

PSYCHOLOGY
AS A
NATURAL SCIENCE

APPLIED TO THE SOLUTION OF
OCCULT PSYCHIC PHENOMENA

C.G. RAUE, M.D.

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AS A

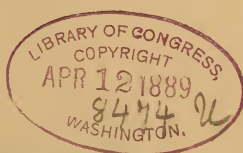
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BY
C. G. RAUE, M.D.



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PREFACE.

THE application of psychology as a natural science to the solution of occult psychic phenomena implies, first of all, a concise statement and a clear understanding of psychology as a natural science. For this reason, it was absolutely indispensable to devote a large space in this work to the elucidation of the principles upon which the final conclusions are based.

Psychology as a natural science is the outcome of Dr. Friedrich Eduard Beneke's labors to base philosophy on firm ground. The results of these profound investigations are laid down in the two volumes of his "*Psychologische Skizzen*," Goettingen, bei Vandenhoeck & Ruprecht, 1825 and 1827, and in many other works.

In the year 1847 I published a little book under the title "*Die neue Seelenlehre Dr. Beneke's, nach methodischen Grundsätzen in einfach entwickelnder Weise für Lehrer bearbeitet*," von C. G. Raue, with the object of popularizing Beneke's researches. This little book is the nucleus of the present work. It had five editions in the German language, each edition following the first having been revised and augmented by my friend and former teacher, J. G. Dressler, Seminar-director in Bautzen. In 1859 the third edition was translated into Flemish by J. Blockhuys (Ghent, Van Dooselaer), and the fourth into English, 1871, under the title "*The Elements of Psychology*, etc." (translator not named), Oxford and London, James Parker & Co. According to the *Encyclopædia Britannica* there exists also a French translation which, however, I have never seen.

Prior to my knowledge of the existence of an English translation, I had commenced to render the work into English myself, with such alterations and additions as I deemed necessary; and these attempts at conveying my thoughts (originally conceived in the German idiom) into English were published in the New York *Quarterly of Homœopathy*, from August, 1871, to August, 1874. In the same journal for August, 1876, I added a new part ("*Physiological Psychology*"), not contained in the original work. Part V of the present work (which was Part IV in the original) I have rewritten and enlarged to a great extent, but some of the chapters are presented partially or wholly in the language of the English translation, with which I had become acquainted in the meantime.

All this, however, did not fully meet the requirements of the investigations into psychological facts so ably and persistently carried on of late years. To bring the entire work to a fitting consummation, it became my work to apply psychology as a natural science to the solution of those apparently occult phenomena which, as far as I know, have resisted all attempts at solution by the methods of research employed by the old psychological as well as the new physiological schools.

This *application* of psychology as a natural science to the solution of occult phenomena is the culminating point of this volume, and the result of my own thought and research. I have thus honestly endeavored to add my share of work to the grand labors of those indefatigable searchers after truth who are endeavoring to solve the vexed questions of psychic life and its seemingly mysterious phenomena.

I am greatly indebted to Dr. E. R. Snader for his valuable assistance in seeing the work through the press.

C. G. RAUE.

Philadelphia, 121 North Tenth St.

CONTENTS.

I.—THE INTELLECTUAL SPHERE OF THE MIND.

	Page
1. The Senses of Man	9
2. Cause and Condition of Seeing, Hearing, etc.	10
3. Innate or Primitive Forces and External Stimuli	12
4. Union between Primitive Forces and Stimuli	13
5. Acuteness or Sensitiveness of the Primitive Forces	15
6. Vestiges—Mental Latencies	16
7. Retentiveness of the Primitive Forces—Memory	19
8. Gradation of the Primitive Forces in regard to their Retentiveness	21
9. Like Unites with Like and Similar with Similar	24
10. Origin of Consciousness—Conception	26
11. Quantitative Relation of Stimuli to the Primitive Forces	29
12. Perpetual Alternation between Consciousness and Unconsciousness	30
13. Second Manner in which Consciousness is resuscitated and again ceases to be Consciousness	32
14. Vivacity of the Primitive Forces, and its Influence upon the Process of Transient Consciousness	36
15. Origin of Concepts—Abstraction	39
16. Gradation of Concepts—Classification—Generalization	42
17. The Intellect—The Understanding	46
18. Judging—Judgment	48
19. Reciprocal Influence of the Concept and Perception upon each other during an Act of Judging	49
20. Inferences—Syllogisms	50
21. Additional Remarks on Judgments and Inferences	52
22. Summary	55

II.—THE SPHERE OF CONATION.

23. Explanation of the Term Conation	58
24. The Primitive Forces are Conative in their Nature	59
25. Quantitative Relation between the External Stimuli and the Primitive Forces	61
26. Mental Modifications Originating in Pleasurable Stimulations Result in Desires	64

	Page
27. How Far the Other Modes of Stimulation are Capable of Producing Desires	65
28. The Act of Desiring is at the Same Time an Act of Conceiving—Two Different Forms of Reproduction of Pleasurable Modifications . . .	67
29. Similar Desires Coalesce.—Inclination, Propensity, Passion	68
30. Influence of the Qualities of the Primitive Forces Upon the Formation of Desires	69
31. External Stimuli and Primitive Forces as Mobile Elements	70
32. Office and Use of the Mobile Elements	73
33. Strong and Weak Modifications	76
34. Repugnancies, Aversion, Repulsion, Resistance	78
35. Repugnancies are Frequently Attended with Pain, and are then More Violent than Usual—Painful Emotions	81
36. Similar Aversions Coalesce	82
37. The Influence of the Qualities of the Primitive Forces upon the Formation of Aversions	83
38. Good and Evil	84
39. Unlike Mental Modifications Unite into Groups and Series	87
40. Some Important Series.—Cause and Effect.—End and Means	91
41. To Wish and to Will	94
42. Similar Volitions Coalesce.—Action	95
43. The Will of Man	97
44. Summary	99

III.—THE EMOTIONAL SPHERE, OR SPHERE OF THE FEELINGS.

45. During our Waking State there are Always Two or More Mental Modifications, either Simultaneously or Successively Excited into Consciousness	102
46. All Mental Modifications Differ More or Less from Each Other	103
47. When Two or More Mental Modifications are Present Together in Consciousness, we Immediately Become Conscious of Their Difference.—Feelings	105
48. Factors of Feelings,	106
49. Extent of the Feelings.—Their Freshness or Vividness	109
50. The Same Mental Process may be Conception, Desire and Feeling at the Same Time	111
51. Feelings of Pleasure and Pain —Difference between Sensation, Feeling and Perception	112
52. The Same Stimulation Does not Always Cause the Same Feeling . . .	116
53. Feelings of the Agreeable, of the Beautiful and the Sublime.—Their Proximate Factors	118
54. The Remote Factors of the Æsthetic Feelings	120
55. Feelings of Strength of the Several Mental Modifications	125
56. Feelings of Clearness, Indistinctness and Obscurity of Conceptions . .	126
57. Valuation—Estimation of Worth	128
58. Gradation of Good and Evil	130

59. The Gradation of Good and Evil is the Same in all Human Beings, Because that Gradation is Conditioned by the Inborn Nature of the Primitive Forces.—True Valuation	132
60. Apparent Contradictions.—False Valuation	135
61. The Feeling of Strength in Desires and Aversions	137
62. Immorality.—Moral Rudeness	137
63. Maliciousness, Wickedness	140
64. The Feeling of Duty.—Conscience	143
65. Freedom of Will and Accountability	147
66. Feelings of Similar Character Increase their Effect when Co-existing in Consciousness	156
67. Dissimilar Feelings when Co-existing in Consciousness Restrain Them- selves in their Effect	157
68. Concluding Remarks	158
69. Summary	161

IV.—PHYSIOLOGICAL PSYCHOLOGY.

70. Sensibility and Irritability	165
71. The Nervous System	168
72. The Sympathetic Nervous System	171
73. General Sensibility, or Common or General Sense of Feeling	174
74. The Muscular Sense and the Sense of Touch	177
75. The Sense of Taste and the Sense of Smell	179
76. The Sense of Hearing	182
77. The Sense of Sight	183
78. Stimuli, Excitants, or External Stimuli	184
79. The Sensory Nerve-Centres	187
80. The Sensory Faculties	190
81. The Rapidity of Sensorial Action	197
82. The Acuteness or Sensitiveness of the Primitive Forces	198
83. The Retentive Power of the Sensorial Forces	200
84. Conscious Development	204
85. Various Degrees of Clearness in Conscious Development	206
86. The Efferent Nerves	211
87. The White Substance	213
88. Connection between the Gray and White Substance of the Spinal Axis	215
89. Function of the Spinal Cord.—Reflex Action	218
90. Volitions	227
91. The Feelings	233
92. Dr. L. S. Beale's Protoplasm	237
93. The Results of Microscopical and Psychological Investigations Com- pared.—Living and Dead	243
94. Beale on the Structure and Action of the Nervous Apparatus	247
95. Psychological Application	252

V.—COMPLEMENTARY INQUIRIES.

96. On the Method of the Study of Psychology	255
97. Consciousness as the Opposite of Consciousness not yet Existing	265
98. Consciousness as the Opposite of Unconscious Mental Modifications.— Reproduction	268
99. Direction in which the Current of Excitation (Reproduction) Proceeds	271
100. Attention.—Tact.—Productive Activity	277
101. The Laws of Association	281
102. Memory, Recollection, Imagination (“ <i>Einbildungsvorstellungen</i> ”) . . .	284
103. Complete or Partial Quiescence in the Soul—Sleep, Dreams	294
104. Consciousness of Psychological Processes which Depends on Special Concepts.—Internal Senses, Inner Perception, Self-Consciousness . . .	309
105. On the Ego	315
106. Reason and Rationality, or Capacity for Reason	319
107. Instinct	323
108. Varied Combinations of the Qualities of the Primitive Forces.—Tem- peraments	340
109. Force and Matter	343
110. Soul and Body	349
111. Generation of Fresh Primitive Forces	362
112. Final and Necessary Separation of Soul from Body—Death.—Contin- uance of the Soul after Death	370

VI.—OCCULT PHENOMENA.

113. Sensitivity	380
114. Muscle-reading. Mind-reading, Thought-transference	388
115. Mesmerism, Animal Magnetism, Tellurism, Hypnotism, Statuvolism . .	401
116. Theories Explaining the Mesmeric State	423
117. Psychological Considerations of the Mesmeric State	428
118. Consciousness during the Mesmeric State	443
119. Hallucinations—Delusions	467
120. Rapport between the Operator and the Subject	477
121. Somnambulism	481
122. Prophecies, Second Sight and Retrospection	498
123. Psychic Action at a Distance; Telepathy, Telergy, the Double, Appa- ritions	508
124. Phantasms of the Dead.—Haunted Houses	525
✓ 125. Spiritualistic Phenomena	531

PART I.

THE INTELLECTUAL SPHERE OF THE MIND.

1. THE SENSES OF MAN.

Light, if it enters the eye, either coming from luminous bodies or reflected from different objects (of various shades and colors, figures, extension and distance), excites the sense of *sight*.

Sound of all kinds—the product of the action of various agents upon the surrounding air, by which the air is thrown into a state of vibration, melodious or otherwise—acts upon the sense of *hearing*.

Externality—extension, form, hardness, softness, roughness, smoothness, etc., of objects which may come within our reach are appreciated by the sense of *touch*.

Flavors—those peculiar exhalations which have as yet escaped chemical analysis, and which are as diverse in character as are the different colors or the different sounds—by that of *smell*.

Savors—those impressions which substances make upon the tongue by virtue of their sapidity, and whose variety is multitudinous—by that of *taste*.

These different faculties are called *senses*; and because each sense is confined to a particular organ—as sight to the eyes, hearing to the ears, touch especially to the fingers' points, smell to the nose and taste to the tongue—they are called *organic* or *fixed senses*. We receive, moreover, still other

impressions. The coolness or warmth of the atmosphere, its sultriness, dampness or dryness, the irritation of various things when applied to the external skin, we can *feel*. All these impressions seem to be related to *tactual sensations*, and may be considered as a continuation of the sense of touch.

Very closely allied to the tactual sense also are the sensations we obtain from the exercise of our muscles, and by which we become cognizant, not only of the weight and resistance of external bodies, but also learn to exactly estimate the degree of contraction necessary for any of our bodily motions. A long-continued use of the muscles produces the sensation of fatigue or weariness. All these sensations we ascribe to the action of the *muscular sense*.

Hunger, thirst, satiety, fulness, emptiness, pain, colic, are utterances of the states of the digestive apparatus and abdominal viscera. Further, the sensations which originate in the several conditions of the air-passages, of the circulatory apparatus and of the sexual sphere, announce the regularity or irregularity with which the *functiones vitales* of the organism are going on. We may call the faculties in which these sensations originate the *vital senses*. Their bodily organs are the system of widely-diffused sentient cranio-spinal nerves and the sympathetic system.

A more detailed consideration of the senses is given in the physiological part of this work.

2. CAUSES AND CONDITIONS OF SEEING, HEARING, ETC.

A dead man can neither see, hear, touch, smell, taste, nor feel, because he is a body without a *soul*.

But in life we also fail to exercise these faculties when we are asleep, or in a state of syncope. Some lunatics do not heed the pricking of needles, or the application of red-hot iron to their bodies; they do not hear the report of a pistol shot off close to their ears; they are entirely unaffected by the strongest odors, or the severest cold, although their sensory organs appear to be in perfect health. Facts similar to these, although less striking, are frequently met with in nor-

mal states of life. Many a soldier, wounded in the heat of battle, has been unconscious of it until the fight was over. The card-player is sometimes so deeply engaged in the game that he observes nothing transpiring about him. We are sometimes so intently absorbed in our thoughts, or in the pursuit of some object, that pickpockets find it an easy task to steal our purse; and we may hear the most interesting discourse without giving sufficient heed to it to recall a single idea it may contain. We may read a whole page without fixing in the mind a single idea there stated. In order, therefore, to perceive external impressions, it is not only necessary that there be a *soul*, but that the soul shall also be in a fit condition *to receive external impressions*. Hence, we conclude that the first *cause* for the exercise of our senses lies in the *soul*, because a corpse neither sees nor hears; nor are the impression-receiving functions ever exercised to their full extent when the soul is pre-occupied by something else and does not or cannot receive present external impressions. The exercise of the senses is, therefore, an activity of the soul. It is the *soul* that sees; it is the *soul* that hears, etc. Still, so long as the soul is united to the body, and through that body with the exterior world, we may naturally suppose that the soul's functions stand in a conditional relation to the body as well as to the things without. In this respect experience teaches, that if a person's eyes (or optic nerves, or the portions of brain where these nerves originate) are destroyed, that person *cannot see*.

The same is true of all the other senses. The exercise of the normal functions of the soul to see, hear, touch, taste and smell, requires *sound bodily organs* as necessary *conditions*, by which alone such actions can be performed. Similarly the artist needs a piano, a violin or other instrument, in order to exhibit his skill.

Concerning the conditions which lie in the external world, Abercrombie remarks: "We see not without the presence both of light and a body reflecting it; and if we could suppose light to be annihilated, though the eye were to retain its perfect condition, sight would be extinguished." Nay, I

may add, the eyes would gradually shrink to mere rudimentary organs, as the well-known blind fishes of the great Kentucky Cave clearly demonstrate. Analogous remarks are applicable to sound, flavor, savor and tactile qualities; their absence would at once render futile all efforts of the best faculties to receive impressions concerning them, even though the soul be provided with perfect receiving organs. Another *condition* necessary for the proper exercise of the normal functions of the soul of seeing, hearing, etc., is, therefore, *that the things without should be capable of acting, and actually should act, upon the senses.*

3. INNATE OR PRIMITIVE FORCES AND EXTERNAL STIMULI.

So soon as it is born, a child, provided its sense organs are sound, can see, hear, etc., at once, but it is unconscious of doing so. The exercise of these faculties is the first utterance of its mental nature. Father, mother, sisters and brothers it knows not. Still less is it capable of speaking, thinking or judging. In short, we observe no sign of intellectual powers, representative or reflective, in the child; they have all yet to be developed. But the ability to see, to hear, to taste, etc., is observable from birth. Hence, we may call them *the innate faculties of man—the primitive or original forces of the soul*—out of which, as we shall see, all further capabilities gradually evolve, as the tree develops out of the seed. These primitive forces, however, would be of no avail if there were no external things that could affect them (2). In order to see, there must be light, and things reflecting it; in order to hear, there must be an atmosphere, and things causing it to vibrate, etc. All the influences of external things on the child, necessary for seeing, hearing, etc., we call *stimuli*; and we may therefore say for seeing, hearing, touching, tasting, smelling and feeling there are required:

1. *Primitive forces of the soul*, and
2. *Stimuli of the external world.*

The external stimuli act upon the primitive forces, so long as we are in a normal condition, invariably through the medium of healthy *sensory organs*.

4. UNION BETWEEN PRIMITIVE FORCES AND STIMULI.

If we hold an object before a young child, it turns its eyes toward it. Perhaps it attempts to seize it with its little hands in order to touch it, and possibly brings the thing into contact with its mouth before it is entirely satisfied. We observe an object far off, but too distant to recognize it. We then make an effort to catch even the faintest glimpse of it. Imagine the crew of a wreck, how their eyes seek for land or an approaching vessel. During the night we hear a noise, but it is not distinct. Hark! what is it? Is not our faculty of hearing all on the alert to catch the sound? In short, *the primitive forces are not merely passively impressed by the external stimuli, but they tend toward them, receive them actively*, because the primitive forces are soul and life themselves.

We may either *seek* to find an object, or the object may strike our eyes casually. In either case, so soon as the stimuli of sight emanating from that body come in contact with our forces of sight, that moment we *see* that body. In the same way we *hear* a bird, if his song reaches our ears. In other words, the stimuli of hearing (the sounds which emanate from the bird) come in contact with our primitive forces of hearing, and are received by them. A similar process takes place when we touch, smell, taste or feel. In all instances stimuli must come in contact with corresponding primitive forces, and must be received by them. The moment this takes place we either *see, hear, touch, smell, taste or feel*.

There is a wide field for speculation to determine *how* this may happen, or, in other words, how matter and mind can form a union. Indeed this field has been ploughed industriously by hundreds of philosophers, from Plato and Aristotle down to Reid and Brown. It is interesting to read the accounts of these labors, as given by Sir William Hamilton in his *Lectures on Metaphysics and Logic*, Vol. I, from page 279 to 396. I shall at present confine myself to the statement of the simple *fact* which consciousness teaches the unbiased observer, viz.: *We see, hear, touch, smell, taste or feel whenever our primitive forces are acted upon by corresponding stimuli.*

For *seeing, hearing, etc.*, we may use the general term of sensing or perceiving; hence the proposition would be this: *The union of primitive forces with corresponding stimuli results in sensations or perceptions.* The difference between sensation and perception will be explained further on.

As this process goes on continually under the above-named normal conditions, we may state the following proposition as the first fundamental process for all mental development, namely: *In the human soul originate sensations and perceptions in consequence of impressions or stimuli from the external world upon the primitive forces of the soul.* Winslow expresses this idea as follows on page 108: "Sensations are *effects*, in the production of which are *causes without* exciting the organs and the *mind*, an intelligent agent, acting in *connection with the organ* at the same time. The united action of *both the organ and the mind* is essential to sensation. The organ, then, is the mutual instrument of mind and matter—the *point at which the two worlds meet*. Whatever operates upon the organ from without is the *occasional* cause of sensation; the organ is the *instrumental* cause; the mind is both the *agent* and the *subjective* cause of it."

When we speak of primitive forces of the soul, we do not mean to imply that they are something separate from the soul, a something possessed or owned by it, but they constitute the very essence or being of which the soul consists at birth. Just as the body of man, animal, or plant, is evolved from living matter or bioplasm (as Dr. Lionel S. Beale has proved microscopically, in his work, "The Protoplasm," to which I can here merely refer), so the primitive forces of the soul are the spiritual substances out of which all mental modifications gradually, and in consequence of corresponding stimuli, develop. And it may as well be stated now that each sense consists of innumerable single primitive forces; that the so-called faculty of sight, hearing, tasting, etc., is not a one-power, except if considered *in abstracto*, but that each sensory faculty consists of separate single forces, which are severally modified by the various stimuli acting upon them. These propositions, however, will become clearer as we progress in our investigations.

5. ACUTENESS OR SENSITIVENESS OF THE PRIMITIVE FORCES.

The human senses are endowed with quite different degrees of acuteness. Some persons, for example, are able to detect the smallest differences in shades and other visible qualities of objects, which others do not perceive. Again, some can perceive the slightest variations of sound. As a familiar example may be cited the so-called musical ear, which perceives any deviation from clearness and purity in a succession of tones, which an unmusical ear does not detect. There are remarkable instances on record of the acuteness of the sense of touch, by which blind men are able to distinguish pieces of coin, and even detect counterfeits, etc., showing a power of minute discrimination in the tactual faculties, to which those who can see rarely, if ever, attain.

“A dealer in wines said he had handled more than ten thousand different qualities, each of which had an odor peculiar to itself. A person of a very discriminating smell said that he had never found two roses, even on the same bush, of precisely the same odor.” (*Winslow's Elements of Intellectual Philosophy*, p. 82.) How many others say all wines and all roses smell alike. “It is somewhere said of a celebrated cook, who had been in service fifty years, and who had prepared on an average fifty dishes a day, that he never made two dishes of precisely the same flavor.” (*Winslow*, p. 85.) How many can be found who can scarcely distinguish beef from mutton if they can not see the meat.

Some persons are exceedingly sensitive to any change in the atmosphere changes, which others do not mind.

The same variety of acuteness is also exhibited in the senses of different animals. We observe an extraordinary degree of keenness of smell in dogs, of sight in chickens, of touch in spiders, etc. All this leads us to the conclusion that the primitive forces are not alike acute in all persons, but vary greatly as to the degree with which they are apt to be affected by even the minutest, or only by coarser stimuli. If we carry our investigations further, we observe that this quality is not equally distributed through all the different classes of

primitive forces in one and the same person. He who is endowed with great acuteness of sight *may*, but need not necessarily, possess a like amount of acuteness of hearing, etc. On the contrary, we observe that each class of primitive forces has its own degree of acuteness. Any degree in the one may be associated with any degree in either of the other classes of primitive forces. It follows thus that among millions of human beings no two can be found exactly alike as regards the sensitiveness of all their primitive forces. This acuteness or sensitiveness is, therefore, a *quality* with which the different classes of primitive forces are endowed in varying degrees, each class representing its own quality by a greater or less degree of aptness in becoming affected by, or capacity to apprehend, a given amount of stimuli.

It may even here be surmised that the quality of the primitive forces must have an important bearing upon the whole future mental development of the individual, inasmuch as a higher degree of acuteness must necessarily result in fresher and fuller sensations and perceptions than a lower one.

6. VESTIGES—MENTAL LATENCIES.

Suppose we see a plant for the first time. As always when we see, our primitive forces of sight are acted upon by the stimuli of light which emanate from that plant. After a while the plant is carried away, and we may forget all about it. Next day some one asks us whether we have seen the plant, and at once it stands before our mind, perhaps with all the peculiar features of its leaves, flowers, etc., precisely as we saw it. Another, who did not see the plant, knows nothing about it. The same result is obtained when we try the experiment with any of the other senses; for we can likewise recollect what we have heard, touched, smelled, tasted, or felt, but we cannot recollect or have a mental picture of a thing of which we had not previously obtained a sensation or perception. It is clear, therefore, that the act of seeing, hearing, etc., is not without lasting effects upon the primitive forces. By the action of stimuli (4) the primitive forces become per-

manently modified in an exact correspondence to the external stimuli, acting upon them. The primitive forces continue to remain thus specifically developed (a development they did not previously possess). In consequence of this fact alone is it possible to recall things long after they themselves may have perished, and sometimes almost as vividly as though they were still acting upon our senses. *Any act of perceiving, then, causes a lasting effect, an objective development of the percipient primitive forces.*

This is an every-day observation which needs no further confirmation. What I have to say is, that modifications of the primitive forces, as they originate in the act of perceiving, do not *remain conscious*, but become *unconscious* (we forget them), and *remain in this state* until they are roused again into a state of consciousness. We then recollect them. (Compare 12 and 13)

"We are conscious of certain cognitions as acquired, and we are conscious of these cognitions as resuscitated. That in the interval, when out of consciousness, these cognitions continue to subsist in the mind, is certainly an hypothesis, because whatever is out of consciousness can only be assumed; but it is an hypothesis which we are not only warranted, but necessitated by the phenomena, to establish." (*Hamilton*, p. 414.) They are *mental developments in a latent state*, which Beneke calls "*Spuren*," *i. e. vestiges*, and Webster defines vestiges as "the remains or marks of anything left, when the thing itself no longer exists." In the original the word vestige meant a material impression upon matter. But, applying this term to mental developments, we enlarge its meaning, and designate by it *specific modifications of the primitive forces by the action of external stimuli upon them, which modifications continue to exist as such in a latent state.*

Sir Wm. Hamilton broaches this subject in Lectures xviii. *et seq.* He says: "Whether the mind exerts energies, and is the subject of modifications, of neither of which it is conscious, is the most general expression of a problem which has hardly been mentioned, far less mooted, in this country; and when it has attracted a passing notice, the supposition of an unconscious action or passion of the mind has been treated as

something either unintelligible or absurd. In Germany, on the contrary, it has not only been canvassed, but the alternative, which philosophers of this country have lightly considered as ridiculous, has been gravely established as a conclusion which the phenomena not only warrant but enforce." He then goes on to prove the fact "that the mind may, and does, contain far more latent furniture than consciousness informs us it possesses," and he calls the hidden riches of our mind "*latent agencies, modifications of which we are unconscious, —mental latencies.*" I may, in my future explanations, make use of any of these expressions, with the distinct understanding that I mean by the use of them *objectively developed primitive forces in their unconscious existence*, extending thus the meaning of *vestiges* from a term simply implying mere modifications of the primitive forces by the action of *external stimuli*, to all and any modifications which primitive forces in the course of mental development may undergo. We shall, by further investigation, find that any kind of mental development, no matter from what cause or in what manner originating, if once originated in a sufficient degree of perfection, continues to *exist as a vestige or mental latency*; for "it is a universal law of nature, that every effect endures as long as it is not modified or opposed by any other effect." (*Hamilton*, p. 416.) To prove this assertion there is much evidence showing that the mind frequently contains whole systems of knowledge, which knowledge (though we are in our normal state, has faded into absolute oblivion) may, in certain abnormal states—such as madness, febrile delirium, somnambulism, catalepsy, etc.—flash out into luminous consciousness, and even throw into the shade of unconsciousness those other systems by which they had, for a long period, been eclipsed and even extinguished. For example, "there are cases in which the extinct memory of whole languages was suddenly restored." (*Hamilton*, 6.) Such a case is that of the Comtesse de Laval, who had been nursed during her infancy in the Province of Brittany. When grown up, during an indisposition, she commenced to talk in her sleep in the Breton idiom; yet, when it was repeated to her in her waking hours, she did not understand a single syllable

of what she had uttered in her sleep. "And what is still more remarkable, there are cases in which the faculty was exhibited of accurately repeating, in known or unknown tongues, passages which were never within the grasp of conscious memory in the normal state." (*Hamilton.*) Such a case is that reported by Coleridge of a young woman, who, during an attack of nervous fever, talked incessantly in Latin, Greek and Hebrew, in very pompous tones and with most distinct enunciation. This woman could neither read nor write, but during her childhood she had been in the house of a pastor, whose habit for years it was to walk up and down a passage of his house, into which the kitchen door opened, and read to himself in a loud voice out of his favorite books. These declamations had been listened to by the child in the kitchen, and produced vestiges which, under the extraordinary stimulus of a nervous fever, rose into consciousness, while under ordinary circumstances they never so rose. (*Hamilton*, p. 238, etc.) A number of other well-authenticated cases, having a similar bearing, are related by Abercrombie in his *Inquiries Concerning the Intellectual Powers*, p. 111, and at 220 *et seq.*

7. RETENTIVENESS OF THE PRIMITIVE FORCES—MEMORY.

A superficial observation will convince us that the vestiges produced in different persons by the same external stimuli are not all of a like nature. Suppose twenty persons, alike interested in the subject, listen to one and the same lecture, or look at one and the same object, will the effect on each one be the same? We can easily ascertain by inquiring next day what the several persons know about the subject. Some, no doubt, will be able to give a very accurate account, while others cannot. Every teacher knows it to be a fact that certain pupils—and not always the most industrious—generally know their lessons better than others. How is this?

Vestiges are objectively developed primitive forces in their latent state. In 5 we have seen that the different classes of primitive forces exhibit different degrees of acuteness. Such forces as are endowed with a great degree of acuteness will

surely be modelled in finer shades and necessarily produce fresher and fuller perceptions, and consequently fresher and fuller vestiges of such perceptions; therefore, persons who possess more acute forces of seeing or hearing than others, will thereby be enabled to relate more accurately what they have seen or heard. But acuteness alone will not suffice. What advantage is it to pour water into a sieve plentifully and continually? Although the sieve receives the water, it does not keep it. In like manner, what would it amount to if I were in possession of the most acute forces, receiving thereby the minutest impressions, but did not retain them? In the first place, I would not succeed in gathering water; and, applying the illustration to the imperfect reception and retention of impressions, I would never be able to reproduce *sensations*. Only by the duration of that definite change which the primitive forces undergo by the action of external stimuli, *vestiges* originate; and the more perfectly this specific development endures, the more perfect will be the vestiges, and consequently the *clearer* will be the recollection of them. A higher or lower degree of acuteness modifies the recollections as to their accuracy, but *clearness* of recollection depends upon the degree of preservation in which the formed modifications endure. Hence, it is not unusual to meet persons who know a little of everything, but nothing thoroughly; while others have a small circle of knowledge, characterized by great clearness.

Now, then, if experience teaches that some persons can and do recollect what they have seen and heard *better* than others, it follows that the *modifications caused by stimuli endure in different persons in different degrees of perfection*; and that, therefore, *the primitive forces of man differ in a second quality, viz.: In the energy or tenacity with which they continue to exist more or less perfectly in that definite change which they have undergone by the action of external stimuli upon them.*

In addition I might remark that, in order to procure a distinct modification, the stimuli should act fully and steadily upon the recipient forces; and it is furthermore obvious that, to procure a thorough cognition of an extensive ob-

ject, the different stimuli which emanate from the several parts of that body must act severally upon corresponding primitive forces, so that the recollection of such an object—a house, for example—consists, not of a single vestige, but of the several vestiges which have been produced by the action of the different stimuli emanating from the several parts of the house.

In this quality of the primitive forces exists the foundation of what in ordinary language is understood by the terms *good* or *bad*, and *long* or *short memory*. It is *good*, or *long*, when the primitive forces maintain in great perfection that state of specific development which they have obtained by the action of stimuli, so that we afterwards can recall to mind what we have perceived almost as clearly as though it were present to our senses. It is *bad*, or *short*, when the modified primitive forces do not remain in such perfection; when, therefore, they lack energy or retentive power. This state, of course, gives only faint vestiges, and their representation in recollection must be equally faint, if no new addition of the same stimuli by which they were produced be operative.

We see, therefore, that what in common language is called memory, is not a special faculty outside the primitive forces of man, but that memory consists solely in the quality possessed by the primitive forces of *continuing* to *persist* more or less permanently in that specific development which has been wrought in them by the action of external stimuli.

As vestiges are produced, however, from all conscious acts in the soul, memory is not confined to external impressions alone. (Compare 75.)

8. GRADATION OF THE PRIMITIVE FORCES IN REGARD TO THEIR RETENTIVENESS.

“When we recollect an external object, I think we much more readily recall the *visual* conception than any other. I may examine a ball by touch, and obtain a knowledge of its form and magnitude; but when I think of it, the visual appearance presents itself most readily to my mind. Almost

all the conceptions of figurative language are derived from sight."—*Wayland*, p. 69.

"It has frequently happened that the most eminent musicians have been afflicted with deafness. It is delightful to observe that this infirmity only in a modified degree deprives them of their accustomed pleasure. They sit at an instrument, touching the notes as usual, and become as much excited with their own conceptions as they were formerly by sounds."—*Wayland*, p. 55.

"When we see a blind person read with his fingers, we must be convinced that he has as definite a conception of the forms of letters as we ourselves have by sight."—*Wayland*, p. 63.

The cited cases prove that the three systems of primitive forces—sight, hearing and touch—form vestiges of great perfection; that they are, therefore, endowed with a high degree of energy.

When a clock strikes, a child generally turns its head toward the sounding body to *see* it. When we listen to an orator, we generally try to get in a position where we can also have a look at him. A strange word is better kept if we see it written, and the proverb says: "One eye is a better witness than two ears."

The highest development of the sense of touch we find in those who are blind from birth. If, however, they become able to see, they rely upon the sense of sight principally, as do those who have enjoyed it from birth.

It seems, therefore, that the forces of seeing yield the most perfect vestiges; that they possess retentiveness or energy in a higher degree than the others. This seems to be the norm. Still there may be persons in whom the hearing forces preponderate over those of sight in regard to energy, as indeed each system of forces is endowed with its own degree of acuteness as well as of energy (5).

"After having smelled an odorous body, I know that I should be able to recognize that particular odor again. I cannot form a conception of the smell of a rose, but I know that I could, *if it were present*, immediately recognize it and distinguish it from all other odors."—*Wayland*, p. 44.

"I think that men generally have no distinct conception of

an absent taste, but only a conviction that they should easily recognize it *if it were again presented to them*. This form of recollection may be so strong as to create a longing for a particular flavor, but still there is no conception like that produced by either sight or touch.”—*Wayland*, p. 47.

The same is true in regard to the general sense of feeling. No one is capable of recalling the sensation of chilliness so long as he feels warm, although every one would recognize it at once should he be attacked by a chill. There is evidently a great difference between the primitive forces of feeling and those of sight, hearing and touch. While sight, hearing and touch are capable of producing vestiges which, on being recalled, appear about as clear as the identical impressions by which they were caused, we find that smell, taste, and the general sense of feeling are decidedly deficient in this particular. The vestiges produced in these systems are by far too imperfect to reproduce in themselves a clear recollection without a new addition of the stimuli by which they originated. They are, therefore, much inferior to the other senses. On this ground, in regard to *energy*, we may divide the senses into two classes—*higher* and *lower*. The *higher* comprise *sight*, *hearing*, and *touch*, because their forces are endowed with such a degree of retentiveness or energy as to produce vestiges which can be recalled in the mind with a degree of clearness that is almost equal to the original impression. All science, in fact, is based upon these senses. The *lower* comprise *smell*, *taste*, and the *vital senses*, because their objective development is not of so persistent a nature as is essential for a clear recollection without the addition of new stimuli. No one has ever succeeded, not even the great Linnaeus, in classifying flowers, for instance, according to their smell and taste, because these forces do not yield products sufficiently clear and distinct for such a purpose.

We thus must recognize a marked difference between the several systems of primitive forces in man—a difference which manifests itself in a gradual diminution of retentiveness from sight and hearing down to the lower and vital senses. Indeed, it is this quality of the primitive forces which constitutes the

specific difference between man and animals; for, although many species of animals possess the same systems of primitive forces as man, and some in even greater acuteness, none are endowed with a sufficient degree of energy to produce vestiges, which, without a repetition of corresponding stimuli, result in clear recollections. The highest development of animals may, perhaps, equal the lowest human development. Man may succeed by perseverance in drilling single animals to a certain degree of culture, but their whole kind remains specifically the same as it was thousands of years ago. The energy of the primitive forces is the basis for all higher mental development.

9. LIKE UNITES WITH LIKE AND SIMILAR WITH SIMILAR.

We have thus far seen that external stimuli act upon corresponding primitive forces; that the product of such actions remains as vestiges, which are more perfect in proportion as the primitive forces are more retentive; that the greatest conservative power belongs to the higher class of senses, sight, hearing, and touch; and that, therefore, these senses are the basis of all higher mental development. It remains, however, to go still further into detail, for this fact is not sufficient to explain the greater or lesser clearness of recollecting objects we have perceived by the *same* system of primitive forces. Every one knows that what we have seen or heard only *once*, cannot compare in clearness of recollection with what we have seen or heard *many* times, provided the acts of perceiving were alike perfect. Only by repeated action of the same stimuli the little beginner gradually gains a knowledge of the A-B-Cs, and finally he learns to spell and read. There is the same experience in the acquirement of all kinds of knowledge. In order to gain a clear recollection or knowledge of a thing we must have repeated perceptions of that thing. But, even then, what would it amount to if these several perceptions remained as so many several vestiges singly and uncombined? Would not the one-hundredth leave us just where we were when we made the first? As this, however, is contrary

to all experience, we come to the necessary conclusion, inasmuch as we gain clearer recollection or knowledge by repeated perception, *that the several vestiges which originate from like perceptions all unite into one aggregate.* This can be proved by thousands of facts. When I see the first violet in spring, it strikes me at once as an old acquaintance, the like of which I have seen hundreds of times before; but if I should happen to see a flower which I never had seen before, it would appear to me as something new. In the first instance the new impression associates with all the like vestiges previously obtained; in the second the new flower finds no vestige of former like impressions. We observe the same fact if we watch the development of an infant. When born it receives external stimuli through all its senses, incongruously, just as they happen to come. We find it first learns to know its mother, because from her it receives the first and most numerous impressions, and in the same way it learns to know other objects, according to the number of impressions it receives from them. Order is thus at once established; for, no matter how indiscriminately external stimuli may act upon the child's senses—as in fact they do—they do not mix and mingle *ad libitum*, but *unite strictly according to their similarity, and constitute in this way homogeneous aggregates, which are the more lucid and clear in proportion as their vestiges are more like and numerous.*

But closer observation teaches us still more. Not only what is perfectly *alike* unites with the like, but even that which is only *similar*.

Almost every one, in walking the streets, has mistaken an entire stranger for an old acquaintance, because at first sight that person looked very *similar* to the other. It is of very frequent occurrence that children, before they have acquired perceptions of what is identical, confound objects with what is merely similar. To them all things that fly are birds, even bats and butterflies. All grown persons who stand in a friendly relation to their parents are uncles and aunts, etc. Even the every-day expressions, as, this looks, sounds, tastes, smells, etc., very much *like or similar* to that or another thing, prove *that not only like and like, but also the similar, unites with the sim-*

ilar. And as we shall find in the course of our investigations, that not only new impressions unite with vestiges of similar impressions previously acquired, but that likewise all other mental acts unite according to their similarity, we may state as a second fundamental process: *In the human soul unite continually the like with the like and the similar with the similar*, producing in this way units of a more or less homogeneous compound. This process I shall call *the attraction of like to like*.

10. ORIGIN OF CONSCIOUSNESS—CONCEPTION.

No one has any recollection of his first year's existence. Gradually the child becomes cognizant of the things around it. When it is born, the only faculties the child exhibits are those of seeing, hearing, etc., and by their use gradually gains a knowledge or consciousness of certain things. On watching closely we observe that this consciousness of things grows clearer in proportion to the frequency with which the same things are made to act upon the senses, or, expressed in terms already used, in the ratio of the increase in the number of vestiges which the child acquires in accordance with the law of attraction of like to like. Only by the repeated action of similar stimuli upon corresponding primitive forces, or, what is the same, by the formation and union of many similar or like vestiges, the child gradually becomes conscious of the things around it. The same truth holds good in after-life. The most striking examples of this truth are offered by persons who, being blind from birth, have gained their sight in mature age by a successful operation. At first they knew nothing at all of what they saw. The most remarkable case of this kind is that which *Cheselden* relates in the *Philosophical Transactions* for the year 1728. Mr. Cheselden says: "When he (the gentleman who had been blind from birth) first saw, he was so far from making any judgment about distances, that he thought all objects whatever touched his eyes (as he expressed it), as what he felt did his skin, and thought no objects so agreeable as those which were smooth and regular, though he could form no judgment of their shape

or guess what it was in any object that was pleasing to him. *He knew not the shape of anything, nor any one thing from another*, however different in shape or magnitude; but upon being told what things were, *whose form he before knew from feeling, he would carefully observe, that he might know them again*; but having too many objects to learn at once, he forgot many of them; and (as he said) *at first learned to know and again forgot a thousand things in a day*. One particular only (though it may appear trifling) I will relate: Having often forgot which was the cat and which the dog, he was ashamed to ask, but *catching the cat* (which he knew by feeling) he was observed *to look at her steadfastly*, and then setting her down, said, "So, puss! I shall know you another time." We see thus that things which were known to him by the sense of touch and hearing, etc., he had no consciousness of when seeing them, until he had acquired by repeated acts of seeing a sufficient number of visual vestiges. It is then a matter of experience that we become *conscious* of external things only in the degree in which we have gained vestiges by repeated perceptions of them. *Repeated actions of similar external stimuli upon corresponding primitive forces and their union into homogeneous aggregates are the necessary conditions for the production of conscious modifications in the soul.*

What, then, is the source of consciousness? Is it the primitive forces? In themselves they are entirely unconscious. Is it the external stimuli? They at no time produce consciousness except by their action upon primitive forces. Both, then, must be considered as taking part in the production of consciousness. Nevertheless, the deepest source must be attributed to the primitive forces, inasmuch as the same external stimuli act upon other things and never cause anything like consciousness, and different systems of primitive forces produce different degrees of clearness of recollection. The unconscious primitive forces possess an inherent capacity of becoming conscious, which capacity becomes actual, so soon as they are modified by the influence of stimuli. We find the clearness of consciousness increase in the same ratio as similar perceptions are repeated, and it follows that the

first vestige must possess a certain quantum of this consciousness, though as yet in an embryonic state. The same is true of all internal acts and developments, as shall hereafter be demonstrated. We may say, then, *that the greater the number of similar vestiges, the clearer will be the consciousness of the aggregate which originates in and from these several vestiges.*

This fact explains why repetition is indispensable in order to obtain any kind of knowledge. We must perform the same mental act over and over again, until at length we gain as many vestiges as are necessary to constitute sufficiently clear and conscious mental acts. The accumulation of vestiges is the necessary condition of all mental progress: *Repetitio est mater studiorum.*

Whenever a sufficient number of similar vestiges have united for us to have a clear consciousness of the object from which the external stimuli were obtained—although the external object be no longer present—we say we have a *conception* of that object; or, we can *conceive* of it. This sense of the word *conception* has been introduced by Stewart, and means a re-calling or re-presentation of previous perceptions, and seems to have been universally adopted, although Hamilton opposes it strongly in his Lectures on Metaphysics, p. 452. Hamilton says: "This term ought to have been left to denote, what it previously did, and only properly could be applied to express the notions we have of classes of objects, in other words, what have been called our *general ideas*." I do not find, however, another word by which I can better express the German term *Vorstellung* and *Vorstellen*, which means to *place before*, and which Beneke applies to the *conscious re-presentation* of previously acquired vestiges, as described above.

If we consider the influence which different degrees of acuteness and energy of the primitive forces must exercise upon the formation of conceptions, we find that a higher degree of acuteness must procure more accurate and more finely-shaded conceptions; and a higher degree of energy must produce clearer and more lucidly conscious ones. Indeed the *energy* of the primitive forces is the actual cause of all consciousness; and we find, therefore, that the development of consciousness

goes hand in hand with the degree of *energy* which the different classes of primitive forces possess (8). This is the reason why our conceptions of objects of sight, hearing and touch are much clearer than those of smell, taste and feeling; and not (as Stewart suggests) "because visible things are complex, presenting a series of connected points of observation; thus being a result to which the association of ideas largely contributes."

The energy of the primitive forces, then, is the origin of consciousness, and of that form of consciousness which is directly opposite to that state of the human soul in which it had *no* consciousness, because its primitive forces had not yet been modified by any external stimuli. We will consider consciousness in its transient state (12), and in its form as self-perception, at a later occasion.

11. QUANTITATIVE RELATION OF STIMULI TO THE PRIMITIVE FORCES.

Perceptions, and consequently their re-presentation into consciousness as conceptions, may be either clear and distinct, or obscure and indistinct, for reasons which have been detailed in the foregoing. I have yet to mention another factor, which has likewise an important bearing in this matter, and that is the quantum of external stimuli in relation to the percipient forces. If, for example, I see an object in obscure light, or hear a sound which is faint, or smell an odor that is indistinct, I shall not gain a clear perception of the object, the sound or the odor. The quantum of external stimuli offered is too small, too scanty, for the recipient forces. The forces are not properly filled out by them, their capacity is not sufficiently engaged, and such a process always occasions a feeling of non-satisfaction.

The case is entirely different if I see the same object in full daylight, hear the same sound with a proper degree of loudness, smell the same odor in all its vigor. I will gain a clear perception of such an object, because the quantum of external stimuli offered is just adapted to the recipient forces; the forces are properly filled out by them; their ca-

capacity is fully engaged ; and in all such cases we have a feeling of satisfaction. There are still other quantitative relations of external stimuli to the primitive forces, of which I shall speak in 25. For our present purpose it is sufficient to state the above-mentioned relations. We learn *that in order to gain a clear perception it is necessary that the quantum of external stimuli should be adequate to the capacity of the recipient forces.* Too small a quantum produces, at best, only obscure and indistinct modifications.

Summing up the facts detailed in the foregoing paragraphs, showing the conditions necessary for the development of clear perceptions and consequently clear conceptions (or, in other words, of clear conscious acts in the human mind), we find those facts resolvable into the following propositions :

1. *The primitive forces must be endowed with a sufficient degree of energy to maintain the development they have acquired from the stimuli received (7).*
2. *Similar impressions must unite with similar already-formed vestiges to constitute a homogeneous aggregate (9, 10); and,*
3. *The stimuli must be of a sufficient quantum in relation to the recipient forces.*

12. PERPETUAL ALTERNATION BETWEEN CONSCIOUSNESS AND UNCONSCIOUSNESS.

Each moment of our lives bears testimony to the fact that we are conscious of but a limited and comparatively small number of acquired mental modifications at one time ; while the others, how great soever our possessions, rest in perfect unconsciousness. For example, while we are pondering over the present subject, the conceptions and ideas appertaining to it fall readily into consciousness ; but we are entirely unconscious of what may have agitated our mind yesterday ; and what is now present in our thoughts may yield the next moment to some other ideas. In short, we observe a constant appearance and disappearance of mental modifications. An attentive reader will observe that we are now viewing

consciousness from a new standpoint. The question is no longer how does consciousness originate, but how does this constant alternation or change between consciousness and unconsciousness come to pass? In this sense, therefore, consciousness signifies merely a *condition* of mental aggregates already acquired, a condition in which these aggregates either appear as conscious modifications or disappear into latency or delitescence.

The question, therefore, is: By what means do vestiges assume a conscious condition; and, on the other hand, by what means do conscious modifications retire into delitescence? The old answer to these questions is: "Ideas awake and go to sleep," leaving us where we were before, because this answer does not tell why they awake, and why they go to sleep. It is a curious fact that these important questions have never been made problems (before Beneke); and we find, therefore, that the older psychologists do not make an attempt to solve them. Everybody seemed satisfied with this figurative answer. *Beneke* was the first who investigated the nature of consciousness and its varying states, and *Hamilton* makes at a later time an attempt to clear up these problems (Lecture xxx., p. 416).

First question: By what means do vestiges assume a conscious condition?

Consciousness originates out of repeated actions of similar external stimuli upon corresponding primitive forces. To the first vestige, which originates in consequence of the first modification of primitive forces by the action of corresponding external stimuli, a second perception adds a new vestige. Every following perception combines with the previously attained similar vestiges, and adds a new element of consciousness, until at last the aggregate becomes a clear, conscious, mental act. It follows, then, that each new stimulus, by acting upon a free primitive force and converting it into a specific modification, brings, at the same time, all the like vestiges previously acquired into a similar state of excitation as they had during their original formation, and which the new perception now possesses. It is a parallel process to that of the string of

a musical instrument, which, on being set vibrating, causes other strings to vibrate if they are of the same tension.

Consciousness, then, in this sense is an *excitation*, a *motion* of the aggregated vestiges by new similar stimuli, which on account of their similarity impart their own motion to all of them. Of this process we are reminded every moment. A moment since, I was surely not thinking of a cart; but its rumbling on the street on passing by at once arouses in me the consciousness of it. If we see a thing we cannot help being conscious of it, and if it is an object which we never saw before, it at once strikes us as something new because its stimuli find no vestiges of a similar development to which they could impart their own specific motion. There is no doubt that resuscitation into consciousness is caused by the action of fresh stimuli. As they excite their similar vestiges they cause an excitation of the aggregate. This is one way, but not the only way, in which latent mental modifications become resuscitated into consciousness. Compare 13.

Second question: By what means do conscious modifications retire into delitescence?

We shall find, as is universally true, that there is no effect without a cause. Where there is motion, there must be moving elements; and if these elements cease to be, motion necessarily ceases. If, therefore, consciousness in its transient state consists in motion or excitation of aggregates already formed, it is clear that this motion must cease so soon as the exciting elements cease. The excitement leaves, and the aggregate, just aroused, becomes motionless, *id est*, *unconscious*.

13. SECOND MANNER IN WHICH CONSCIOUSNESS IS RESUSCITATED AND AGAIN CEASES TO BE CONSCIOUSNESS.

(a) I may sit alone in darkness and silence and yet be full of ideas crowding one upon another. Without wishing it, perhaps against my will, the whole past of my life may unfold like a panorama before my internal vision, or I may hear dear voices, melodies, or what else may happen to be recollected, or I may be busily engaged in thoughts of the future, full of

hope or fear, and all this without any external excitants or any intention of my own.

(b) But I may also *wish* to remember things past, things seen or heard, etc., and they also, in a majority of cases, will represent themselves to my internal view. We are able, in most cases, to recollect what we wish to recollect, and all this without the presence of corresponding external stimuli. This clearly shows that latent modifications can be resuscitated into consciousness by something else than the external stimuli of which we spoke in the foregoing paragraph. What is it?

If consciousness in its transient state is excitation of formed aggregates, if excitation or motion cannot take place without moving elements, and if, as shown in the above instances, the excitants do not come from without, it follows that we must look for moving elements within the mind itself. We know of nothing here but (1) primitive forces (3) and (2) objectively developed primitive forces or vestiges (6). As vestiges are the objects to be moved, there remain for our consideration only primitive forces.

The power of movement is invariably possessed by bioplasm. The rootlets of the plant extend themselves into the soil because the living matter at their extremities moves onward from the point already reached. The tree grows upward against gravity by virtue of the same living power of bioplasm. In every bud portions of this living matter tend to move away from the spot where they were produced, and stretch upward or onward in advance. No tissue of any living animal could be formed unless the portions of bioplasm moved away from one another. Portions of the bioplasm move and place themselves beyond the point already gained. The above are *vital* movements. (Bioplasm, by Lionel S. Beale, p. 35).

Of a still higher order than bodily bioplasm are the primitive forces of the soul. They possess this power of spontaneous mobility in a far superior degree. They are capable of flowing from one fixed modification to another, imparting their own motion to the same, and thus causing a renewed excitation of already-formed or fixed modifications. In other words, their

action upon fixed modifications brings to consciousness what existed in a latent state, and their withdrawal lets the modifications back again into delitescence.

However, the primitive forces which thus cause from within the resuscitation into consciousness of fixed mental modifications are not all free primitive forces, untainted (if I may use this expression) by external stimuli. For experience teaches that external stimuli are constantly pouring through all the gateways of our sense organs upon the primitive forces without always causing a specific modification of the same. We may for hours hear the tick of a clock and not have any distinct perception of it. We may for hours sit surrounded by light and not notice it or the things about us in particular. These objects, however, make continual impressions upon our senses; for if the clock suddenly stops, or a cloud suddenly obscures the sky, we at once become conscious of the impressions occasioned by them. Thus our primitive forces do not all and always assume a definite form when they are acted upon by external stimuli; they are merely partially affected, "tainted," so to speak, in a general way, by the more general stimuli of light or sound, etc. They thus retain more or less their original character, although somewhat modified, and correspondingly to the nature of the external stimuli by which they have been acted upon. They stand between the fixed forms of perfect vestiges and the original forces. As such they partake of the properties of both. Not being developed in a permanent manner as perfect vestiges, they still retain their mobility, while on the other hand, having undergone a general, yet indefinite, undefined change, corresponding to the general character of the different classes of external stimuli, they also partake of the nature of external stimuli, and, being more or less similar to the modifications already formed, they flow to them and excite them into consciousness very much in the manner as external stimuli do. Thus we can easily understand why a lively conscious excitation (compare the series of instances given under *a*) may be going on without the presence of external stimuli. This excitation is *involuntary*, for the partially changed primitive forces are more or less at-

tracted by the more or less similar modifications already existing.

It is different with the primitive forces yet unchanged by the influence of any external stimuli. They, possessing the inherent power of spontaneous mobility, being living soul themselves, are not merely attracted by fixed modifications, but move of themselves and constitute the basis of will-power, as will be shown hereafter. The excitation into consciousness by them is *voluntary*. Beside what has been stated under b), this may be exemplified by the following: I am deeply engaged in solving a problem, I *will* its solution, and I call up all the latent treasures of my mind, *id est*, I resuscitate into consciousness whatever may in any way help the solution of the present problem. All external influences, I find, interrupt the flow of my thoughts. The less I am disturbed, the better I succeed. My activity, therefore, is entirely internal. Thus I work on for hours. Finally, the flow of thoughts becomes slower; I feel tired. The problem is not yet solved, but I fall asleep. Next morning, on awaking, I find my first thoughts turning to the object of yesterday's research. Again, with renewed vigor, I bring all the necessary items into consciousness, and in a short time, perhaps, succeed in finishing my task, showing that that which became exhausted after several hours of intense thinking yesterday, must have been replenished during the night's rest. This could not have been external stimuli, because I slept all night. It must have been those primitive forces by which I was enabled to excite into consciousness all the various ideas necessary for the successful handling of my problem. Thus we find that resuscitation of latent agencies into consciousness may be effected by *purely internal means*, namely:

1. *By those primitive forces only generally modified by external stimuli*, which retain their original mobile character, and having acquired greater or less similarity with formed vestiges, cause *involuntary* excitation into consciousness; and,

2. By primitive forces not at all objectively developed, which originate during sleep, and, being of an active, living nature, correspond to the will, cause *voluntary* excitation into consciousness.

Both these kinds of internal excitants may properly be called *mobile elements*, because they have not yet developed into fixed forms. They still possess the power of motion, and give an impulse to one or the other of the formed aggregates. We may also call them *elements of consciousness*, because they are the internal agents by which the latent modifications become agitated, *id est*, made conscious.

Their action does not warrant an invariable certainty in making conscious what we want.

Sometimes the greatest effort will not enable us to recall what we would like to remember, although there is no want of either kind of these elements. External stimuli, on the contrary, excite their similar vestiges into consciousness with unerring certainty, because they can impart their motion only to such vestiges as have been formed by a like excitation. All other stimuli remain unaffected, just as the many strings of an instrument are unaffected by a special tone if they are not tuned in accord with that tone.

When by these means latent agencies are resuscitated into consciousness, we say also, they are *reproduced*, and we call them reproductions. By this term, accordingly, we do *not* mean that they *originate* anew, nor even that their consciousness is produced anew, but merely that they, as already formed aggregates with inherent strength of consciousness (which consists in their multiple vestiges), are brought out of a state of tranquillity into a state of excitation.

They lose this state of excitation, and again fall into a state of delitescence so soon as mobile elements cease to excite them. Thus, the flood of our thoughts, coming and going, moves on, even in dreams, in accordance with unchangeable laws, laws of which we shall speak more fully in our further investigations.

14. VIVACITY OF THE PRIMITIVE FORCES, AND ITS INFLUENCE UPON THE PROCESS OF TRANSIENT CONSCIOUSNESS.

Suppose a sheet of paper with a number of pictures on it be quickly passed before the eyes of a number of persons.

On inquiring afterward of the several persons how many of the different pictures they have recognized, we will, no doubt, receive different answers. Some may be able to name several of them, while others, perhaps, will confess that they have not recognized any with certainty. It seems, then, *that some persons see quicker than others*. We observe the same phenomenon if we pay attention to persons while they are reading. Some require a long time to read a page, while others peruse it very quickly. It would seem, however, that we perceive external stimuli quickest by the sense of hearing, when we consider with what rapidity we are able to catch the various sounds, syllables and words of a fast speaker, or the single notes of a lively piece of music. But in this respect, also, there is a difference among different persons. Some hear more quickly than others. In general, however, it may be stated that the sense of hearing is the quickest of all the human senses.

The sense of touch, and in connection with it the muscular sense (1), likewise exhibit great rapidity in their actions, as is shown by the dexterity and rapidity with which some persons are able to handle different instruments, such as the violin, the piano, the pen, the needle, etc., or in talking and singing, the organs of the voice; in wrestling, running and dancing, the organs of motion. But not so easily are we able to distinguish different flavors and savors if they follow each other in rapid succession. The sense of general feeling is also of a much slower nature.

We thus find that besides *acuteness* (5) and *energy* (7), there is still another quality inherent in our primitive forces, that of greater or lesser *quickness* or *vivacity* in their action. This quality manifests itself in all the doings of man. One appears in constant, restless motion; it is hard for him to sit still half an hour. Quickly he perceives what enters through eyes and ears, and as quickly he changes in his emotions, feelings and thoughts. What he has learned is always ready at hand, and he brings it forth with astonishing celerity. Another takes the world much more easily; he observes, talks, and acts quietly. While still others seem to lack quickness to such a degree that their motions become slow and heavy,

their thoughts after-thoughts, and they appear *dull and stupid*, although they may not be *ignorant* of the subject in hand. Dulness of mind and ignorance are, therefore, two entirely different things. The first is a want of quickness; the latter a want of acquired knowledge. They are often found together.

In view of all this, we come to the conclusion *that a higher degree of quickness or vivacity of the primitive forces causes, not only a more rapid apprehension of external stimuli, but also a more rapid change of transient consciousness, a quicker and livelier mutability of latent agencies into conscious ones, and vice versa. In short, a livelier activity of the mind throughout.* These three qualities of the primitive forces—*acuteness, energy and quickness*—constitute the fundamental character of every living soul. In them the child possesses from birth an inheritance which stamps upon each and every mental development that may follow afterward a subjective character. We find, therefore, among the millions of human beings no two who are exactly alike, even if they have originated from the same parents, and have been brought up under the same external influences and conditions. The reason is, there are no two living souls in whom all the primitive forces are endowed with the same degree of acuteness, energy and quickness.

According to the degree of acuteness, the mind receives more or less finely shaded perceptions; a higher or lower degree of energy causes more or less perfect vestiges (8), and the degree of quickness determines the degree of activity of the mind throughout. The entire objective development of the mind by means of external stimuli receives, even to its very elements, an indelible character from the inherent qualities of the primitive forces; and, although at first this subjective character may scarcely be perceptible, it must grow in the course of development, as with the multiplication of vestiges it likewise multiplies *ad infinitum*.

The human soul at birth cannot, therefore, be properly compared to a "*tabula rasa*." It does not receive passively what the outer world writes upon it. On the contrary, the subjective qualities of its primitive forces stamp at once their character upon all that is received, and thus, although at birth the soul

is yet vacant as regards objective modifications, it is nevertheless subjectively a perfect individuality in regard to the nature of its primitive forces—their own subjective peculiarity as to acuteness, energy, and quickness. This peculiarity of the primitive forces remains the same through life. Whatever originates in the soul is dyed in this peculiarity, and thus it is that even all objective products (which ought to be alike everywhere) nevertheless assume, as they grow in different persons, a more and more *subjective* character, completely corresponding to the higher or lower degrees of acuteness, energy, and quickness of the primitive forces of the individual.

15. ORIGIN OF CONCEPTS—ABSTRACTION.

There remains in the soul a vestige of all that we perceive with sufficient clearness (6); and all similar vestiges unite into one aggregate (9). In consequence of this originate all our conceptions of external objects, and in the course of time we acquire a large number of them (10). Now it will often happen that several of such aggregates are resuscitated into consciousness simultaneously, or at least in quick succession. For example, when walking through fields we may see hickory, beech, chestnut, walnut, oak and maple trees standing by the road. These present perceptions excite their similar vestiges, and we have a full consciousness of all these various objects at the same time. What will be the consequence? The same that always takes place when similar aggregates awake simultaneously into consciousness, namely: *What is common to all, their similar or like constituents fuse again into a closer union because of the attraction of like to like* (9). The similar in our illustrative case is *trunk, branches, twigs, roots*.

Furthermore, we know that the resuscitation of mental aggregates into consciousness requires *mobile elements*, and that according to their afflux or withdrawal consciousness increases or fades (13). It is further a law of the mind (of which I shall speak more fully hereafter) that the largest quantity of mobile elements is attracted by such aggregates as consist in themselves of the most similar vestiges, and which, for this reason,

are so much more intimately and firmly united. It is, therefore, of necessity that the present perceptions of the *similar* constituents (trunks, branches, etc.) attract a larger amount of the exciting elements than their dissimilar constituents (color, light, circumference, etc.).

Nor is this all. Our consciousness of an object is the clearer, the greater the number of its similar vestiges that become excited with the present perception (10). If now in the six perceptions (hickories, beeches, etc.) we perceive what they have in common *six times*, and all other peculiarities only *once*, it is clear that the six-fold perception must gain a stronger consciousness than that which exists only once in each individual object. Hence it is that the perceptions—trunk, branches, twigs, roots—occupy the foreground of our consciousness, while the single properties of each necessarily recede out of it. Thus we obtain a new aggregate, which we designate by the word *tree*, and *which consists of only the similar constituents of the different sensorial apprehensions or perceptions*, excluding all the particulars of each of the single objects.

Such an aggregate is called in German *Begriff*, meaning a something that has been *grasped together*, corresponding, therefore, nearest to the Anglo-Latin term *concept*, and we understand by it a general idea or conception (in the sense alluded to in 10), which is applicable to the whole class of apprehensions or perceptions of similar objects from which it was formed; whereas a *perception* is applicable only to the one single object of which it is the product.

This process of forming concepts has been styled *abstraction*, because consciousness is abstracted from the dissimilar elements of a given number of otherwise similar perceptions. It therefore denotes only a part—and that a secondary one—of the process which in fact consists, as we have seen, in the very opposite of abstraction, that is, in a *combination* and *concentration* of the similar elements of different perceptions into one. This has been felt by a number of psychological writers, but by none has this process been so accurately defined as by Beneke. Still the term "*abstraction, abstract idea*," may pass very well, if we only understand it rightly, and I shall use it whenever it fits the occasion, in the above defined sense.

A concept, or abstraction, is, therefore, the combination of the similar elements of different perceptions into one act of consciousness. This new combination remains as a vestige, and thus we gain by degrees from single concrete perceptions, *concepts* of whole classes of individual objects. The necessary requirements for their formation are the two following conditions:

First, we must possess the single concrete perceptions. As impossible as it is for a blind man to form an idea of color, or a deaf one of sound, is it for us at any time to form a real idea of any series of things, without having first the concrete perceptions of the various corresponding objects. Language frequently deceives us on this point. Children may have acquired the use of words which signify certain ideas, so that it sounds as though they had the concepts themselves, while in reality they use only *words*. How frequently do we observe the same vague use of language in grown persons! Their endless quarrels about words show exactly that often neither party has a real idea of what that word signifies, because they lack in the primitive perceptions, by which alone the idea embodied in the word could gain a substantial existence. We remain ignorant of the concept "crystal" so long as we have not seen crystals of different varieties; just as people a hundred years ago had no idea of a steam-engine.

This simple fact is fraught with great importance for every teacher, who ought to bear in mind that, by causing his pupils to commit to memory technical terms and phrases, he may succeed in making them *talk* in such terms and phrases, but will never succeed in giving them substantial ideas, unless he causes them to make the several concrete perceptions, out of which alone ideas can originate. By this a rational teacher is distinguished from a mere memory-trainer.

Secondly, the several concrete perceptions must be excited into consciousness at the same time, because in this way only can like meet like and combine in a new union. A child may have seen at different times a snail, a frog, a lizard, a turtle, etc., yet it is by the effort of the teacher to excite simultaneously into consciousness and to combine their similar constituents

into one conscious act, that the child receives an actual concept of a reptile.

16. GRADATION OF CONCEPTS—CLASSIFICATION—GENERALIZATION.

In the last section I have remarked how easily we might be misled by taking a *word* for an actual concept. "The words," says J. Haven, in his *Mental Philosophy*, p. 167, "which constitute by far the greater part of the names of things are common nouns, that is, names of classes. The names of individual objects are comparatively few. Adjectives, specifying the qualities of objects, denote groups or classes possessing that common quality. Adverbs, qualifying verbs or adjectives, designate varieties or classes of action and of quality. Indeed, the very existence of language as a medium of communication and means of expression involves and depends upon this tendency of the mind to class together, and then to designate by a common noun, objects, diverse in reality, but agreeing in some prominent points of resemblance." Words, then, are nothing but names; and the concept exists in reality only in the mind, and exists there only in so far as we have acquired the several concrete perceptions, the similar of which fuses into a new aggregate during their simultaneous presence in consciousness.

Think of a collection of coats, vests, jackets, pantaloons, boots, shoes, stockings, gloves, hats, caps, etc. Now, no matter how different these things may appear in form, size, color, or material, they all serve one purpose—*protection of the body*—and this being common to all these objects, it at once manifests itself as the strongest in consciousness, and we obtain the concept "*clothing*," which concept savages do not possess—at least not to the same extent.

Take the perceptions poker, brush, broom, basket, tub, pan, kettle, pot, plate, dish—things greatly differing from each other, *yet all being used in the kitchen*—they fuse, during their simultaneous presence in consciousness, by this very resemblance into one conscious act and thus form a new concept, "*kitchen utensils*."

Or, observe house, barn, stable, shanty, theatre, church, college, castle, capitol, etc., and there will project into clearer consciousness, because common to all, the fact *that these objects have been built* for certain purposes, and thus we gain the concept "*building*."

Now, let us excite into consciousness simultaneously these newly-gained concepts—clothing, kitchen utensils, building. They all unite in this particular: They are made by the hands of men, are the *product of art*, in its widest sense, and give a new and higher concept than any before; and, if we contemplate this concept, together with *all that nature* produces of a measurable character, we obtain the still higher concept "*body*," until finally, in uniting with it also what is not measurable, we arrive at the summit of our ascent in the concept of "*being*" or "*existence*."

It is scarcely necessary to remark that in reality the acquisition of these concepts does not go so fast as the above illustrations seem to imply, for the simple reason, already stated, that a concept is the product of the similar of the several concrete perceptions which must first be acquired. But it was not the object of these illustrations to show how *fast* concepts grow, but *how* they originate; and thus I may sum up the results of our investigations as follows: *Concepts originate in the human mind in consequence of the attraction of like to like, in this way: The similar of the several concrete perceptions fuse into a new aggregate, which constitutes the concept, and as concepts so formed have also points in common, these similarities again unite into new aggregates, and thus originate higher and higher concepts.* The only condition necessary for this development is the simultaneous presence of the concrete perceptions or respectively lower concepts in consciousness, long enough, and persistent enough, to produce a thorough attraction of like to like.

Thus we come to a *gradation* of concepts, or *classification* of all that exists and is perceived by means of the senses or mentally, into genera and species, with all the various subdivisions; a process of mind by which alone order is established among the millions of objects which the outer world, as well as the interior working of the mind, incongruously

presents to man; a process without which no science could be possible, and which itself rests upon the simple law of the attraction of like to like.

This process is also called *generalization*. Our personal observation is always a limited one. We cannot observe all the trees, all the houses, all the animals, etc., in order to combine, out of the perception of *all*, their similars into one concept. That would be wholly impossible. A limited number of perceptions generally suffices to elucidate their common character, and to yield the aggregate of their similarity into a concept, and we then extend this concept to *all* the similar objects. In short, we *generalize*. The truthfulness of such generalization depends entirely upon the correctness with which we conclude in what respect diverse objects are really similar; that is, in forming a correct concept. This, if perfectly correct, will surely fit to all the individuals of the same class, and we may with safety *generalize*, that is, extend the group of similars, of which the concept consists, to all other individuals of the same class. Whether we have perceived them or not, or whether we ever shall perceive them, is a matter of no consequence. Nature is always true to herself.

If we now consider the various concepts in regard to their nature as lower and higher concepts, we shall have to direct our attention to two points, viz.: Their *content* or *intension* and their *sphere* or *extension*. The content of a concept is always what it consists of, the similarities of diverse objects united into one aggregate. The content of a concept is, therefore, the identical concept itself—nothing more nor less. The concept "tree" consists of "trunk, branches, twigs, roots," as the similarity of all perceptions of various individuals, combined during a simultaneous consciousness into one aggregate. This is the content or intension of the concept "tree." The content of the concept "being or existence" is the very least that we can say of anything, namely, that it exists. The higher the concept, therefore, the fewer will be the attributes which constitute it, while the lower concepts must necessarily embrace a greater complement of attributes to make up its content. We might express this also in this

manner: *The content of a concept diminishes in the same degree as the concept rises higher in the scale of classification, and vice versa.*

Altogether different is the *sphere* or *extension* of a concept, which consists of all the individual perceptions or concepts, out of the simile of which the concept was formed. The concept "tree" contains in its sphere all the individual trees that exist, while the notion "being" is applicable to all its divisions and subdivisions, down to the very concrete perceptions, out of the simile of which the lowest concepts and their gradation up to the highest concept, "being, or existence," originated. It is evident, therefore, *that the sphere of a concept increases as it rises higher in the scale of classification, and vice versa.* This sphere of a concept, when it is meant *wholly*, is usually expressed in language by the words "all or each" (all men, all soldiers, etc.); when meant *partially*, by the word "some" (some men, some soldiers, etc.).

There is one point more which should be considered when we speak of the gradation of concepts. It is the question: Can higher concepts ever originate previous to lower concepts? As the higher concept is the combination of all the similarities which the lower concepts present, we would naturally suppose that this question would be answered in the negative. But experience teaches altogether differently. We find that children have acquired the concept of "bird" much sooner than that of "lark;" the concept of "tree" much sooner than that of "maple," or "linden," etc., *because* the more general concept consists of fewer attributes, which are more quickly acquired, and very often not even correctly acquired, so that in the mind of a child "bird" is all that flies, insects, as well as bats and kites. A clearly defined concept, whether high or low, always requires for its perfection a clear and steady coexistence in consciousness of the concrete perceptions, out of which a thorough union of their real simile alone can be effectuated. We may assert, then, that such anticipated higher concepts, although they are frequently conceived, are nevertheless premature, and, therefore, imperfect concepts, and their existence alters nothing in the

normal gradation of concepts, according to which the higher must necessarily arise out of the lower.

In regard to the influence of the innate qualities of our primitive forces, it is evident that a greater amount of energy and acuteness must bring forth greater clearness and greater correctness to all our concepts, showing the reason of the existing differences in this respect between the different human beings, and the insurmountable difference between man and beast. "The brute knows one thing at a time, and that one thing goes from his mind as it comes—a solitary, uninformative fact. But man, in learning that one thing, learns all things of the same genus in the universe, and all these, too, in their relations to other genera and to the universal system."—*Winslow, Elements of Philosophy*, p. 255.

17. THE INTELLECT—THE UNDERSTANDING.

The concepts hitherto considered always arise ultimately from primitive perceptions or sensorial apprehensions, and as perceptions are the product of the action of external stimuli upon corresponding primitive forces (4), of course concepts must be traced to the same origin, with the exception of those dissimilar elements which belong to each single perception individually, because concepts are the aggregates of only the similar attributes of different objects. Concepts are identical with perceptions only so far as the similarity between different perceptions reaches, and their peculiarity consists in the concentration of all the similar, out of a variety, into one conscious act.

Concepts consist, then, of a portion of the same vestiges of which perceptions consist, and they must last, therefore, as long as their vestiges last, remaining as latent agencies, which may be excited into consciousness in the manner described in 12 and 13. As in the progress of life we are continually adding new acquisitions, our store of perceptions, concepts, and higher ideas, is continually on the increase, and so much the more as we intentionally and diligently look around and compare what we have been observing. Now, the question

arises: What do we gain by the acquisition of concepts? The answer lies in the very nature of these concepts. As they are the union of the similar of *many* perceptions, they must present this simile in a much greater clearness of consciousness than each single perception, because the clearness of consciousness grows with the multiplication of similar vestiges. (Compare 10 and 15). Concepts are, therefore, mental modifications, possessing a greater clearness of consciousness than any other mental modification, because in their very nature they consist of what alone causes consciousness—a union or fusion of many similar elements (10). They are, therefore, the very light of the soul. Only so far as we have acquired concepts, we *understand*, and we can follow a discourse *intelligently* only so far as we possess the concepts of which that discourse treats. A popular lecturer must speak altogether differently from a scientific one, and we need not wonder if we find that to a musician mathematics are Spanish provinces, or that an astronomer may not be able to distinguish rye from wheat. In short, our understanding or intellect reaches just so far, and no farther, than the concepts which we have acquired reach. There is an old proverb that teaches the same idea: *Ne sutor ultra crepidam*. We may say, in short, *the intellect, the understanding, consists essentially of the sum of the concepts which have been acquired during the process of mental development by each individual*.

This brings us certainly in opposition to the common view, according to which the intellect *makes* the concepts. We have sufficiently shown how concepts originate, so that we need not refute now a supposed faculty to *make* them. Before the first concepts have originated there is no understanding, and only in the degree in which concepts are acquired, does the understanding grow, in the child generally, as well as in arts and sciences particularly. All must be learned from the beginning, *id est*, must be by single perceptions gradually acquired and sublimated into the necessary concepts before we can gain any understanding of anything whatsoever. The only necessary conditions for this development are, primitive forces endowed with sufficient energy, and the law of attraction of like to like.

18. JUDGING—JUDGMENT.

Concepts once acquired remain as vestiges ready for future use. I see before me coal, tar and ink, and I say these things are black. To the present perceptions rises the concept "black." I see an emerald and I say it is green. Another concept, therefore, joins this perception. I hear a clock strike and I may say the clock *sounds*. *Thus, if we perceive a thing, there almost always rises a concept into consciousness, joining the thing perceived.* To the subject is added a predicate.

We did not feel inclined to say coal is green, emerald is black, the clock flies. Why did not such concepts join our perceptions? Because, as we have seen in 9, only the like and similar attract one another and unite.

The first perceptions do not lie in the sphere of the latter concepts, and cannot, therefore, excite them into consciousness. A clearer statement of the above might, therefore, be made by saying: If we perceive a thing, only such concepts rise into consciousness as have been formed from the similar of many such perceptions.

Furthermore, if the similar of the concepts black, red, green, blue, gray, violet, etc., again unite into one conscious act, we obtain the higher concept "color." I can say now, red, green, etc., are colors, showing also that a concept of a lower order is frequently joined by a similar higher concept.

When this takes place, namely: (1) *When either the simple perception is joined by a like concept, or* (2), *when a concept is joined by a similar higher concept*, we then say: *The mind judges.*

Judging, or judgment, consists, therefore, of nothing more than a simultaneous consciousness of a perception with a corresponding concept, or a concept with a similar higher concept; or, in other words, of a union of a subject with a corresponding predicate, the latter, by its sphere, entirely covering the former, because it is the sum of all the similar of many such perceptions or lower concepts.

We have, then, in an act of judging nothing but the same vestiges we have acquired by our original perceptions, and which, by a union of their similars, have become sublimated into concepts and higher concepts.

The simultaneous presence in consciousness of subject and predicate causes a determinate junction between them (compare 38); and thus a judgment, once formed, must endure so long as this connection is not dissolved. It remains like all other mental modifications, as a latency, ready to be called into consciousness at any future time. In this way we gradually gather a great number of judgments, and if we understand by *the faculty of judging* this sum of judgments acquired in the course of time, we have not much to say against it. But, if it is to mean a special power of the mind, by which each act of judging is produced, we hope to have sufficiently shown that there is no such special power, but that these acts of judging are but the necessary consequence of the mind's law—the attraction of like to like.

19. RECIPROCAL INFLUENCE OF THE CONCEPT AND PERCEPTION UPON EACH OTHER DURING AN ACT OF JUDGING.

If, as we have seen, in an act of judging, nothing but similar vestiges previously acquired are added to the present perception, the question arises: What influence has this simultaneous consciousness of the two constituents of a judgment (subject and predicate) upon each other? We know from what we have seen in 17 that the predicate, being a concept or a higher concept, contains the similar in a multiplied concentration. It will add, therefore, *clearness* to the subject, which contains this similar only singly. It illuminates the subject, so to speak. Suppose I have a clear concept of the natural family Ranunculaceæ, and I see for the first time a Pulsatilla plant. It is very likely that the perception of this plant excites into consciousness the concept of the Ranunculaceæ, and if so, I would judge this plant, although new to me, is a Ranunculaceæ. At once I look with altogether different eyes upon it than I would if I had not this concept. It ceases to look entirely strange to me. It presents quite a good many features I have observed previously in other plants. In short, the concept "Ranunculaceæ" makes this new perception *clearer*, *illuminates* it, because it adds the multiplied vestiges of similar previous perceptions.

And what does the subject? It adds new, fresh elements to the predicate, as the above example likewise shows. My concept of the *Ranunculaceæ* had been formed without this variety, of which the present perception is a specimen. There it is to be seen in all its peculiarity, and I find that by observing and looking at it my concept of the *Ranunculaceæ* gains. It becomes enriched, invigorated, grows fresher again, so to speak.

The influence of the simultaneous presence in consciousness of subject and predicate during an act of judging is therefore reciprocal, and a very marked one, namely: *The subject* (present perception or conception) *is rendered clearer, becomes illuminated, while the predicate* (the concept) *is enriched, livened up by new and fresh elements which only perception or sensorial apprehension can afford.*

The act of judging, then, although it adds nothing new, nevertheless is of the greatest importance both to the subject as well as to the predicate. The former gains in clearness, the latter in freshness.

20. INFERENCES—SYLLOGISMS.

It often happens that more than one judgment is excited into consciousness at the same time. For example: All human beings are mortal; the negro is a human being. We have in these two judgments, three concepts presenting themselves side by side: *Human being, mortal, negro*. In the first judgment we find the concept "mortal" applied to all human beings, therefore to *the whole sphere of this* concept. The second judgment determines the "*negro*" as belonging to this sphere. What now will be the consequence of the simultaneous consciousness of these three concepts? *Human being* and *negro* are two entirely similar concepts, the negro presenting merely a species of the whole human race. They will, therefore, fuse together in consciousness; and as the concept "negro" is expressly lifted into the foreground, consciousness will concentrate upon it, while its fellow-concept fades away by the expressly emphasized concept "negro" of

the second judgment, and now there is for the still remaining, but dissimilar concept of the first judgment, "mortal," nothing left but to join the full conscious concept "negro," which fact we express in a new judgment as a *conclusion* out of the two judgments: "(therefore) *the negro is mortal.*"

If in two judgments the *similar* concepts are wanting, there can never originate any *new* judgment or conclusion, although they may present themselves side by side in consciousness. For example: The bird flies; the lizard is a reptile. Here all the concepts lie in different spheres. A fusion into one is impossible, just as impossible as in the judgments: Iron is hard and honey is sweet. Such judgments can never unite into one, can never give rise to a new judgment, a conclusion or inference; but must always stand asunder.

But if two judgments which contain similar concepts, together with one that is dissimilar, are roused simultaneously into consciousness, then the similar concepts fuse together, and there originates a new judgment, because the dissimilar concept joins now that of the similar concepts which has been expressly lifted in the foreground of our consciousness.

Such a process is designated in common by the word *reasoning*, an expression rather loosely defined as yet in books. The whole process is technically called a *syllogism*, or an *inference*, and consists of three judgments. The first two are called the *premises* (of which the first is the major and the second the minor proposition), and the third, which follows, is the *conclusion*. One of the premises is always destined to mark out that concept on which stress is to be laid in the formation of the new judgment. Most generally is this done by the minor premise, but it may likewise be done by the major. In fact nothing depends upon the position of the several judgments, as the following may show:

Some animals are birds; all birds lay eggs; consequently some animals lay eggs.

Here the minor premise stands before the major (instead: All birds lay eggs; some animals are birds). Nevertheless the conclusion follows legitimately *because the position has nothing to do with the attraction of like to like, which exerts itself in any posi-*

tion. A syllogism, as the foregoing clearly shows, is a combination of judgments which results in the formation of a new judgment because of the similarity of their concepts, which, by the law of attraction of like to like, fuse together in consciousness, and thus give rise to the conclusion. It is, then, a mental act which takes place naturally, necessarily, without any provocation or effort on our part. Just exactly as concepts are formed from a combination of the similar of various perceptions, or as judgments are formed by the joining of similar concepts to perceptions, so judgments also combine into a conclusion if they contain similar concepts capable of fusing together in consciousness. It is always the same law of attraction of like to like which originates these processes, and the assumption of the necessity of special faculties or powers to create such actions is neither necessary nor even allowable in accurate discrimination. Conclusions, once drawn, remain as vestiges, like all other mental modifications, ready for future use.

But we almost always apply conclusions in an abridged form, as for example: Like all human beings, the negro is mortal. To this abridged form we may even count the negative judgments, if they are not a mere grammatical *quid pro quo*, such as: This is not a difficult task = is a light task. He is not diligent = he is lazy. The real negative judgments are abridged syllogisms. For example: The bat is no bird. This would read in full: The bat bears young alive; the bird never bears young alive, but lays eggs. Consequently the bat is no bird.

21. ADDITIONAL REMARKS ON JUDGMENT AND INFERENCES.

Often when we judge or infer we make use of those judgments and conclusions already stored up in our minds as latent agencies. They are merely resuscitated into consciousness. For this purpose we need the mobile elements of consciousness of which we have spoken in 12 and 13. Whenever the mobile elements unite, either from without or from within, with a part of such a judgment or syllogism, this part is ex-

cited into consciousness, and being closely combined with the rest, the whole act of judging or inferring is re-established in consciousness. (Compare 39.)

Moreover, new judgments and inferences are easily formed, and necessarily so, when our concepts join with new perceptions, or our judgments of similar concepts combine to form new conclusions. In all cases it is only necessary that the different constituents of either a judgment or an inference should be excited simultaneously into consciousness.

The attraction of like to like cannot take place without this condition. Thus we may say that, in order to form judgments or inferences, it is necessary *that the constituents of these acts should become simultaneously excited into consciousness; that, consequently, there must be present mobile elements which alone can cause such excitation.* These mobile elements consist, as we have seen, of external stimuli, or partially modified primitive forces; or, primitive forces which never have been modified by external stimuli. The first two kinds cause an involuntary, the latter a voluntary excitation into consciousness. (Compare 13.)

But there is still another quite necessary condition for the formation of judgments and inferences—the innate *quickness* of our primitive forces. We have seen, in 14, how this quality of the primitive forces imprints its character upon all mental actions. Without the necessary quickness it would be of little use to have the clearest and best concepts. If concepts do not become conscious at the right time, we might just as well not possess them. In order, therefore, to judge and to infer with facility *a certain degree of quickness of the primitive forces* is indispensable.

If, lastly, we consider that, in 17, we defined the intellect or the understanding as the sum of all concepts, it is clear that we there meant intellect in its narrowest sense. Judgments and inferences are equally intellectual operations, because they are not possible without concepts. We must, therefore, also include these in the sphere of the intellect, *or intellectual development*, inasmuch as they require the same peculiar mental modifications—concepts characterized by the combination of

many *similar* elements— which alone bring clearness into the mind, and, therefore, may be rightly called the *light of the soul*.

This brings us to the question: *Is the intellect an innate faculty or power of the human mind?* It has always been so considered, because a distinction was never made between the *developed* and the *non-developed intellect*. The non-developed intellect we have found to consist of nothing more than the energy of our primitive forces to maintain that definite development as vestiges, which has been wrought by the action of external stimuli, and which finally, by the law of attraction of like to like, combines into concepts, judgments, and inferences. The developed intellect, then, requires, if we first consider its inferring faculty, a single judgment as a basis. Judgments are impossible without concepts. Concepts cannot originate without primitive perceptions, and primitive perceptions would not be fit to be sublimated into concepts if their vestiges were not perfectly retained by a sufficient degree of energy of the primitive forces. Thus we come back again to the energy of our primitive forces, which energy indeed, besides the law of attraction of like to like, is the innate, ultimate and only source of the human understanding.

The developed intellect we may call a faculty or power, *acquired* but not *innate*, and thus settle the question.

An analyzing method of examination cannot allow unquestioned the existence of any such artificial so-called faculties or powers. In the practice of that method we must endeavor to examine into the very elements of mental processes, no matter how complicated these processes appear, and show the existence of their elements, and then construe out of them the very process in question. Only in this way is it possible to gain clear and distinct knowledge of mental development and growth. We must, in this investigation, follow the same method as that by which other natural sciences have attained their high perfection. By the strict carrying out of these principles Beneke has succeeded in elevating Psychology to the level of the other natural sciences, and in this way developed an insight into the hidden workings of our mind, as no one before him had ever been able to do.

Beneke, by his wonderful genius, created an altogether *new science of Psychology*.

22. SUMMARY.

I. *The primitive forces of the human soul*.—These primitive forces manifest themselves as the faculties of seeing, hearing, touching, smelling, tasting and feeling, and these faculties are known by the name of *senses* (1-3). We call them *primitive forces*, because they are the original and innate powers of the mind (3), the elements of which the mind consists of at birth, and out of which all further capabilities gradually develop.

The primitive forces possess three different *qualities* in various degrees:

1. *Acuteness* or *sensitiveness*, in consequence of the existence of which quality the different primitive forces need for their objective development a smaller or larger quantum of external stimuli (5).

2. *Energy* or *retentiveness*, in consequence of which the different primitive forces continue to exist more or less permanently in the definite change which they have undergone by the action of external stimuli upon them (7); and,

3. *Quickness*, in consequence of which the different primitive forces receive more or less rapidly external stimuli, and cause a more or less lively convertibility of latent agencies into conscious ones. In short, a more or less lively activity of the entire mind (14).

The primitive forces, endowed in varying degrees with these qualities, constitute the very being, the very essence of the human soul, and predetermine the soul's entire future development, which development, even under the most similar external influences, must nevertheless attain in the course of time an entirely subjective character (14). The higher, spiritual nature of the human soul has its foundation in the greater energy of its primitive forces (10, and others). Primitive forces are constantly acted upon by external stimuli, and become objectively developed, in which objectively developed

state they remain as vestiges (61). The primitive forces consumed in this process are replenished during sleep (13).

Not all the primitive forces assume a definite, fixed form from the action of external stimuli upon them. These forces are sometimes merely changed in a general way corresponding to the more general action of external stimuli. Being only partially acted upon, these forces retain their mobile nature (like the primitive forces unaffected by external stimuli) and remain capable of exciting into motion or consciousness such latent modifications as bear more or less resemblance to them. By their withdrawal the excitation ceases.

II. *External stimuli*.—External stimuli consist of external influences capable of affecting either the sight, hearing, touch, smell, taste or feeling (3). We have found thus far that the quantitative relation of external stimuli to the primitive forces may be either *sufficient*, so as to produce *clear perceptions* and a feeling of *satisfaction*, or *insufficient*, producing no perceptions, or, at least, no clear perceptions, and a feeling of dissatisfaction (11). By their action upon the primitive forces the latter are objectively developed (4), and as these modifications remain as vestiges (6), and constantly become augmented by the action of new similar external stimuli, there arise conscious aggregates (10). The external stimuli excite their similar vestiges into consciousness (12).

III. *The fundamental processes of the human soul*:

1. *The reception of external stimuli*, which is: *In the human soul originate sensations and perceptions in consequence of impressions from the external world* (4).

In consequence of the nature of the primitive forces—the primitive forces being life itself—they endeavor to assimilate external stimuli, and by the assimilation of external stimuli the primitive forces grow into specific forms. These specific forms endure. By reason of this process *vestiges* originate in the human soul (6) and constitute what is commonly understood by *memory* (9). That all which once originates with a sufficient degree of perfection endures, until it is destroyed, is a universal law (6).

2. *The attraction of like to like*, which is: *In the human soul constantly unite like with like, and similar with similar* (9).

New external stimuli (present impressions) always and unmistakably find their similars (which exist as vestiges from former similar impressions); external stimuli excite the pre-existing similar impressions into consciousness (12) and unite with them. In this way consciousness grows clearer and stronger in the proportion in which similar impressions unite (10). In like manner the like of different perceptions fuse and form a new mental modification, which new modification we call a *concept* (15); and if again the like of different concepts fuse into one, we obtain a *higher concept* (16).

Thus we logically come to the consideration of classification and generalization (16).

Of what does the intellect or understanding consist? (17 and 21). When either a similar concept joins a simple perception, or a concept is joined by a similar higher concept, we say the mind *judges*. What is the faculty of judging? (18). Of what does the reciprocal influence of the concept and perception upon each other during an act of judging consist? (19). The similar concepts of two judgments unite also into one conscious act, forming a *conclusion*. The whole process is called an *inference* or a *syllogism*, and denotes what is generally understood by the term inferring (20). What are the conditions necessary for successful judgments and syllogisms? (21). What may be called the light of the soul? (21). Is the understanding an innate faculty of the mind? (21).

PART II.

THE SPHERE OF CONATION.

23. EXPLANATION OF THE TERM CONATION.

I am glad to be able to refer, as an authority for the use of this term, to so eminent an authority as Sir Wm. Hamilton.

"In English, unfortunately, we have no term capable of adequately expressing what is common both to *will* and *desire*; that is, the *nisus* or *conatus*—the tendency toward the realization of their end. By *will* is meant a free and deliberate, by *desire* a blind and fatal, tendency to act. Now, to express, I say, *the tendency to overt action—the quality in which desire and will are equally contained*—we possess no English term to which an exception of more or less cogency may not be taken. Were we to say the phenomena of *tendency*, the phrase would be vague; and the same is true of the phenomena of *doing*. Again, the term phenomena of *appetency* is objectionable, because (to say nothing of the unfamiliarity of the expression), though perhaps etymologically unexceptionable, it has both in Latin and English a meaning almost synonymous with desire. Like the Latin *appetentia*, the Greek *ὁρεξις* is equally ill-balanced, for, though used by philosophers to comprehend both will and desire, it more familiarly suggests the latter, and we must not, therefore, be solicitous, with Mr. Harris and Lord Monboddo, to naturalize in English the form *orectic*. Again, the phrase phenomena of *activity* would be even worse; every possible objection can be made to the terms *active powers*, by which the philosophers of this country have designated the *orectic facul-*

ties of the Aristotelians. For, you will observe that all faculties are equally active; and it is not the overt performance, but the tendency toward it, for which we are in quest of an expression. The German is the only language I am acquainted with which is able to supply the term of which philosophy is in want. The expression *Bestrebungs-Vermögen*, which is most nearly, though awkwardly and inadequately, translated by *striving faculties*—faculties of effort or endeavor—is now generally employed, in the philosophy of Germany, as the genus comprehending desire and will.” (*Lectures on Metaphysics*, p. 128.) Our author quoted finally adopts the terms *conation* and *conative* (from *conari*) as the most appropriate expressions for the class of phenomena in question, and so shall I. Without these terms I should be at a loss to convey the ideas I shall endeavor to express in this part of my work. Nevertheless, I shall also use the terms *striving* and *tending* for the German *streben*, as both or either of them may at times express the sense of the ideas to be conveyed better than the Latin *conation* and *conative*.

24. THE PRIMITIVE FORCES ARE CONATIVE IN THEIR NATURE.

The human soul has been wrongly compared to a *tabula rasa*. Being a living soul, its primitive forces are tending to act and to receive. In the presence of external stimuli, primitive forces are not merely passively impressed, but they seize the external stimuli actively, because they are *conative* in their nature.

This living activity manifests itself continually. Observe the new-born child. When awake it is in continual motion; its hands, feet, head, eyes and tongue move; and, after awhile, if the little one be neglected, it cries. At a later period, the child is continually on the go; and if it is not properly occupied it will be doing all sorts of mischief. Man, as well as the child, must do something; and if he is not in the habit of doing right, he will do wrong. We meet occasionally people who, after working hard and contentedly, are met by the misfortune of suddenly acquired riches. Now happiness begins!

some might think, and they are happy for a while. But such persons soon become discontented and uneasy, because if they have given up work, they do not know what to do with themselves. Parisians have much to say about rich Englishmen who come to Paris to partake of all the pleasures that city of luxury and laxity affords, and who, after becoming tired and satiated, know of nothing better to do than to end their *ennui* with a pistol.

“ With pleasure drugged, he almost longed for woe,
And e'en for change of scene would seek the shades below.”—*Byron*.

The single-cell system is a means of great punishment, if the prisoner be kept shut off without employment. In fact, man cannot stand doing nothing. He feels incessantly urged and forced to apply his strength, *because his primitive forces are, in their very nature, conative, that is, tending or striving to be employed*. If, now, we once more look back to the infant, we find that it is all the same to him whether we show him one or another object. With equal willingness he receives external stimuli of any color, form or size. He shows no particular desire for a special sound, and all his other primitive forces tend merely toward a union with external stimuli corresponding to their nature.

From this fact it follows *that the innate conative nature of the primitive forces is not a tendency or striving toward specially defined or particular external stimuli, but rather a general tendency toward repletion with external stimuli which correspond to their nature*.

A special conation exists only so far as the faculties of sight tend toward repletion with elements of *light*, the faculties of hearing toward elements of *sound*, etc. In short, each class of primitive forces strive toward stimuli which *correspond* to their nature. Indeed, special tendencies, *id est, particular desires*, for one or another special object or external stimulus, no child has ever shown at birth. Even the mother's breast it does not care for, if its conation for nourishment is otherwise amply satisfied.

How, then, do all special desires, longings, appetites, etc.,

originate, if the primitive forces possess a conative nature so indeterminate in its character?

We shall endeavor to explain in the following chapters.

25. QUANTITATIVE RELATION BETWEEN THE EXTERNAL STIMULI AND THE PRIMITIVE FORCES.

Of quantitative relations between external stimuli and primitive forces we know two kinds (11), namely: 1. *The external stimuli are too weak, too faint, to cause the recipient forces to be fully developed.* This is an *insufficient stimulation*, and causes a corresponding feeling of *non-satisfaction*. In such cases the forces are not perfected, as the immediate feeling of non-satisfaction proves. On the contrary, they are merely tainted, imperfectly developed, and remain at best as obscure and imperfect vestiges.

2. *The external stimuli are adequate to the recipient forces.* Under this favorable condition the primitive forces exhaust the conative power in the reception of the stimuli. The yearning of the primitive forces for development is appeased. We know the yearning for development is appeased by the immediate feeling of *satisfaction* always attendant upon such a process. The primitive forces assume predominantly and permanently the character of the stimuli; they undergo a definite and complete transformation or objective development, in which they endure as vestiges; and as additional like processes result in clear perceptions, this relation of external stimuli to primitive forces is the actual basis of all intellectual development. We shall call it the *full stimulation*. But there are other relations yet to be considered.

3. Suppose we enter a theatre or ball-room, splendidly illuminated and decorated, or remember our younger days, when at Christmas-eve we were called into the room where the Christmas-tree stood in its radiant beauty. I am sure the remembrance alone that gave such glory to childhood brings a smile to the cheek, however careworn. Suppose we hear a poem well recited. This gives us pleasure. Let the poem be sung and accompanied by an orchestra, and it will cause a still greater pleasurable feeling. Why is this?

In both cases there are *more* external stimuli rushing to our senses than are actually required to satisfy the capacity of the recipient forces. A much smaller amount would be sufficient to cause clear perceptions. This abundance, we feel, does not increase clearness, but throws the primitive forces into a state of excitement, which rather hinders than promotes a quiet and perfect development of the same, and although it is attended with an immediate feeling of *pleasure*, we nevertheless soon become tired of a long continuance of such superabundant stimulation. This relation of external stimuli to primitive forces we shall call the *pleasurable stimulation*.

4. As already mentioned, we soon become tired of pleasurable stimulations. Just as little as man can stand doing nothing, can he bear an excitement which has nothing but pleasure for its object. This fact can be proven by a number of instances.

The pleasure experienced in listening to a melody, however sweet and pleasing at first, if continued for too long a time, becomes intolerable. We may even become nauseated at the sight of a rich and finely-savored dish, if we have eaten of it too often; although the eating of it for the first few times gave us keen gustatory pleasure. The man who spends his life in constant pleasurable excitements, wears himself out before his time. We have here a relation of external stimuli to the primitive forces similar to the third; that is, more elements than the forces require, and, in consequence, a pleasurable stimulation at first. But if this abundant influence is protracted too long or too often repeated, it causes a prostration of the primitive forces, manifesting itself in an immediate feeling of *satiety*, *disgust* or *loathing*. A condition of superabundant stimuli is not at all favorable to a perfect development of the primitive forces. We may call this quantitative relation—this gradually increasing over-stimulation of the primitive forces—the *satiating stimulation*.

5. When from a dark room we suddenly emerge into the glaring sunlight, or when a gun is unexpectedly fired near us, or when we take some acrid substance into the mouth, or smell a pungent essence, or our hand comes in contact with a

hot stove, or we receive a blow upon any part of our body—in all these instances the external stimuli are *too strong*. They act *suddenly, overwhelmingly* upon the primitive forces and necessarily prostrate and cripple them. It is attended with an immediate feeling of *pain*. We call this relation *the painful stimulation*. It is obvious that under such conditions a perfect development of the primitive forces has but a poor chance. The quantitative relation between external stimuli and primitive forces is of a five-fold nature, and may consist of (a) an *insufficient*, (b) a *full*, (c) a *pleasurable*, (d) a *satiating*, and (e) a *painful stimulation*.

It will be necessary simply to intimate here that, in the actual play of our faculties, these classes are not marked by such strict lines of demarcation as are here presented. As everywhere in nature, there is also under the circumstances cited a gradual transition of one into the other, so that it is not possible to determine the quantum of external stimuli for a full or for a nearly full, or for an insufficient stimulation, etc. There is another important feature of these various quantitative relations that may, at this time at least, be touched upon: Everything that attains existence continues to exist until destroyed, and continues to exist with its own special characteristics, until they are altered. Now, it is clear that each of the different stimulations gives a peculiar character to the product resulting from that stimulation. The product of a full stimulation must have a different character from that of a pleasurable stimulation; and both must differ essentially from the products of the remaining stimulations, which all, more or less, produce mental modifications of a feeble and imperfect character. If their products endure, their peculiar characters must also endure until changed. Consequently we find in these different stimulations the true foundation of the various characters, moods, tempers and peculiarities of the developed mind. One whose mental modifications are predominantly developed by full stimulations, will always be found well-balanced, cool and reflective. One whose mental modifications have received their predominant character from pleasurable stimulations, will always be wanting, wishing, longing and

fickle. A predominance of the remaining stimulations cannot produce anything but a weak, cross, irritable and peevish disposition. Hence the various dispositions of men are not innate qualities of the mind, but *products*; one great factor of which consists in the above-described different quantitative relations between the external stimuli and the primitive forces.

26. MENTAL MODIFICATIONS ORIGINATING IN PLEASURABLE STIMULATIONS RESULT IN DESIRES.

I refer to what has been stated in the last chapter. *Sometimes external stimuli are offered in greater abundance than the primitive forces require for their full development.* In this case they cause an *agitation* of the primitive forces, attended by an immediate feeling of *pleasure*. This agitation, however, hinders the primitive forces from as thorough an objective development as takes place in the case of a full stimulation. They retain more or less their original *conative* character, and assume the character of the stimuli in a subordinate degree only. The primitive forces receive thus a development *sui generis*; a development which, by additional like processes, produces modifications possessing predominantly the subjective character of the primitive forces, which are of a predominantly *striving* nature. This is substantiated by daily experience. *After a pleasurable stimulation we feel a desire for a repetition of the same.* A fine exhibition we desire to see again. A fine piece of music we like to hear repeated. A pinch of snuff, a piece of tobacco (if once we are pleasurably excited by it), we crave again; and if a man has been pleasurably stimulated by a certain kind of food or drink, he soon acquires a desire for it.

This peculiarity is easily explained. The primitive forces are conative in their nature. The conative power is spent in the conversion of the primitive forces into objective developments, by the reception of external stimuli (25). The more complete this conversion, the less conative power remains. On the other hand, the less complete this conversion, the more conative power is retained by the primitive forces. When, then, under a pleasurable stimulation (see above) the primitive

forces are only partially modified, it follows that their original conative power is but little diminished, and that they still strive, as before, after objective development. But now the case is somewhat altered. Having been partially modified by the stimulants of a special object, their original *general* conation has likewise undergone change. It is now directed into a definite channel. From a *general* conation it has been modified into a *tending toward stimuli of a special object*. In short, *the original general conative power of the primitive forces has been converted into a special desire*. Thus it is that mental modifications, which originate in pleasurable stimulations, result in desires.

27. HOW FAR THE OTHER MODES OF STIMULATION ARE CAPABLE OF PRODUCING DESIRES.

An object seen at twilight causes us to strain our eyes to perceive it fully. A sound that strikes our ear with insufficient loudness, we try to catch wholly. The same is true of the other senses, if they are stimulated in an insufficient degree. The reason is this: As insufficient stimulations only partially satisfy the conative power of the primitive forces, the imperfectly employed forces strive for repletion in the same direction, and thus special desires originate even from an insufficient quantum of external stimuli. But, if we continue this kind of stimulation, we soon find that our striving for further repletion would cease or become very feeble; for it is a process in which the primary forces are merely imperfectly developed, and thus result in invalid and impotent modifications, which, no matter how often produced, would nevertheless leave the mind weak and imbecile.

In the conscious presence of vigorous mental modifications they cause an action of the mind, which is termed *aversion*. Of this, however, I shall speak more fully in 34.

An adequate amount of external stimuli pervades the primitive forces thoroughly. It is the most favorable condition under which the primitive forces can undergo a definite and complete transformation or objective development; they assume pre-

dominantly and permanently the character of the stimuli, and their conative power is, for the most part, spent in the reception of the stimuli. Nevertheless they retain enough of their original conative nature as to be still capable of tending toward a renewal of the same stimulation. This we find in accordance with daily experience; for we want frequently to see and to hear again what we have previously observed or heard quietly and under the most favorable conditions. Thus far even the full stimulation is capable of producing special desires.

The *satiating stimulation* must necessarily have the same effect at least so far as it is, in its beginning, similar to a pleasurable stimulation. In its highest degree it cannot but cripple the primitive forces and their conative power. Nevertheless, when we observe in drunkards and gluttons quite strong desires for further dissipations, it is not the satiating stimulation which they desire. It is a yearning after those pleasurable impressions they have enjoyed before their excess amounted to a temporary satiety.

The *painful excitation* offers the least chance for the formation of special desires, because the sudden and excessive influence injures the primitive forces to such a degree that their conative power is at once paralyzed, and may be even permanently injured. We find, therefore, nobody who desires a repetition of any process that causes pain.

In reviewing the different quantitative relations of external stimuli, there is none so favorable for the formation of special desires as *pleasurable stimulation*. Under the conditions of pleasurable stimulation the inborn conative power of the primitive forces remains unimpaired, and the primitive forces receive a development which comes nearest to the vigorous development of a full stimulation. Still, as the agitation which is occasioned by the greater amount of external stimuli hinders the primitive forces from a thorough objective development, the primitive forces retain their conative nature in a sufficient degree to constitute a vigorous striving for a repetition of the same influences. In this way the pleasurable stimulation presents all the conditions which are favorable for the formation of special desires in the most perfect manner. (Compare 33.)

28. THE ACT OF DESIRING IS AT THE SAME TIME AN ACT OF CONCEIVING.—TWO DIFFERENT FORMS OF REPRODUCTION OF PLEASURABLE MODIFICATIONS.

Before we can desire a thing, that thing must first have acted pleurably upon us. During a pleurable stimulation the primitive forces retain predominantly their conative nature, but assume also, at the same time, more or less distinctly, the character of the stimuli. In the degree in which this latter takes place they are converted into vestiges of perceptions. If, for instance, a flower has pleasantly acted upon us, the result will be not only that we *desire* to see the flower again, but also that we have, at the same time, a more or less distinct *conception* of the flower, because just by this more or less distinct objective development the conative power of the primitive forces receives its direction to this special object, by which the whole act assumes the form of a *desire* (27). An act of desiring can, therefore, never exist without an act of conceiving, that is, of reproducing a perception (10). Hence one and the same mental act (all acts are mental modifications, either vestiges or active conscious excitations) is partially a *desire* and partially a *conception*. It is *desire* so far as the primitive forces have retained their conative power, and it is *conception* so far as they have been converted into vestiges of perception. Such a conception will always be of a *pleasurable nature*, because it has originated from a pleasurable stimulation.

Conception and desire are, therefore, only two different *forms of one and the same mental act*—not at all two different mental acts in themselves. Still, it is possible that in the process of reproduction the one or the other of these forms may so preponderate, that each may appear as an independent or separate act. If, for instance, the larger part of the primitive forces is converted into vestiges of a perception, the reproduction of such modification will be a pleasurable *conception* or *remembrance*; while, on the other hand, if the primitive forces retain in greater part their original conative power, the reproduction of such modification will have the decided character of a *desire*. Thus we come to the important fact *that a pleasurable*

mental modification is capable of being reproduced in two different forms, either as a pleasurable remembrance, or as a distinct desire for a similar pleasurable stimulation.

It is even possible that the one or the other form may gain a *permanent* preponderance. We observe, especially in the lower senses, that the pleasurable modifications assume the character of *desires*, because the primitive forces of these senses possess by nature a much lower degree of energy than the higher senses (8); consequently their objective development is not so permanent; they retain more of their inborn conative power, which clothes the reproductions with the form of *desire*.

The higher senses, on the contrary, are characterized by a higher degree of energy. They continue to exist more persistently in that definite change which they have undergone by the action of stimuli, and therefore the reproduction of pleasurable modifications assumes predominantly the form of *pleasurable remembrances*. There are, however, a number of pleasurable modifications in which both forms of reproduction are equally balanced.

The third form of reproduction—that of *feeling*—I shall speak of more fully in 50.

29. SIMILAR DESIRES COALESCE. — INCLINATION, PROPENSITY, PASSION.

We have seen (9, 16, 18 and 20) that the law of attraction of like to like exerts its influence in the sphere of cognitions. We shall see its influence equally great in all conative modifications. Striking illustrations of this fact are not scarce. Recall instances of the miserable victims of opium and whiskey! Their desires grow with the use of these poisons, until those desires are irresistible. Quick, indeed, grow all desires founded in the lower senses; for these senses, on account of their low degree of energy, are much more apt to produce desires, as we have shown in the last paragraph. Frequent repetition in a short time swells them to formidable magnitude. Desires also grow in the higher senses by repetition of pleasurable stimulations.

We see this fact verified in enthusiasts for music, painting, etc., in all sort of queer geniuses who ride their hobbies. The miser even belongs in this category. From continued pleasurable stimulations their desires grow stronger and stronger, until they attain a leading control over all other mental modifications. All this goes to show *that similar desires coalesce as do similar perceptions*, thus originating in the soul those multiplex conative modifications, which, in the language of common life, are designated by the terms *inclination, propensity, passion*.

30. INFLUENCE OF THE QUALITIES OF THE PRIMITIVE FORCES UPON THE FORMATION OF DESIRES.

The nature of desires consists of the preponderance of the conative power in the primitive forces, which conative power remains the stronger the less firmly the primitive forces undergo an objective development. A high degree of tenacity favors the latter, and so far *it is not favorable to the formation of desires*.

This assertion agrees fully with the general observation, that most desires originate in senses possessing less energy—the lower senses. Yet, on the other hand, how could inclinations and even passions be produced, if it were not, as we have seen in the last paragraph, that single similar desires were held together and retained as vestiges?

Without that power none of these multiplex conative formations would ever originate, and we may measurably witness this if we observe idiots and animals. In both the energy of the primitive forces is of a low grade; and, therefore, although both of them unmistakably form a great many desires and even inclinations that are definitely determined toward this or another object or person, the desires and inclinations do not attain to real *passions*—that multiplex aggregate of similar desires which, by a sufficient degree of inherent energy, grows to that conative power of the mind which overcomes the greatest difficulties.

Thus we see *that, although a very high degree of energy is not*

favorable for the formation of desires, a certain degree of energy is nevertheless indispensable for the formation of inclinations and passions.

2. *Their acuteness or sensitiveness.*

Another condition for the formation of desires is a *pleasurable stimulation of the primitive forces* (25, 26). The higher the degree of acuteness, the less external stimuli are required to affect the primitive forces (5). Consequently *a high degree of acuteness must be exceedingly favorable for the formation of desires.* This point we find everywhere corroborated by experience. One possessing a fine taste is easily pleasurable excited by the addition of a very small quantity of condiments to his food; while another, possessing dull taste, requires much larger amounts of pepper and mustard. To a fine ear soft music may cause great pleasurable excitation. The dull ear requires the sound of drums and trumpets to become in any way aroused, etc. In short, there is no doubt that a greater amount of acuteness of the primitive forces causes pleasurable excitations easily; and, as these are the foundation of desires (9), it is evident that *a high degree of acuteness of the primitive forces is very favorable for the formation of desires.*

3. *Their vivacity.*

A higher degree of this quality causes a livelier activity of the soul throughout. In this general way desires are likewise favorably affected by it. Slow forces are not only slow in perceiving, but also slow in striving. It is in the sanguine temperament that we find lively desires most prominently developed; while the phlegmatic, whose primitive forces are wanting in acuteness and vivacity, is scarcely ever aroused to passion.

31. EXTERNAL STIMULI AND PRIMITIVE FORCES AS MOBILE ELEMENTS.

A. All psychical modifications hitherto considered (perception, concept, judgment, inference, desire, inclination, propensity, passion) are products of primitive forces and stimuli. By the latter we are continually surrounded. Stimuli are

emitted from all objects external to the soul, and even from our own body. Stimuli stream upon us from all sides. These stimuli, into the nature of which we will inquire later, we shall designate as the *first* class of *mobile elements*, because in reality they are different modes of motion (78).

B. Every night at a certain hour we experience a regularly recurring diminution of our sensorial faculties. We do not see nor hear as clearly as we did through the day. The eyelids shut and the hearing is blunted. It is true, an extra excitement may rouse us again into full activity for a certain time, but finally exhausted nature yields. There is no substitute for sleep. After sleep we again see, hear, think, wish, will, etc., as briskly and as vigorously as before. What, then, is it that has been exhausted through the day and restored by sleep? As seeing, hearing, etc., are mental acts by which primitive forces are modified (2, 3, 4), and thereby are constantly consumed, it is these primitive forces which have become exhausted through the day's work; and, as after sleep all mental functions again revive to vigorous activity, to what else could it be referred than to a restoration of the primitive forces? Sleep, then, is a condition necessary for the restoration of consumed primitive forces. Of this process, however, I shall speak more fully in 99. At present it is sufficient to note that such restoration actually takes place during sleep, and we shall likewise call these *newly-restored primitive forces mobile elements*; because, so long as they are not objectively developed by external stimuli (that is, so long as they have not been transformed into fixed vestiges), they are *free, capable of entering into any combination* which corresponds to their general character. This is, then, the second class of mobile elements, namely, the *newly-formed primitive forces*.

C. If it were possible that the reception of external stimuli (the processes of seeing, hearing, etc.) could take place without primitive forces, or by some mental modifications already formed; and moreover, if it were possible that consciousness could be kept active without other aid than that of vestiges (which in fact, as we have seen in 10, are, on account of their aggregate nature, the very ground of all consciousness), it

would be entirely superfluous to have a period of rest like that of sleep, in which new primitive forces could be produced. But this is not so. External stimuli have no effect upon the soul unless they are received by free primitive forces (4), which are thereby converted into vestiges. Such conversion continually decreases the number of primitive forces; and that is the reason why after a day's work our capability to see and to hear, etc., is diminished in a corresponding degree. Conscious excitation also can only be kept up by means of mobile elements (9, 13).

Now, it is an incontrovertible fact of experience, that so long as we are awake and have not shut our eyes, there are elements of light flowing into the mind constantly without necessarily forming special perceptions. We are conscious of *seeing*, but are not always conscious of *what* we see, thus showing that the external stimuli do not always excite their corresponding vestiges into a conscious state. Hence, it follows that this unconscious reception must take place entirely by free or empty primitive forces. Aye, even more, as from such unconscious reception conscious modifications seldom result, it follows that the stimuli leave no distinct vestiges, and consequently that the action of such stimuli is not attended by a perfect transformation of the primitive forces.

The same is true with regard to the sense of hearing. How many different sounds and noises, of which I am not conscious in the least, enter my ear! If I remember some of them afterward in a faint manner, it proves only that they have been received, but not that the primitive forces have been thereby actually converted into distinct vestiges.

This is equally true of all other senses. We may say: *External stimuli are continually acting upon all classes of primitive forces, but do not always give rise to distinct and fixed modifications.* Nevertheless such action cannot be without some effect; for, although the primitive forces are not converted by the general stimuli into fixed forms, the primitive forces undergo some change—assume to some extent the character of the stimuli. We may consider the changes noted as *partially modified forces*. As such they retain their mobility, and obtain

at the same time a general tendency toward modifications which have been developed by similar stimuli. These partially modified primitive forces constitute the *third* class of mobile elements.

We have thus *three* classes of mobile elements: 1, *external stimuli*; 2, *free primitive forces*; and 3, *partially modified primitive forces*.

32. OFFICE AND USE OF THE MOBILE ELEMENTS.

We have partially touched upon this subject in 12 and 13. In those sections we have seen that external elements always and necessarily find their similar vestiges and excite them into consciousness; and also that free primitive forces flow to other objective modifications, and cause the latter to become conscious. We may trace this process still further. Why is it that the first fine spring day exercises such a charm upon every one? It is because the charms of the day yield so many pleasurable external stimuli. These stimuli spread, as mobile elements, over a large number of similar pleasurable modifications already existing, excite them into consciousness, and thus cause that peculiarly exalted state of the mind. It is not only that the beauty of nature causes a pleasurable excitation of its own, but that beauty excites at the same time a number of other pleasurable modifications—perhaps remembrances of olden, happy times—and is thus the cause of a much higher elevation of the mind than a mere pleasurable excitation could produce of itself.

Let me submit another example. I sit quietly in my room, reading or writing, or doing something else, in the usual quiet way. I receive a letter. I open it; I read it, and the further I read the more eager and restless I grow. Finally, I find myself in a turmoil of thought. Why is this? Surely it cannot be an abundance of external stimuli coming from the letter. What I see is mere paper and figures written upon it. But these figures excite mental modifications composed of numerous elements—of the conception of a dear old friend, or of an urgent business, or of some other important matter thus

conveyed. Whatever the cause be, the mental modifications that have been aroused by the letter must consist of numerous elements, which elements, being in close connection with other modifications, likewise excite them into consciousness. In the same manner *one word* may sometimes cause an excitation of the mind wholly inexplicable, were it not for the mobile elements which start from that word and diffuse all around, exciting into consciousness numbers of ideas intimately connected with it. It is here that the partially modified forces come into play. They are drawn into the excitement, and, being of a general character, flow to those latent agencies which, by former associations, are the most intimately connected with the first, and thus cause a commotion of ideas. This perturbation may take place independently of our wish or desire.

If one excites into consciousness the conception of a steeple, consciousness does not remain confined to the steeple alone, but gradually spreads to the whole building of which the steeple is a part. Or, I say: Two times two is —; six and six is —; Philadelphia lies between —; and I know that all in whom the knowledge of the answers exists will at once supply the predicates. Similarly, the mobile elements, which are here partially modified forces, flow constantly from one modification to another, either similar or connected by previous simultaneous presence in consciousness, and stimulate these modifications into consciousness.

But free primitive forces are also mobile elements. They, too, are capable of moving from one modification to another; but, as they are of a conative nature, they naturally join with such modifications as are the most similar to them, or such as are predominantly of the same character, like all desires, inclinations and passions. Thus results voluntary excitation into consciousness. But it is otherwise when we *want* to recollect something. Be it, for example, a name that we once knew, and wish to recall. What was that name? Perhaps the mere wish brings it at once to the mind. At other times it requires greater effort; and sometimes it appears as though the name had been entirely wiped out of memory.

What was that name? We make all sorts of combinations. Himley? No! Hemmit? No! O, well, that prince of Denmark of whom Shakespeare wrote a drama! Hamneit? No! Hemlot? Neither! But similar. There it comes! *Hamlet* is the name!

It is clear that if we had just seen or heard that name, that is, had external stimuli been present, we would have known the name at once, without the necessity of searching for it; but just then the external stimuli were wanting, and hence we had to make an exertion (that is, by means of conative forces, we had to hunt for it), and finally, after several failures, we found it. This is an experience of every-day occurrence. We come then to the resulting rule: *That not only external stimuli and partially modified forces excite mental modifications into (involuntary) consciousness; but, also, that free primitive forces arouse latent agencies into (voluntary) consciousness. So soon as these stimulating elements depart, the now conscious modifications sink again into delitescence.* We see then that it is by means of the mobile elements that the constant change between conscious and unconscious modifications takes place; and that the activity of our soul is carried on during our waking state and sometimes even during sleep, in the form of dreams. We may define this process as follows: *Mobile elements are constantly flowing from one mental modification to another, and thus cause a continual transmutation of mental modifications, from delitescence into conscious excitation, and vice versa.* This fundamental process, which indeed constitutes the activity of the soul, we call *the diffusion of mobile elements*, and we will find this process (if we stop a moment for reflection) acting with equal force throughout the whole exterior world. "*Corpora non agunt nisi fluida,*" and only through fluids motion exists. This process lowers mountains and lifts up the depths of the sea. It warms again the freezing atmosphere, and cools down its scorching heat. From the oceans it waters the parching land, and from thence it sends back again what feeds the sea.

The same process regulates the intimate connection between mind and body. Lightly and more energetically are moved muscles and bones when joyful tidings vibrate through the soul; while, on the contrary, even the mind's energy suffers

under the influence of bodily pain. It is, indeed, a process universally acting and important; and, although we cannot observe the mobile elements themselves as they move from vestige to vestige (because they are unconscious elements), we see the effect of their action. Neither do we observe the continual motion of the fluid elements of our bodies, and yet such motion, notwithstanding our inability to observe it, is an unceasing reality. Another question is: How, by reason of the fluid nature of these elements, can uniform regularity be produced in their office to excite and to withdraw consciousness? Of this further investigations will bring full explanation. (Compare 39, 99.)

33. STRONG AND WEAK MODIFICATIONS.

I shall, under this section, repeat some observations partly considered in 25, in order to gain a basis for further investigations.

We know an *insufficient stimulation* causes, at best, indistinct perceptions, shadowy, feeble modifications, which modifications (although at the time of the stimulation possessed of a faint striving for complete excitation) soon lose this tension, and remain imperfect modifications, with a feeling of non-satisfaction. Thousands of such imperfect modifications, even united, would not be able to produce one single sound and perfect modification, because each imperfect modification bears the character of intrinsic debility, and debility added to debility can never result in strength.

We know further that a *satiating stimulation* causes disgust and loathing, because the primitive forces, in consequence of the unceasing irritation of full or abundant external stimuli, become tired and worn out. Such excitations must necessarily modify the primitive forces in an objective manner; but as the quantum of external stimuli grows gradually too great and overwhelms the primitive forces by degrees—covers them, as it were, with an aftergrowth—the satiating stimulation produces mental modifications likewise of a morbid, debilitated character.

Painful stimulations weaken the primitive forces suddenly. The products of such stimuli bear decidedly the character of debility.

We see, then, that each of these quantitative relations (the insufficient, satiating, and painful stimulations) produce mental modifications distinguished by a character of debility, and, at the same time, of pain (if we allow the term pain, in its widest sense, to embrace non-satisfaction and loathing). These debilitated modifications continue to exist, like all other modifications, as latent agencies, and in them the weakness of a developed mind has its original foundation, as we shall learn hereafter.

An altogether different result is produced by *full stimulations*. The immediate feeling of satisfaction attending them shows a gain in strength and perfection. Under such a condition the primitive forces, by reason of an adequate amount of external stimuli, have received a complete objective development, giving proof that the mind gains in strength and perfection in the same degree as the primitive forces are developed by full and adequate stimulations.

A somewhat similar result is observed from *pleasurable stimulations*. Under the influence of pleasurable stimuli the quantum of external stimuli does not weaken the primitive forces, but stimulates them to a higher tension, manifest in the greater conative power with which pleasurable-modified forces strive for other similar stimulations. We gain thereby mental modifications of a two-fold nature. *First*: Modifications of the nature of pleasurable perceptions, proportionally as the primitive forces have been fully converted into vestiges. These, no doubt, we must consider as strong modifications. *Secondly*: Modifications of the nature of desires, proportionate to the higher agitation by which the primitive forces have been prevented from securing a thorough objective development. These must be considered as weak modifications, because they consist of imperfectly developed primitive forces. The result of our inquiry is: The human soul acquires strength or weakness according as its primitive forces are modified and developed by different modes of stimulation. These forces are strengthened so far as they undergo a

thorough objective development; they remain weak, or are weakened, if this development is frustrated by an unfavorable (either insufficient or superabundant) stimulation.

34. REPUGNANCIES, AVERSION, REPULSION, RESISTANCE.

We have an aversion to being stung by a bee. A child shows repulsion when compelled to take bitter medicine. The self-conceited resists a reproach, even if that reproach be just. In all cases we have a *striving*, yet not a striving *for* but *against* something. How does this mental condition originate?

When a bee comes flying about your head threatening to sting, you become conscious (from previous similar experience) of the pain such a sting would cause. This conception of pain is called up during a state of mind free from pain—a state consisting of conscious modifications, which, compared with the pain that a bee-sting would produce, are of a pleasurable character. In short, in the midst of modifications of *strength* there is suddenly awakened a modification of *debility*. Both are related to the well-being of your person, both are therefore quite similar, but the one is the product of full or adequate, the other of painful stimulations. On the one hand, then, we have primitive forces perfectly developed; on the other primitive forces imperfectly developed. Either of them, to be kept in consciousness, require mobile elements; and, as imperfectly developed forces largely retain their original conative power (if they have not been totally crippled), they largely attract the existing elements, which thus are withdrawn from the perfectly developed modifications. This sudden withdrawal causes in return a revival of conative power in the perfect modifications, and consequently a striving in the direction of the withdrawn elements, or against those modifications which cause this withdrawal. Such counter-striving we feel when a bee threatens to sting, and it is called a repulsion.

In the case of a child showing repugnance to taking bitter medicine, the same process occurs. To the modification of feeling comparatively well, the sight of the medicine excites, on account of former similar experiences, a feeling of loathing.

This is a modification of debility, and, as such, withdraws the mobile forces from the modification of strength—namely, the child's feeling of comparative ease. This sudden withdrawal of mobile elements causes in return the modifications of strength to regain part of their original conative power, and they react against that conception of loathing and repel the medicine.

A similar process occurs when a self-conceited man is reproached. A conceited man's conception of his own worth is exceedingly strong. A reproach excites a conception of himself that is anything but flattering. The conception of worth is antagonized by the conception of worthlessness. The "worthless" conception withdraws the abundant mobile elements from the man's conception of his own worth, leaving the latter free of its ordinary stimulation, and consequently his desire for self-flattering stimuli makes more manifest their absence. The original conation—concept of worth—resists reproach.

In order, then, to produce an *aversion or repugnance*, it is necessary that two diverse modifications should rise simultaneously to consciousness—a modification of *strength* and a modification of *debility*. This process causes the mobile elements to flow from the former to the latter, and quickly converts the strong modification into one of *conation*, and the conative force defends itself against the loss of stimuli involved in the process, thus engendering a counter-effect—a repugnance.

We must, however, go still more into detail to become fully familiarized with this mental process. In the *first* place, it is not sufficient that any two diverse mental modifications, one of strength and one of debility, be roused together into consciousness. They must be similar; that is, *must bear a relation to the same or at least a similar object*. If I have acquired, for example, correct modifications of a piece of music, these modifications will cause a repugnance if I hear that piece of music faultily played; but these particular modifications do not enable me to repel against orthographical errors. *Vice versa*, if I have acquired the rules of orthography, but have no correct musical modifications, faulty or poor play would not provoke

my aversion, while an incorrectly written letter would. The repugnance to a mistake is felt only when the correct expression rises into consciousness. In short, two diverse modifications, roused at the same time into consciousness, must be similar in order to produce an aversion.

Secondly. The striving *against*, as we observe in aversion, etc., is, in fact, of the same nature as the striving *toward* in desires of which we have spoken. It is the same manifestation of conative action of the primitive forces toward existing elements, only with the difference that the striving is not directed toward elements external to itself, as in desires; but toward the immediate loss which the modification of strength sustains by the attraction of the mobile elements to the modification of debility, a striving naturally assuming a direction against that modification which causes this loss.

In the mental modifications of fear, anguish, terror, etc., there are usually several modifications of debility simultaneously roused in consciousness, so that the modifications of strength, conscious at the same time, lose a considerable portion of mobile elements. If the mental modifications of strength develop sufficient conative power to resist those losses, there will result a *repulsion* against the modifications of debility. If, however, there is no modification of sufficient strength to resist and stop this sudden flow of mobile elements, there will, of course, be no repulsion, but the mobile elements will spread further and further, to bodily functions even, and cause screaming, crying, trembling and convulsions.

Thirdly. The process of diffusion of the mobile elements is rarely confined to the modifications of strength and debility causing the phenomena in question. On the contrary, all that is mobile in the soul partakes of the motion, and excites such modifications as have been previously conjoined by simultaneous presence in consciousness; and thus it is, that when a bee threatens to sting, we feel not merely an aversion to being stung, but are at the same time aroused to defend ourselves. So is the child by the sight of the bitter medicine aroused to actual resistance against taking it; and the self-conceited may, if reproach be offered, resort even to a kind of defence that

would not meet the approbation of gentlemen. We see thus, that the process of diffusion of mobile elements is not confined to the modifications of strength and debility which have given rise to it, but that it spreads all around; that is, draws into excitation all such modifications as have previously been conjoined by their simultaneous presence in consciousness. Consequently we find explained the fact that the mere aversion combines at once with those other mental modifications which present the means of resisting the continued action of this special modification of debility.

Lastly. We find that when the process of diffusion is at an end and all is quiet again, the diverse modifications which caused it, still continue to exist as they did before. The self-conceited holds the same high opinion of himself; the child is not in the least changed as regards his disliking bitter medicine; and we may feel just as well after the threatening bee has gone as we did before its approach. This fact shows clearly that the mental modifications which caused this commotion by their simultaneous presence in consciousness, were not themselves dissolved during that process, but that the lively agitation consisted only in a shifting of mobile elements. The free primitive forces take part in the process only so far as they join to modifications of strength, thus augmenting the power of striving against, or resisting, that which affects us unpleasantly.

35. REPUGNANCIES ARE FREQUENTLY ATTENDED WITH PAIN,
AND ARE THEN MORE VIOLENT THAN USUAL.—PAINFUL
EMOTIONS.

Fits of anger, vexation, indignation, mortification, etc., are frequently attended by pain. Why are such emotions attended with a *painful* feeling? Let us take for an example the self-conceited. In him those mental modifications which have engendered an overweening conception of his own worth, have grown to considerable strength. They are modifications of a pleasurable character, replete with pleasurable elements. Let some one come and tell him that he is an utterly worthless

fellow in a certain respect—the respect in which he imagines himself to excel—and the consequence will be a painful emotion of anger and mortification. Why is this emotion painful? Because we have, in the case cited, on the one hand, modifications replete with pleasurable elements, and, on the other hand, a modification so destitute of these elements that the numerous mobile elements of the first rush, according to the law of diffusion, so overwhelmingly to the latter, that they act like an overdose, and cause a painful stimulation in the same way as any other sudden and overwhelming external influence would produce pain at any time. This explains also the great *violence* of action against the intruding mental modification of debility, with which such a process is accompanied. The diffusive process is sudden and extensive. Therefore, many of the primitive forces, previously developed by pleasurable stimulation, are quickly converted into their original conative nature. This conversion must produce a lively repulsion of the weakening influence. We find, therefore, that a child commences to scream and kick if a favorite plaything is suddenly taken from it, and adults resent interference with their favorite inclinations in a more dignified way.

Thus it is that in the degree in which a mental modification is replete with pleasurable elements, and thereby is made sharply antagonistic to a similar mental modification destitute of these elements, their simultaneous presence in consciousness causes a more painful sensation by the process of diffusion; causing, in short, a more violent resistance and painful emotion.

Such is not the case with the majority of aversions hourly originating in the soul. They leave us comparatively quiet. We merely go away from a place we dislike. We quietly correct the errors we find our pupils have made in speaking or writing. We patiently seek what we have lost, etc.

36. SIMILAR AVERSIONS COALESCE.

Like unites with like (9). This law also exerts its influence in the case of aversions. The first rough treatment of a child by the nurse causes a painful modification, which, with the simul-

taneous remembrance of the mother's kind treatment, creates the first aversion to the nurse. A repetition of the same treatment causes the same effect, and, both being similar, unite as such. In this way the first simple aversion in a short time grows, by repetition, into a strong repugnance to the nurse. Or, let us suppose that we had been disagreeably affected by the howling of a dog, and that in consequence an aversion to noise has originated. Let this be joined by the sounds of cats, owls, etc., and, provided that their first effect has been disagreeable, a repugnance to this discord (even an abhorrence of it) will be the inevitable result. This need not, however, necessarily be the case; for we find persons not in the least painfully affected by such sounds, who never show, therefore, an aversion to them. We have thus an example of those seemingly contradictory conditions, in which it is found that certain persons detest a thing which others, perhaps, desire, or, at least, are indifferent to. It is the *disagreeable* or *painful influence* a thing has exerted upon the mind, and the frequent repetition of such influence, that creates aversions and makes them grow to repugnance and detestation. Life presents many instances of this fact.

37. THE INFLUENCE OF THE QUALITIES OF THE PRIMITIVE FORCES UPON THE FORMATION OF AVERSIONS.

It will be found that in the discussion of this question we shall arrive at the same results as have been noted in 29, in considering the influence of the different qualities of the primitive forces upon the formation of desires.

Since aversions can only originate when modifications of strength and debility exist in the human soul, it is clear that all that favors the development of these elements will likewise favor the formation of aversions. The most influential quality of the primitive forces, however, in this respect, is *acuteness*. Where acuteness exists in a high degree, even a moderate amount of external stimuli produces full stimulation and, a little more, pleasurable stimulation. Just as easily do satiating and painful stimulations arise under its influence. Varying

degrees of stimulation are the exact conditions required for the formation of energetic, as well as feeble, mental modifications (33), and consequently of aversions (34).

However, for the origination of aversions it is likewise necessary that the diffusion of mobile elements should take place rapidly, and this rapidity depends on the degree of vivacity with which the primitive forces are endowed. The phlegmatic individual is just as slow in forming aversions as he is in forming desires, while the sanguine is alike quick in originating both.

The *energy* of the primitive forces may be said to be, to a certain degree, rather unfavorable to the formation of aversions, inasmuch as primitive forces with a high degree of this quality, hold fast what they receive, thus limiting the amount of mobile elements. On the other hand, however, if such acts of resistance did not remain as vestiges, we could never attain to repugnance and abhorrence in the aggregates of single similar aversions. The fact is, under the circumstances stated, just what it has been stated to be elsewhere, in regard to the formation of notions, passions, etc., viz: Only by preservation and accumulation can single mental acts grow into compound and powerful ones—desires as well as aversions. This truth is illustrated in cases of idiots and animals. Neither idiots nor animals, on account of the want of the requisite energy in their primitive forces, ever attain to the deeper grades of passion and detestation we find in the human being.

38. GOOD AND EVIL.

Pleasurable stimulations produce *desires* (26), and the object causing such stimulations we consider good, that is, a something capable of promoting our well-being in some way or other. As an illustration: The traveling facilities by railroad and steamboat are a public good, and are everywhere desired by people who know their advantages by experience. Coffee is considered good by those whom it has pleurably excited. Anything grows more and more in favor as it is capable of causing pleasurable stimulations. In short, we may say, *what-*

ever has the ability and opportunity of exciting us pleasurable, we consider as something good, and we strive to obtain it. We desire the good so long as we do not possess it. Possession of the good, however, appeases our desire, because then the primitive forces are constantly acted upon by the object at hand.

A pleasurable modification loses thus the character of desire by the possession of the desired object, and, instead of it, gains the predominant character of a *pleasurable conception*. (Compare 28.)

It happens now and then that we desire an object which, as yet, has not had an opportunity of causing pleasurable stimulation of our primitive forces. For instance, a child may be anxious to obtain a pineapple without ever having previously been pleasurable affected by eating one. In some there may be an intense desire to see foreign countries, without ever having personally received any pleasurable impressions from them. Still others may burn with a desire to hear a renowned composer's new opera—an opera as yet unknown to them. Now, how is it possible that we can desire things that have not excited us pleasurable?

In these instances we shall, by close examination, come to nearly the same result as already set forth. When a child desires a pineapple, it has already received many pleasurable impressions from *other* fruits. Seeing or being told that the pineapple is also a delicious fruit, the pleasurable impressions from other delicious fruits act as a substitute for the yet unknown pleasurable impressions of this fruit, and thus originates a desire for it. In the case of a desire to see foreign countries, there exist already pleasurable stimulations from beautiful scenery already visited, or from descriptions of travelers, which, on account of their similarity, lend their conative force to the more miraculous spectacles imagined to lie in foreign countries. The same holds good when we desire to hear the new opera of a renowned composer, because, as his former productions have already excited us pleasurable, we do not expect anything else than pleasure from his latest work. We come, then, to the conclusion *that we may desire a thing, or consider it as good, even though that supposed good has not yet had a chance to make a pleasurable impression upon us.*

It is on account of the similarity the conceived object has with other objects from which we actually experience pleasure, that we form desires. Imagining that the unknown thing will create similar or greater pleasurable impressions, the conative force of the acquired pleasurable modifications is substituted for the yet unacquired.

So soon as a thing exercises an unpleasant impression upon our primitive forces, which may be caused either by an insufficient, satiating or painful stimulation, there originates a mental modification of debility (33), and in consequence of this, if the necessary conditions are fulfilled (34), an *aversion* results. All that excites us unpleasantly, that causes a debilitating effect upon us, we not only do not desire, but shun and strive against. We consider it an *evil*, a something which impairs our happiness or prosperity in some way or other. In this sense we consider sickness in general an evil; fire and water only so far as they cause damages by their destructive power; but good, in so far as they promote our happiness and prosperity. Many things may be considered by some as good, while others may shun the same things as great evils. It depends entirely upon the manner in which things affect us, whether they cause pleasurable or painful stimulations.

Full stimulations cause, as we have seen in 11, clear perceptions, or conceptions, when reproduced in consciousness, and constitute so firm a transformation of the primitive forces by external stimuli, that only a small portion of the primitive forces regains its conative power. Therefore, little chance is given for the formation of either desires or aversions (27).

We consider things which cause full stimulations, generally speaking, neither as good nor as evil. However, as full stimulations perfectuate the mind, enrich it with new perceptions and ideas, the objects which are competent to produce this result assume the nature of good, and as there is no line of demarcation between full and pleasurable stimulations, we can hardly make a marked distinction between the objects causing them. They will be desired inasmuch, at least, as they enrich our knowledge, and thus become a real good for the inquiring mind.

39. UNLIKE MENTAL MODIFICATIONS UNITE INTO GROUPS AND SERIES.

The union of like with like has been treated of in 9, 10, 15, 20. The union of unlike mental modifications into groups and series I shall now demonstrate.

So soon as we hear the word "tree" there rises into consciousness, in all who hear it and understand its meaning, a whole group of totally distinct things, namely: Roots, trunk, branches, twigs, leaves, bark, etc. What we understand by the term "house" is a combination of quite different things in one group, namely: Walls, windows, doors, roof, chimney, parlor, kitchen, etc. Again, the mentioning of your sister's, brother's, or father's name, will at once excite into consciousness corresponding groups of quite diverse mental modifications, showing *that in the human soul unlike modifications united in groups really do exist*. It is of importance, therefore, to consider the means and processes by which such union of unlike mental modifications into groups is effected.

When we see a tree we observe, as said before, different things united. Roots, trunk, branches, leaves, etc., make up the tree. In perceiving a tree, then, we perceive a group of things, all at the same time, or, at least, in quick succession, and ever afterward in the same combination. These groups exist, therefore, in the external world. As such they are perceived and made the property of the mind. Still, this illustration does not explain the means by which these diverse objects are kept together in the mind. We must, in order to understand how this is done, go back and recall the existence and office of mobile elements (constantly flowing from mental modification to mental modification, and thus causing the ever-changing stream of consciousness, as we have demonstrated in 31 and 32). When, therefore, a group of unlike things (as we find presented when viewing a tree) is excited into consciousness simultaneously, or in quick succession, such excitation into consciousness is performed through the medium of *mobile elements*, which pervade the whole act. Now, the question arises: What becomes of these mobile elements

after they have set in motion these several different perceptions? Do they stay in combination with the perceptions, or do they again disassociate? Experience teaches that both combination and disassociation take place, namely: Inasmuch as these groups sink into delitescence, to a certain extent the mobile elements must have disassociated; and inasmuch as we find, on again recalling the several perceptions, the different perceptions clinging together, to that extent these elements must have adhered to the perceptions; must have bound the different mental modifications together; must have served as a connecting medium between them. This explanation is in accordance with the universal law of nature: Every effect endures so long as it is not modified or changed by adverse influences. In short, the connecting medium remains likewise as a vestige, and is multiplied with each act of repetition, thus growing stronger and stronger, and combining the several dissimilar perceptions or conceptions firmer and firmer to each other, *so that finally a lasting union of these heterogeneous modifications is established, in consequence of which they always rise conjointly into consciousness.* These connecting vestiges are, therefore, latent agencies which pre-establish the possibility of the occurrence of future simultaneous consciousness of whole groups of dissimilar mental modifications.

Beneke calls them "*Weckungsangelegtheiten*," for which I know of no corresponding term in the English language. The term means provision for future excitations into consciousness.

The number of associations of dissimilar mental modifications in groups are very numerous in all human souls, because any object which we see (for our perception) is always of a complex character. Even the elementary gold we perceive is something that is yellow, hard, heavy, etc. As often as such an object is perceived, its several constituents are overspread and pervaded by the existing mobile elements, and as a portion of those elements adhere, the dissimilar perceptions become connected into permanent groups. Thus it happens that such groups exist to quite a considerable extent in the human soul, and that they sometimes consist of the most heterogeneous and oddest combinations. Superstition

imagines the devil as a being of human figure, with horns, a tail, and horse's feet. A remembrance of Frederick II. in some people excites regularly the ideas of a queue and a cane. If we furthermore find combined (and regularly) the object and its name, few only consider that these are perceptions which mostly have had their origin in different senses; that they, therefore, are groups of entirely dissimilar mental modifications. The conception of a tree originates in the sense of sight, while the name "tree" has its origin in the sense of hearing. What we *read*, that is, perceive by the sense of sight, excites mental modifications which we have heard, and then, again, conceptions which originally may have had their origin in any of the other senses. Similarly, musical notes, which we see, excite conceptions of sounds we only could have acquired by hearing; and if the *smell* of a rose excites into consciousness the figure, form, and color of a rose, and the *taste* of an apple its form and shape, we see clearly that the most dissimilar mental modifications may become connected into groups by mobile elements. There is nothing else required for the formation of such groups but the simultaneous presence in consciousness of the several mental modifications, and their permeation by mobile elements, which elements at the same time excite and unite them.

But whole *series* of mental modifications may thus originate in the soul. Any sentence, poem, tale, we have learned by heart, is proof of it. But here the conjoining of the several constituents does not take place simultaneously, as in the case of the formation of groups; because a series of perceptions cannot rise into consciousness at once, but only by a successive presentation of its parts. Thus the mobile elements spread only successively over the several mental modifications in the order in which they follow each other in consciousness, and conjoin them in this order, forming thus a continuity within a whole series of various mental modifications. Each repetition makes this continuity firmer by the formation of new vestiges of the connecting media, until, finally, a lasting union between the different members of such a series is established. We then know it *by* HEART.

Such series originate constantly in the soul ; and necessarily, because consciousness is ever wandering and changing from one object to another, occurring always in consequence of the existence of mobile elements, which elements excite it, and at the same time connect the several mental modifications which successively follow each other.

Of course, in order to establish a lasting connection between the several links of a series, it is necessary that the several members thereof should be repeatedly conjoined, that is, repeatedly pervaded and overspread by mobile elements, which end is realized by frequent repetition. Numerous series originate in this way. Every morning the sun rises, and every evening it sets. Thus follows day and night. Every month the moon regularly changes her phases, and each year brings forth in regular succession spring, summer, fall and winter. The little boy every day walks from his father's home to school, and the houses, streets, trees, etc., he passes on his way, are noted in regular order. How many other series are there we acquire by intentional exercises ! We need not wonder at the great multitude of series which gradually collect in the human mind.

In addition, one thing more ought to be taken into consideration. As all that has originated once in the soul need not be formed anew, we can easily understand why some persons catch a knowledge of some things seemingly without any effort, which with others requires a great deal of painstaking. The reason is that in the first case whole series and groups are already stored up, which enter as constituents moulded to the cast of the new knowledge. Their efforts can concentrate, therefore, upon what is merely new ; while in the second case those less mentally furnished have to acquire the whole of what is offered. For this reason it is much easier for one who speaks English to learn German, than for a Frenchman, because the German and English languages, being derived from a common stock, have great similarities. Just as easy is it to understand why, when we perceive an object from one side, we very often know already how it is shaped on its opposite side without the need of looking at it. We know

from former experiences that the trunk of a tree is round on all sides ; that most houses, the fronts of which only we see in the streets, have back buildings and yards, without the necessity of ascertaining this fact in every case by personal inspection, etc. It is a law *that all that has once been acquired need not be acquired the second time, but enters as a ready constituent into all combinations, if fit for it* ; just exactly as the tone A of the piano fits not only to make the accord A sharp and A flat, but is also a constituent of F sharp, D sharp, D flat, F flat, etc. The constituents best fitted for entering into all sorts of combinations are notions or general ideas in combinations that are flexible, being composed only of the similars of many special things. But the apperceptions also, although they correspond to one object only, have nevertheless many points in common with others, as the objects themselves, from which they are derived, have many similarities with each other. It will now also better be understood why there occurs the union of the several constituents of concepts, judgments and syllogisms. The union likewise takes place in consequence of the same connecting media, the mobile elements, which pervade the several constituents of these modifications during their co-existence in consciousness and combination in one whole. In this instance the attraction of like to like acts at the same time. We need not wonder that just such mental modifications attain the greatest durability.

40. SOME IMPORTANT SERIES.—CAUSE AND EFFECT.— END AND MEANS.

When we make fire in a stove, heat ensues. When it rains, the ground becomes wet. When we perceive an object frequently, our conception of it grows clearer ; and when in connection with a pleasurable modification a painful one is excited, and the mobile elements from the first flow to the latter, there originates an aversion. We have always found these results to follow, and never otherwise. Upon making fire in a stove, there always follows warmth ; after rain, the earth is always wet. We have here several series, each consisting

of two parts—two different mental modifications, which, by their being invariably repeated together, gradually grow into so firm a union that, so soon as the one is excited, the other also rises into consciousness.

Series like these, which, in consequence of processes following *invariably* one upon the other, either in the outer world or in the mind, we carefully distinguish from other series. We consider *each part a necessary constituent of the whole process*. We consider *the two constituents in a causal connection with each other*, and call the first the *cause* and the second the *effect*.

Mental modifications, standing in the relation of cause and effect, are, therefore, series which have originated in different processes, either in the outer world or in the mind, and have constantly and INVARIABLY followed one upon the other. We may call them *causal series*.

It will, however, be proper to mention here that not all sequences, which in the outer world follow invariably upon antecedents, stand in the relation of cause and effect. Of two stars, which regularly rise one after the other, is the first the cause of the rising of the second? Is night the effect of day, or summer the effect of spring, or winter the effect of fall? All these stand in mere relation of space and time, but not in that of cause. It is a mere *beside* and *after* one another, but no *by* or *through* each other. There exists an external, but no internal, connection between them. The discrimination between these two kinds of relations, in regard to the things of the outer world, is frequently very difficult to make, because in the outer world we observe merely appearances, which *may*, but *need not*, stand in an internal connection. It is different with the processes within our mind. In the mind everything that originates under a strictly causal relation manifests itself as thus induced. There is not, as in the outer world, a mere before and after, which alone of all external processes our senses are able to perceive; but we observe the processes themselves, by themselves, and exactly as they originate, out of one another. (Compare Beneke's "Psychologische Skizzen," vol. ii., p. 264, *et seq.*)

In reversing the above-mentioned series, so that we put first

the effect and after it the cause, they would read as follows: An aversion originates when, in connection with a pleasurable, a painful mental modification is excited, and the mobile elements from the first flow to the latter. The conception of an object grows so much the clearer the oftener we perceive it; the stove gets warm when we make fire in it, and the ground becomes wet when it rains. Such reversals of causal series take place frequently in the mind. They depend upon a reverse excitation and combination, of which, however, I cannot speak more explicitly here. The several constituents remain the same. (Compare Beneke's "Neue Psychologie," p. 221, *et seq.*, and Dressler's "Beiträge," vol. ii, p. 289.)

Now, then, to proceed, there rises in me the desire to have a warm stove, and immediately I become conscious that fire produces warmth. I want to get a clearer conception of a thing, and at once I know that repeated perceptions of that object would lead to it, and so on. In this manner I convert the effect into an *end*, and the cause into a *means* to obtain that end.

We may say, therefore, that mental modifications, which stand to each other in the relation of ends and means, are series, the constituents of which are the same as those of causal series, only reversed.

A special consideration is due to those series of ends and means by which our muscles come into play, that is, those primitive forces by which we are enabled to act with our body in the external world. So soon as the infant succeeds in grasping and bringing fruit to his mouth, that is, in using the motion of his arms as a means to obtain the fruit, he acquires with this act a vestige in his muscular forces, which enters into a combination with the conception of the fruit. The perception of another fruit excites again this muscular action. The child again reaches for it and again acquires a vestige of this motion, which unites with the first, so that, after repeated exercises, the child becomes quite expert in this kind of muscular action. The perception, desire and muscular motion grow by this repeated co-existence in consciousness into a lasting union, so that the latter is used as a means to obtain the end whenever it is desired and obtainable. In this

way all our various muscular actions and dexterities are acquired; and they all form more or less extensive connections with perceptions, desires or aversions, in consequence of which the former become the means for realizing the other, and thus is it that the mind becomes capable of acting through the body upon the outer world.

41. TO WISH AND TO WILL.

I want to have my room warm, because I feel cold. The chilly sensation creates a desire for warmth. Warmth, then, is the object I wish to obtain. What now will be the mental processes which must ensue in consequence of this desire? Desires consist mainly of primitive forces which retain predominantly their original conative power. To them other primitive forces join in preference, as to their similars (32), which not only increase the conative power of these striving forces, but spread also to those mental modifications which, by repeated co-existence in consciousness, have been joined in a lasting combination. When I, therefore, want to obtain the *end*—a warm room—these elements will necessarily excite into consciousness all those mental modifications which will serve as *means* to obtain that end. I shall, therefore, find (and every body else would experience the same) that they excite into consciousness the mental modifications of a stove, of wood, of coal, of matches, and of all the muscular actions necessary for the kindling of the fire; or if I had a servant, of the muscular motions necessary to call that servant. In short, I find my desire for warmth excites into consciousness the whole series of ends and means, by reversing the causal series “that fire makes warm.” But this is not all that is necessary to constitute a mental process in consequence of which I could say: I *will* have my room heated. Take, for example, the possibility that there were no stove in my room; or that I had no wood, or coal, or matches in my possession; or that by disease I were unable to kindle the fire, and had nobody to do it for me; could I then say, I *will* have my room heated? Surely not; I

could merely *wish* it. This is the difference: In order to *will* it, it is not sufficient that a correct series of ends and means should rise into consciousness. I must know also beforehand that these *means can be realized by me*. If I am, therefore, in the possession of all the means of kindling the fire, either myself or of having it done by somebody else, I may say: I *will* have my room heated. If, however, I cannot be convinced beforehand of the possible realization of my desire, I can only *wish* it. An act of *willing*, or a *volition*, is, therefore, quite a complicated mental process. It requires:

1. *A desire in connection with mobile primitive forces, which cause—*

2. *An excitation into consciousness of all the means by which the desired object may be obtained, and—*

3. *The full conviction, beforehand, that the desired object can be obtained by us, because we know ourselves in possession, not only of the means, but also of the ability to apply those means for that purpose.*

If we are in want of the third condition we may *wish* but cannot *will*. This is the difference between *wishing* and *willing*.

A few years ago no sane person could *will* to go to California within the space of seven days. To-day we can *will* it. Some years ago we could only *wish* to get news to us from Europe in the space of a few hours. To-day we can *will* it.

Writing requires certain dexterities. So soon as we have acquired those dexterities, we can *will* to write; but can these dexterities enable us to *will* to *draw*, to *play on the piano*, to *play the violin*, or to *dance*? Surely not. Each particular act of willing requires also a particular series of ends and means.

42. SIMILAR VOLITIONS COALESCE.—ACTION.

We know, from previous explanations, that all that originates in the mind, with at least some perfection, remains as vestiges; consequently acts of willing or volitions remain as vestiges also; and as we further know that *all similar elements coalesce*, so also must volitions, as they originate, one after the

other, coalesce with the vestiges of former similar volitions. However, this needs some explanation.

A volition consists of a *desire* and a *series of ends and means*. Now, these two constituents may and mostly have originated quite independently of each other. One may have a desire and also possess the series of ends and means by which to obtain the desired object, and yet there may not originate a volition in his mind, simply because these two constituents do not unite in consciousness. Of what use is it, if one has the desire to make an egg stand upon its end, if he does not remember, at the same time, that slightly cracking its top will accomplish his purpose? He may *wish* to accomplish this feat, like the professors of Salamanca; but Columbus could *will* it, as in him alone both the desire and the necessary series of ends and means had united in simultaneous consciousness. Now every boy can will it, because, having heard of it, both constituents of this volition have been united by a *connecting vestige* in consequence of their co-existence in consciousness. An actual volition, then, is a joining of a desire and its corresponding series of ends and means in one conscious act. Each repetition of such or a similar volition produces a new connecting vestige between its two constituents, and thus volitions develop, by repetition, into prompt and dexterous action, constituting that feature of man which we call practical. Action is the immediate result of desires or aversions, conjoined with the necessary series of ends and means. The firmer this junction between the two has been established, by repeated like or similar processes, the more readily will be the execution of such volitions—a most important point, which never ought to be lost sight of in the education of children. For, if these series of ends and means do not become excited with the desire, the effect is the same as if they were wanting, and a state of helplessness originates in the mind. “My dear father,” says Bonstetten, in his autobiography, “forbade all our servants to do things for me which I could do for myself. This soon gave me a feeling of independence, and made me find out many contrivances. In this independence I have remained all my life.”

43. THE WILL OF MAN.

The will is said to be the power of the mind of determining or deciding what it will do, and of putting forth volitions accordingly. This is rather a vague definition. If it means to consider the multifarious volitions in the abstract, it may be applied conditionally to the *developed* will; but it leaves entirely unexplained how this power originates and gradually grows in the mind, or in other words, of what this power actually consists. A clear exposition of its nature must also explain why the will can act contradictorily so often in one and the same person; why, for example, to-day it wills this and to-morrow something else; and why, in fickle-minded persons, it can change so often even in an hour, and frequently in opposite directions. To explain all these apparent difficulties and contradictions, we need only refer to what we have thus far elicited by our investigations.

We know that so soon as a desire is joined in consciousness by a corresponding series of ends and means, and we can be convinced beforehand of our ability to use these means to attain the end (in short, if we can, with conviction, expect the realization of our desire), we *will*; and if such similar processes are performed repeatedly, we gain a volition in this particular direction which remains as a vestige. If we now inquire how many such single volitions may have originated in a developed mind, we might find it a difficult task to determine their number, because each desire may, under the known conditions (41), result in an act of willing, and by a repetition become a volition, ready at any moment to be recalled into activity. We may surely say *that in the developed mind volitions have gradually originated* in great numbers. It is not difficult to prove this from history and from daily experience. When King Saul was pleased by David on account of his skilful playing on the harp and his courageous fight with Goliath, he would have him always about his person. Afterward, when Saul became much depressed in spirits, and the loud praise of the people roused suspicion in his mind against David, he intended to kill him. Later again, when Saul had experienced

the magnanimity of David in the cave, he ceased to pursue him, which quiet of mind, however, lasted only until new suspicions arose against David. We see that *in Saul's mind had originated various and opposite acts of willing or volitions*. This alternation of will we find to be more or less the case in all men. We are often surprised at finding a benevolent man acting harshly toward others, and a good and obedient child become all at once headstrong and contrary. The explanation of such contradictory mental states is simply this: *Acts of willing originate in desires* (41). *Desires are formed in great variety, according as this or another thing acts pleasantly upon us* (26). *It is no wonder, then, that acts of willing or volitions originate likewise in great variety, and that we frequently find volitions of an opposite nature in one and the same individual. All these various volitions, taken collectively, as they have gradually originated in the mind, constitute what we call the will of man.*

Man's will is, therefore, not at all a simple power, which can determine or decide what man will do, but is made up of quite numerous single volitions or acts of willing. Just exactly as the understanding consists of all the notions and ideas developed in the mind (17), and the power of judgment or reason of all the vestiges which have originated in the single acts of judging and inferring (18), so also is the *will of man the sum of the single acts of willing or volitions which gradually have been, and continually are, acquired in the way above stated, and which remain as vestiges in the mind*. Furthermore, we observe that the will grows stronger in proportion as the desires, by frequent repetition, assume the character of inclinations, propensities, and passions (29); provided these modifications have entered into an efficient connection with their corresponding series of ends and means; and also that it grows in extent in the proportion in which volitions originate under the known conditions.

Thus the will of man is continually growing, not only in power, but also in extent. It can never be considered as wholly finished or completed at any one time, and least so in the child. A power it can be called only *in abstracto*, as far as single acts of volitions have developed, and have remained

as vestiges in the mind. In reality it is the sum of all volitions actually existing in the mind.

It remains to be observed that *aversions* form also, to a large extent, part of the will. For, although an aversion consists in a striving *against*, and not, like a desire, in a striving *toward* something, 34 shows clearly that, notwithstanding this, the nature of both is the same, a manifestation of the conative power of the primitive forces. As aversions frequently combine with series of ends and means to keep off the displeasing objects, their relation with what is termed the will of man is quite obvious.

An excellent article "On the Nature and Development of the Will of Man," by Dressler, is found in *Diesterweg's Pädagogischen Jahrbuche auf 1861*.

44. SUMMARY.

I. *The primitive forces of the human soul.*

They are *conative* in their nature, because they are living soul. This conation is a tendency or striving toward repletion with corresponding external stimuli in general, but not a striving for special objects (24).

When the primitive forces are developed by pleasurable stimulation, their *general* conation is changed into a striving after stimuli of a special kind (in short, converted into a special *desire*). (26). How far other than pleasurable stimulation is capable of producing desires is demonstrated in 27.

Among the qualities of the primitive forces, *acuteness* and *vivacity* especially are most favorable for the formation of desires, while their *tenacity* rather tends to prevent such formations. Still a certain degree of it is quite indispensable for the formation of inclinations and passions (30). Upon the formation of *aversions* also, the qualities of the primitive forces bear the same influence (37).

So long as the primitive forces are not definitely changed by external stimuli, they are free and mobile—that is, capable of flowing to and combining with the developed mental modifications which they excite into consciousness. Thus originate

voluntary excitations in consciousness (30 and 31). If they are only partially modified, they also retain their mobility and cause *involuntary* excitation into consciousness (31).

II. *External stimuli.*

The quantitative relation of external stimuli to the primitive forces is of a five-fold nature, and may produce an *insufficient, full, pleasurable, satiating, or painful stimulation* (25). The vestiges of these various stimulations form the foundation of the various characters, moods, tempers, and peculiarities of the developed mind (25). According to their quantitative relation the external stimuli cause various kinds of development of the primitive forces; it is the most perfect by *full*, the least perfect by *painful stimulation* (25).

Only the *full* and *pleasurable* stimuli perfect the primitive forces. The other modes of stimulation exert a weakening influence. Thus originate *strong* and *weak modifications* (33); and we learn to consider things as either good or evil, according to their impressions upon us (38).

III. *The fundamental processes in the mind.*

1. *The transformation of primitive forces by external stimuli, which is an origination in the human soul of sensations and perceptions in consequence of impressions from the external world.* In short, all that once with some perfection has originated in the mind, remains as a vestige or vestiges. This law we have also found substantiated throughout the sphere of conation.

2. *The attraction of like to like, which is a constant union in the human soul of like with like and similar with similar.* This law shows its action in the fusion of single similar *desires* into *inclinations, propensities* and *passions* (29); of single similar *aversions* into *disinclinations, repugnance, and detestations* (36), and of single similar *acts of willing* into *volitions* (42). Of what does the will of man consist? How far does the will reach in extent (43)?

3. *The diffusion of mobile elements—a constant flowing of mobile elements from one mental modification to another, thus causing continual transmutation of our mental modifications from delitescence into conscious excitation, and vice versa* (32).

In consequence of this process originate *aversions*. How do aversions differ from desires (34)? Aversions are frequently attended with pain, and are then more violent than usual—painful emotions (35).

By the same process also originate combinations of dissimilar mental modifications into *groups and series*, the mobile elements constituting connecting vestiges between the single and dissimilar members (39).

Two of the most important series are those which constitute *cause and effect*, and *end and means* (40).

If, by the diffusion of mobile elements, a desire is joined with a series of ends and means, and if we can be convinced beforehand of the possible realization of our desire, we *will*. If, however, we cannot be convinced beforehand of the possible realization, we can merely *wish* (41). What is the will of man (42)?

The whole series of investigations has proven, like the previous series, that even the most complex of our mental acts, so far as we have considered them, originate from the same primitive forces and external stimuli, in consequence of the fundamental processes above stated. All desires, aversions, volitions, and acts of wishing, we have clearly traced to the primitive forces; all groups and series in their most varied combinations, all pleasurable and painful modifications, are also the result of the operation of external stimuli upon the primitive forces. Further investigations will enlarge our views still more in the same direction.

PART III.

THE EMOTIONAL SPHERE, OR SPHERE OF THE FEELINGS.

45. DURING OUR WAKING STATE THERE ARE ALWAYS TWO OR MORE MENTAL MODIFICATIONS, EITHER SIMULTANEOUSLY OR SUCCESSIVELY EXCITED INTO CONSCIOUSNESS.

This proposition is easily proved. While reading, for instance, the several ideas which the words represent are roused into consciousness, and frequently other ideas in addition. While engaged in conversation or listening to a lecture, all the ideas corresponding to the words heard rise into consciousness. Even while alone, with stillness and darkness around us, when no external stimuli act upon us, we may be, and usually are, full of thought. We often observe in such loneliness quite a tumultuous agitation of the mind, that may entirely prevent us from going to sleep, or may drive the timid almost to despair. It might be difficult to always define the number of mental modifications arising in quick succession in consciousness, or the velocity with which they follow one upon the other. The velocity of thought depends upon the degree of vivacity of the primitive forces; and, as vivacity varies in different persons, the rapidity of excitation in consciousness necessarily varies. Attempts to define the velocity of thought in numbers can give, therefore, only approximate results. Still, time is required for the excitation of vestiges into consciousness, and in some persons it takes so long that their best thoughts become after-thoughts; while, in

others, the most complex mental processes often roll off with astonishing celerity. In the quiet hours of life, which are by far the most numerous, we do not observe such hasty rushing of mental modifications. The modifications then take a more even and quiet course. But we always find, if we pay any attention at all to what happens in the mind, *that the excitation into consciousness is never confined to one modification alone, but extends over several, either simultaneously or successively.*

46. ALL MENTAL MODIFICATIONS DIFFER MORE OR LESS FROM EACH OTHER.

“Whenever a sufficient number of similar vestiges have united for us to have a clear consciousness of the object from which the external elements were obtained—although the external object be no longer present—we have a conception of that object” (10). This union of similar vestiges belongs to all conceptions. But the conception we have of a *red* color has originated from altogether different stimuli than the one we have of the *green*; and the conception of the *word* “green” has again originated, not only from different external stimuli (stimuli of sound), but also in different primitive forces (those of hearing). The conception of “hard,” again, has its origin in the primitive forces of touch and external stimuli corresponding thereto, etc. So far we may say that all our conceptions differ more or less from each other. We may trace this difference still farther. No two conceptions will consist of exactly the same number of vestiges, neither will the quantum of external stimuli, by which they have been formed, ever be alike, one having grown out of full, another out of nearly full, another out of pleasurable stimulations, etc.; and this difference in genesis necessarily gives each mental modification a different character.

Concepts, judgments and inferences originate from single perceptions and conceptions. If, now, as we have seen, all conceptions differ greatly from each other, it is easy to conceive that the more complex mental modifications, which have grown out of the conceptions, must have still greater mutual

difference. All concepts are *similar* only so far as they are a combination of the similar elements of different perceptions (or conceptions) in one act of consciousness (15). Concepts differ, however, in many respects. One has originated from one kind, another from a different kind of stimuli; one out of a great number of single perceptions, another out of a few; one out of perceptions which are characterized by great richness of external stimuli, another out of perceptions of an opposite nature. The same holds good as regards judgments and syllogisms. If we compare single *desires*, we find that they *correspond* with each other so far as they arise from pleasurable stimulations (26). But a merely superficial consideration of their formation must teach, that the transformation of primitive forces into desires will take place with some on a larger, with others on a smaller scale; that with some it will go on rapidly, and with others slowly, and thus cause great variety among the single desires. We must also add that two desires must necessarily differ in the object they strive for, and that each one may have grown out of different quantitative relations between the external stimuli and the primitive forces (25).

In regard to *aversions* the same is true (34, 35), as the various quantitative relations cause still greater variations between them. It is also true of *inclinations*, *repugnancies*, *passions*, etc. They are still more complex modifications. This fact gives room for the greatest variety in the quantity and quality of their vestiges.

An act of *will* always requires a desire (41). If, now, all desires differ from each other, then the difference between single acts of willing must be still greater, because each single act of will requires also its special series of ends and means (41).

These facts prove clearly *that all our mental modifications differ more or less from each other*. There are, in fact, no two modifications which can be considered entirely alike. Indeed, if they were alike they would cease to be *two*, as, by the law of attraction of like to like, the two would fuse into one (9). Not only must they differ in regard to the external stimuli (their objective side), and in regard to the primitive forces

(their subjective side), which are differently developed by the various quantitative relations of external stimuli (25), but also in regard to the number of vestiges of which they consist (in accordance with which some are stronger, clearer, etc., than others). We find a similar diversity among objects in the external world. Among the billions of things there are no two which can be considered entirely alike.

47. WHEN TWO OR MORE MENTAL MODIFICATIONS ARE PRESENT TOGETHER IN CONSCIOUSNESS, WE IMMEDIATELY BECOME CONSCIOUS OF THEIR DIFFERENCE.—FEELINGS.

a. When we go out of a close room into the fresh air we feel refreshed.

b. When, on the other hand, we enter another room just as close as the one we have left, or go from the fresh air into the fresh air, we have no such feeling. How is this to be explained? Analyzing these cases we find (1) that in both there are two mental modifications excited into consciousness—namely, in *a*, the perceptions of closeness of the atmosphere and fresh air; in *b*, the perceptions of closeness of the atmosphere and closeness of atmosphere, or fresh air and fresh air; (2) that in *a* there is a great *difference* between the two perceptions simultaneously excited; in *b* there is no such difference; and (3) that in *a* we feel refreshed, in *b* not. Why did this feeling originate in *a* and no feeling originate in *b*? There was not the slightest hindrance in the latter case, nor the slightest additional proceeding in either case. There was in *a* simply a perception of “fresh air,” excited in close conjunction with a perception of “close air,” and we would become conscious of the difference at once. To express it otherwise, with the consciousness of the two different perceptions we had immediately a *third* perception: *The feeling—i. e., the consciousness—of the difference*, which necessarily was a feeling of refreshment, because in this property fresh air differs from close air, and only from close air; for in *b* there were likewise two perceptions excited into consciousness, and still there was no distinct feeling springing

from them. The reason is obvious. Consciousness can discover no *difference* between the two. All like and similar modifications must coalesce into *one*, according to the law of the attraction of like to like (9), and therefore no *feeling* can originate.

We come thus to this conclusion : *A feeling can originate only when several (at least two) mental modifications which differ from each other are excited into consciousness, either simultaneously or in quick succession. This difference is immediately and of itself presented to our consciousness ; and it is just this immediate and concomitant consciousness of the difference between mental modifications, simultaneously excited, that we call a feeling.*

Like modifications produce no feelings, neither do like sensations ; they simply remain what they are.

It is clear that the word "*feeling*" is here used in an entirely different sense from that in which it was used in 1. There "*feeling*" designates some classes of primitive forces ; here it means what some psychological writers have also termed *sensibility*. I do not think this latter word an improvement. The Anglo-Saxon term "*feeling*" is decidedly the better, since the psychological result is surely a feeling. A consciousness of the difference between several mental modifications has nothing to do with the senses.

48. FACTORS OF FEELINGS.

A feeling can originate only when diverse (at least two) mental modifications are excited into consciousness, either simultaneously or in quick succession (47).

Let us think of a man vividly impressed by his present circumstances, and let these circumstances be the urgent need of money. So long as these modifications alone are excited in his consciousness, he will undoubtedly have no painful perception of his state, as we, indeed, find thousands of people live contentedly year in year out under just such conditions. We say: "They don't know any better," and this opinion contains a great deal of truth. Take the case differently, and suppose the man above mentioned has formerly lived in

better circumstances, that he therefore knows of better circumstances, and we shall find that he cannot help bringing his former better circumstances (pleasurable excitations) into a simultaneous consciousness with his present poor circumstances (painful excitations). What will be the consequence? Contentedness will vanish; he will have *a feeling of pain*. This feeling originates simply in this way: He measures, if I may figuratively express it, his present circumstances with those he formerly enjoyed, and thus becomes aware of the difference of the two conditions during their co-existence in consciousness.

For better understanding we may call the modifications in which others are measured, the *basis of an act of feeling*, or the *measure* by which the difference is felt. In the above instance the recollection of former better times is, therefore, the basis or measure by which the present poor circumstances are measured, or with which they are compared. Both the *measure* and the *measured*—that is, the basis, and what has been felt, measured or compared on this basis—are the *factors* or *elements of an act of feeling*. They need not, however, be always a consciousness of a single perception, as cited in the first example of close and fresh air. Complex mental modifications produce the same effect so soon as they are measurable or comparable.

Let us, for the sake of further explanation, suppose that the man above mentioned has regained a state of prosperity. What will now be his feelings? We may mark out three different possibilities:

1. The consciousness of his former *better* circumstances forms the basis on which the recent prosperous condition is measured. As the difference between the two is not great, the recent lucky turn cannot produce a very marked feeling. It will leave him in quiet content.

2. The consciousness of his former *poor* circumstances forms the basis on which his present prosperous condition is measured. This will undoubtedly cause a feeling of *joy*, inasmuch as his present condition is a pleasurable excitation compared with the former.

3. His present prosperous condition remains latent in consciousness, and his *former* prosperous state rises as a basis for comparison with the poverty that followed. In this case he will have the same feeling of pain that he had before. This pain fastened to the past is common even in a prosperous condition. Why? Because in the time of his suffering, both his former prosperous condition and his following poor one rose so frequently into consciousness, that they became bound together by mobile elements into *groups or series* (38). *So long as this connection lasts, it will produce the identical feeling to which it first gave rise.* With some persons this feeling, never having been very strong, does not seem to have a protracted duration; and their present happy time occupies so entirely their thoughts, that their former condition can rise but faintly into consciousness. By and by the combination in consciousness between their former prosperous and their following poor condition dissolves altogether, the single factors are drawn into other combinations, and thus the old *feeling of pain* ceases entirely.

We may say, therefore, *that a feeling endures only so long as its factors remain combined in groups or series.* When, however, *the simultaneous consciousness of the factors—the measure and the measured—is interfered with, or the connection between the two is broken, the feeling, which is the consciousness of the difference between the two, must likewise cease.* Thus we come to the very important fact that *feelings* differ materially from *conceptions* and *conations*. *The latter, both of them, endure as independent vestiges. The feelings, however, endure only so far as their factors have become united by mobile elements into firm groups or series; for they consist, as we have seen, only in the consciousness of the difference between the several mental modifications during their conscious excitation.* Thus it follows that *feelings* are not a new kind of mental modification, but only a *particular mode of consciousness*—a consciousness of the difference between diverse modifications, so long as they are in a state of co-excitation. The one acts then as a basis upon which the other is lifted into the foreground. As in a picture, the prominent parts appear as such only because of the surrounding shades. That modi-

fication which acts as basis—the measure—is usually the least prominent in consciousness; but that which is measured is foremost in consciousness, and this gives rise to the feeling. We find, therefore, that a white object appears still whiter beside a less white object; and so a pleasurable stimulation is felt in a higher degree when it co-exists with a less pleasurable modification. If both modifications are excited with equal strength, each of them may produce a separate feeling, in so far as each may act as basis for the other; or both may produce a mixed feeling, so far as neither is taken as a distinctive basis. Thus we frequently have a feeling of joy mingled with grief, or feel pleasure and pain following each other alternately.

Now that we understand the nature of feelings, their great variability according to the continual change of mental modifications in consciousness, by which new groups and series perpetually originate, it may be easily understood why in the old psychologies there is such a confusion in regard to these mental phenomena. Some psychologists deny them the rank of a separate class of mental powers, while others (since Kant) give them the same rank with cognitions and conations. Still more confused we find the attempts to classify them. Although a great deal of labor has been spent upon the elucidation of feelings, nowhere do we find an analysis which even approximately demonstrates what they consist of and by what mental processes they originate. This work has been performed by Beneke, and the following will prove still more how wonderfully keen his observations were in solving the most obscure mental phenomena.

49. EXTENT OF THE FEELINGS—THEIR FRESHNESS OR VIVIDNESS.

During our waking state there are always several mental modifications, either simultaneously or successively, in a state of excitation (45), and all mental modifications differ more or less from each other (46). If now, as has been shown in 47, we immediately become conscious of the difference between mental modifications which are excited simultaneously into consciousness, it follows that we cannot be without feelings for

a single moment of our life. Is this confirmed by experience? Seemingly not. What particular feeling has the reader while perusing these pages, where a great number of different mental modifications have risen into consciousness? If he considers this question superficially, he will answer "None." Indeed, this is a case where modifications rise into consciousness, which are neither of a pleasurable nor of a painful character, as is the case with our ordinary conceptions. This is natural enough, for where there is no marked difference between the single modifications, there, of course, cannot arise a consciousness of any; or, in other words, we cannot have a marked feeling of a difference during the consciousness of modifications between which there is no marked difference. Still, even at times similar to the illustration, we are not entirely without feeling. This is necessary; for if there be a difference, ever so small, this difference must be felt, and a closer observation makes it evident. We find that when a concept is excited in conjunction with a perception, we have a *feeling* of greater clearness; for just by its greater clearness the concept differs from a mere perception (16); and if some new ideas have been presented to our mind, we have the *feeling* of their newness. It is equally true that no one can mistake a perception for a desire, a desire for an aversion, a recollection for a perception, determination for fickle-mindedness, courage for fear, etc., because the difference of all these modifications makes itself felt immediately. Although, in the language of common life, only *manifestations of the more marked and striking differences* are called *feelings*, a closer observation must also assign those manifestations which have less marked differences to the class of feelings. We find, therefore, that this class of mental developments extends as far as there are any manifestations of difference between simultaneously excited mental modifications. Of course the difference between the feelings as regards their *strength* is very obvious. Some are stronger than others. Some feelings are often so little marked that their character to the superficial observer as feelings is lost altogether.

He who always enjoys health does not usually esteem its

value. After a spell of sickness, however, he feels quite differently about it. The rich man does not value the gain of a few dollars, while such a gain would delight a poor man. All feelings concur in this: *The greater the difference between modifications simultaneously excited, the stronger, fresher, or more vivid is the feeling; while the less this difference, the weaker or fainter is the feeling*; or, as it might otherwise be expressed, *the greater the difference between mental modifications simultaneously excited, the greater is the vividness with which this difference manifests itself.*

50. THE SAME MENTAL PROCESS MAY BE CONCEPTION, DESIRE AND FEELING AT THE SAME TIME.

Suppose we see a fine picture or hear a good piece of music. In both cases we gain a conception of what we see or hear. At the same time we are pleasurably excited by sight or hearing, because the impressions we realize from the picture or the music are of a richer nature than the other things we see or hear at that time. This difference at once manifests itself in a corresponding *feeling of pleasure*. If, now, the picture be carried away or the music cease, it is quite natural that we should want to look at the picture once more, or to have the music repeated; proving that the primitive forces have retained some of their conative power, which now is converted into a desire for these special stimulants. The seeing of the picture or the hearing of a piece of music has had, therefore, the following three-fold effect upon us: (1) *So far as the primitive forces have been definitely changed by the external stimuli, a conception has originated of what we have seen or heard*; (2) *as this conception differed from the other conscious mental modifications we happened to have at that time, this difference manifested itself immediately as a feeling*; and (3) *as the primitive forces retained their conative power, a desire has originated for a renewal of the same impressions*. Thus we see that the same mental process—the seeing of a picture or the hearing of a piece of music—may result in a conception, a feeling, and a desire at the same time. This is quite frequently the case.

We have seen in 28 that an act of desire is at the same time

an act of conception. In order that the same act may be also one of feeling, nothing is required but the co-existence of other modifications in consciousness, from which it differs. The immediate manifestation of this difference is the *feeling*. If, for instance, I *desire* an apple, I have, at the same time, a *conception* of it, and so far as an apple, compared with many other eatables, has caused in me a fuller stimulation, this conception manifests itself as a pleasurable *feeling*. We see thus that the same mental process can be of a three-fold nature—a conception, a desire, and a feeling. Usually one of these forms preponderates more or less over the others. Conception, desire, and feeling are, therefore, only three different forms of one and the same mental process. They originate in the same primitive forces and stimuli. The form of feeling requires merely the co-existence of other mental modifications in consciousness, as a basis whereupon the present impression can be measured.

51. FEELINGS OF PLEASURE AND PAIN.—DIFFERENCE BETWEEN SENSATION, FEELING AND PERCEPTION.

When external stimuli act in greater abundance upon the primitive forces than the latter require for their development, we have an immediate *feeling of pleasure* (25). We can now see *why* this must be so. The present plentiful stimulation follows or meets in consciousness other modifications of a less pleasurable character, which act as a basis upon which it is measured. The greater agitation of the primitive forces caused by this abundance of external stimuli, compared with but ordinary developments, manifests itself as a *feeling of pleasure*. This is the *difference* between them.

Now, there are also pleasurable *sensations*. What is the difference between them and *pleasurable feelings*? *Sensations* are understood by the new psychology only as *simple actions of the senses*, where unmodified primitive forces are acted upon by corresponding external stimuli, without the accession of similar vestiges previously acquired. Such an act is almost without consciousness, as we observe in the new-born child. Only

by repeated actions of similar external stimuli upon corresponding primitive forces, and the union of their vestiges into homogeneous aggregates, does the full consciousness of the same originate (9, 10) and the mind become gradually enriched with a great number of conscious modifications. But even then new impressions of external stimuli continue to act upon single corresponding primitive forces, and these acts would, indeed, continue to be mere obscure sensations through life, if it were not for the accumulated similar vestiges which are excited with each successive sensation, thus augmenting the embryonic consciousness of the mere sensation and converting it into a full conscious *perception* (12).

We may say, therefore, that *perceptions are sensations which receive their full consciousness from the aggregates of similar vestiges previously acquired*. In short, *perceptions are multiplied sensations*. Consider this course of reasoning with reference to *pleasurable* sensations also. Pleasurable sensations differ from non-pleasurable only in this: They originate in a fuller afflux of external stimuli (25). If, now, the present pleasurable sensation excites the vestiges of former similar pleasurable stimulations, it at once partakes of the degree of consciousness which is a property of these multiple vestiges, and thus becomes converted into a pleasurable *perception*. Now, if at the same time as such an act of pleasurable sensation occurs, other non-pleasurable modifications are likewise present in consciousness, the latter will serve as basis for comparison between them and the higher excitation of the pleasurable perception. The abundance of external stimuli will become manifest as a pleasurable *feeling*.

There is, then, between a sensation of pleasure and a *perception* of pleasure, no other difference than that which exists between a sensation and a perception in general. The pleasurable *sensation* is a single act of union between abundant external stimuli and corresponding primitive forces. As such it is already a *feeling*, although of the very faintest kind, a feeling in degree corresponding to its elementary consciousness. The *perception* of pleasure, on the contrary, is a full, conscious modification during advanced development, such as at

the commencement of mental life never exists. Only by repeated pleasurable sensations do pleasurable perceptions originate; and they produce actual *feelings* of pleasure only by the above-explained measurement or comparison with other mental modifications. In the new-born soul all sensorial activities are, therefore, sensations; while in the developed mind they result in perceptions and feelings. But even in the developed mind such sensations, no doubt, take place, since their similar vestiges are not in all instances excited into consciousness. This is the case especially when we receive entirely new impressions, or where the impressions are of a very fleeting character, or where the consciousness is concentrated upon other subjects. These sensations endure, as we shall see in 70, in their elementary character.

In common language the concepts *sensation*, *perception* and *feeling* (of pleasure) are usually confounded. All that manifests itself either as pleasure or pain is called, indiscriminately, sensation or feeling. Such an ambiguous use of words ought to be confined, however, only to manifestations in the lower senses. Here it might be admissible to speak of sensations, because none of the modifications arising in these senses ever attain a very great clearness (8). Their reproductions are always obscure, and therefore might be designated by either term indifferently.

In paragraph 38, and in other places, it has been shown that in reality there is no line of demarcation between the quantum of external stimuli constituting a full or a pleasurable stimulation. We cannot say that just so much external stimuli produce a full, and just so much produce a pleasurable, stimulation. From this fact it follows that there must also exist a great difference between the different *pleasurable* feelings; and this truth is already indicated by the different expressions we have to signify different degrees of pleasurable feelings, such as: "Pleasure, joy, delight, rapture, enchantment, ecstasy," etc.

The mode by which pleasurable sensations are converted into feelings, is the same by which all other sensations take the same form. Where the quantum of external stimuli is

too *scanty* for the capacity of the primitive forces, we have forces side by side which are partly developed and partly not. This of itself must cause a sensation of non-satisfaction. But when this insufficient stimulation, and the vestiges of former similar insufficient stimulations, are aroused into consciousness (as is usually the case), and at the same time also modifications of fuller stimulations, with which they can be measured, then the mere *sensation* will at once be converted into a decided *feeling* of non-satisfaction.

In cases of satiating stimulation we feel the increase of external stimuli in its relation to the primitive forces as a gradual over-stimulation, causing a sensation of *satiety* or *loathing*. If, however, as is usually the case, this sensation excites the vestiges of previous similar stimulations, and is measured upon the basis of other more perfect modifications existing in consciousness at the same time, we have a clear *feeling* of satiety or loathing. Lastly, in cases where the primitive forces are suddenly overwhelmed by too great a quantum of external stimuli, we have a feeling of *pain*, which becomes stronger in proportion as more numerous similar vestiges are drawn into the process, and are measured on more perfect modifications excited at the same time. Simple irritation of primitive forces causes only a dull sensation of pain.

The feelings of non-satisfaction, satiety and pain, may be comprised under the general term "feelings of *pain*," and their opposites under the term "feelings of *pleasure*." In this nomenclature we take the word "pain" in its widest sense. What we have said of the pleasurable feelings, is equally applicable to feelings of pain. They have within themselves no sharp line of demarcation. They gradually merge into one another, and it is possible that a *weak* painful feeling, in the presence of one more powerful, may lose entirely its painful character, "*dolor dolorem solvit*," or may be felt even as pleasure.

We see thus that the difference between pleasure and pain, as with other mental modifications, arises for the most part from the peculiar development which the primitive forces receive from the varied quantitative relation of the external

stimuli to them. This varied development of the primitive forces endures as independent vestiges, and forms their *peculiar pleasurable or painful character*, a kind of development which, by the law of the attraction of like to like, grows gradually into conscious modifications, and these, in the presence of other measurable modifications, produce actual *feelings* of pleasure or pain. A *conscious* feeling would not be possible without these peculiar fundamental developments of the primitive forces—that is, without that peculiar painful or pleasurable character which they have received from the varied quantitative relations of the external stimuli. It is this varied quantitative relation of the external stimuli that constitutes the basis of all kinds of moods, dispositions and characters of the developed mind.

52. THE SAME STIMULATION DOES NOT ALWAYS CAUSE THE SAME FEELING.

Some patients cannot bear the common light of day, or the sound of ordinary talking, or even the touch of the bedclothes. Why is this? The stimuli cannot be the cause, or other people would be equally affected by them. The reason must be looked for in a peculiar *condition* of the patient's *primitive forces*. These forces are undoubtedly weakened by disease, or, what is perhaps the most frequent occurrence in such cases, the bodily organs are diseased, and in these organs, that is in the lowest or vital senses, originate the painful sensations. That this explanation is the true one, we see when the patient becomes well—that is, when the primitive forces of the higher or of the vital senses have regained their normal energy. The same stimuli in health do not cause the over-stimulation noticed in disease. *Whether, therefore, this feeling or another be caused by the same stimuli, depends, 1, upon the condition of the primitive forces and their sensory organs.*

Furthermore. When a poor man has a chance to satisfy his hunger with a frugal meal, it causes a decided pleasurable feeling in him; another, who is accustomed to a daily rich table, might feel rather disappointed by such a style of fare.

One who is brought up in a large city is little affected by the beautiful signs, show windows, statues, etc., he sees every day, while the country boy, coming to town for the first time, is almost stunned by the new impressions he receives. The stimuli cannot be the cause of this difference. The stimuli are the same for both parties. Neither can it be the *primitive forces*, for in both we suppose them to be in a natural condition. The cause must lie, therefore, in something else.

When the poor man satisfies his appetite, he compares his present impressions with those he has received from his usual poorer quality of food, and in the comparison the present impressions are of a much more agreeable nature, and as such they manifest themselves immediately as a feeling of pleasure. The rich man, on the contrary, measures the impressions of a frugal meal with impressions derived from meals of richer quality, and, finding thus his present fare rather "inferior" to his accustomed mode of living, has immediately a feeling of dissatisfaction. The same is the case with the boys of city and of country breeding. The impressions which the country boy receives on coming to town differ greatly in splendor from those received in the village or on the farm, and the immediate consciousness of this difference constitutes his feeling of astonishment; while to the city boy all these splendid things are old acquaintances. There is no difference in the usual impressions, and, therefore, no particular feeling of astonishment.

We shall find this peculiarity true in other cases. The kind of feeling impressions are capable of producing depends entirely upon *the kind of mental modifications with which they are brought into conscious co-existence*. Another basis, or another measure for the same impressions, gives another measurement, and thus a different feeling. Thus we find as causes for different feelings aroused by the same impressions: 1, *the condition of the primitive forces*; and, 2, *the co-existent mental modifications with which the impressions are measured*—other measures, other measurements, *id est*, other feelings. The measure or basis, it will be observed, is in all cases the least conscious modification; the measured new impressions are the most prominent in consciousness and condition the feeling (48).

In this way only is it conceivable that the same object can produce at one time a pleasurable, and at another time a painful feeling.

53. FEELINGS OF THE AGREEABLE, OF THE BEAUTIFUL, AND THE SUBLIME.—THEIR PROXIMATE FACTORS.

To originate agreeable, beautiful or sublime feelings, a pleasurable stimulation is always required. An abundance of external stimuli alone is not sufficient to produce them. There are required also, as we shall presently see, certain qualities of the primitive forces, and to these qualities a cultivated mind must add its acquired treasures to form fully the feelings of the beautiful and the sublime.

When a lively piece of music is played; when the vivid colors of a picture or a bouquet strike our eyes; when sweet odors in spring scent the atmosphere; when we partake of a richer dinner than usual—we feel pleasurably excited. When dazzling lightning cleaves the dark clouds, and rolling thunder shakes the earth; when the whole ocean seems in uproar, and dashes its waves against the rock-bound coast; when on a clear night we look up to the firmament and see worlds upon worlds in the immeasurable space—we likewise feel pleasurably excited.

But the difference between these feelings is vast. We call the first *agreeable*, the latter *sublime*. What, then, is the essential character of each constituting this difference?

If we at present dismiss the consideration of the elements that must be educed from the mind itself for the formation of feelings of the sublime, we see at a glance, that in the instances of the first order the excitants are of a *light and vivid* nature, which require for their reception nothing but a sufficient degree of *vivacity* and *acuteness* of the primitive forces. In order, however, that these vivid impressions may result not merely in *obscure sensations*, it is necessary that they should find vestiges of former similar impressions, in order to attain the character of *conscious perceptions* (50).

In the instances of the second order we find the excitants of

a much graver, more comprehensive nature; they act, therefore, in a much weightier, steadier and *slower* manner upon the primitive forces. Such excitants require *greater energy* of the primitive forces to support and receive them; and that such impressions should result not merely in obscure sensations, but in full conscious perceptions, there is required, as in the former case, an excitation of similar impressions previously received (51).

Furthermore, when the setting sun clothes the sky in purple, or the splendid colors of light appear on the sky as a rainbow; when a fine country scene spreads before our eyes, with villages, woods and lakes intermingled; when we listen to a finely executed opera of Beethoven, Mozart, etc.—we are also pleasantly affected. But we do not call the feelings produced thereby agreeable or sublime, we call them *beautiful*.

Here, too, as in the above instances, the addition of similar vestiges to the present impressions is necessary to make them full, conscious acts. The excitants, however, are neither so light as in the instances of the agreeable, nor so grave and weighty as in the instances of the sublime. They stand, so to speak, between them; act vividly, steadily, and energetically; and require, therefore, for a thorough reception, primitive forces of correspondingly sufficient *vividness* and *energy*.

From this explanation we may learn the following two things: 1. Animals may and do have sensations of the *agreeable*, but never attain to feelings of the *beautiful* or *sublime* (although the same stimulants act upon them as upon man), because their primitive forces lack the energy necessary to retain a definite development as independent vestiges. It is by the simultaneous excitation of the external stimuli, and vestiges shedding all their concentrated light upon the present impressions, that a simple percipient act is elevated in man to a full, conscious act. As, however, animals often possess the qualities of acuteness and vividness in a very high degree, they undoubtedly are capable of forming various *sensations of the agreeable*, as daily observation teaches. 2. In man we have observed (3) that the lower senses lack energy, and thus it is intelligible why we never form the feelings of the beautiful or

the sublime in the sphere of smell, taste or vital senses. "A beautiful smell" is an exaggeration, and we never speak of a "sublime taste." But the feelings of the agreeable are very common in these senses.

The feelings of the beautiful and sublime are called "*æsthetic feelings*," and from our former reasoning it is clear that only man, and in his higher senses, is capable of an æsthetic development.

As one and the same mental act (compare 50) may be at the same time an act of conception, conation and feeling (the one or the other preponderating), it is clear that the feelings of the beautiful and sublime, of which we have spoken, are pleasurable conceptions (27), which have their root in the qualities of the primitive forces and their peculiar development in a certain quantitative relation of external stimuli to them.

54. THE REMOTE FACTORS OF THE ÆSTHETIC FEELINGS.

Thus far we have explained the origin of the feelings of the beautiful and sublime (æsthetic feelings) only superficially. We have yet to answer the following questions: What is the real nature of these feelings? Why do some persons remain entirely indifferent to the presence of a beautiful or sublime object? Why is it that the same æsthetic feelings are produced by objects so different? Why do feelings of the sublime originate in some persons more easily than feelings of the agreeable?

1. Suppose we have a violet before us, and because it has bloomed in such a quiet and hidden way we feel disposed to give it the attribute of modesty. It is clear that in this case we have ascribed to the violet something which, in fact, is derived from *our own spiritual being*. For whether the violet really is modest we do not know. But this much is certain, the nettle we would not call modest. We would rather feel inclined to call it impertinent, as it answers the slightest approach by a sting. Is the rose, the symbol of love, really inspired with that sentiment? Is the lily innocent? The

tulip haughty? We do not know. But the impression we receive from these flowers is of such a nature that it rouses in us the conception and feeling of such attributes, and the disposition to imagine these objects as possessed of such qualities, because their exterior, by its kind of impression upon us, corresponds with an *interior of our own*, and this we *lend them, ascribe to them*. We thus take a deeper view of them, inspire them with our own feelings and dispositions. We do this when we look upon the oak as an image of strength, upon the rock in the ocean as an image of constancy, upon the flowing stream as an image of the fleetness of human life, upon a ruin as the image of the transitoriness of earthly splendor, etc.

In looking at things merely as they appear to our senses, we receive only sensorial impressions, which may be agreeable or disagreeable. When we, however, underlie these sensorial impressions with feelings and dispositions of our own mental life, as in the foregoing instances; when we thus deepen our views by transferring *our interior life to external objects*, we then consider them *æsthetically*. We then penetrate, so to speak, beyond their exterior, and mentally translate them as they might be in their peculiar interior constitution. Now, all which, by this combination of external and internal views, is capable of producing in us a mild, gentle pleasure, as the rose and the lily, fine country scenery, etc., we call *beautiful*; while all which, by a more energetic projection of our personality, causes an intenser feeling of pleasure, like the rock in the ocean, the starry heavens, thunder and lightning, etc., we call *sublime*. In the first instance our primitive forces are pleasurably excited; in the second they are energetically exalted. This is the real nature of the *æsthetic feelings*.

2. What kind of persons will remain indifferent in presence of beautiful and sublime objects? Such as are not developed sufficiently to be capable of underlaying sensorial impressions with feelings and dispositions of their own, as children and uneducated people. Children perceive only by the senses. The modifications of modesty, constancy, and innocence, have not developed into consciousness, and cannot, therefore, be combined with the mere sensorial perception of the violet,

rock, lily, etc.; consequently these impressions remain merely as agreeable, and do not attain the character of beauty or sublimity. Uneducated persons may possess these modifications, but having never been led or trained to underlie their sensorial perceptions with personal attributes, they cannot experience feelings of the beautiful and sublime, and remain, therefore, indifferent, or at best only agreeably excited, in the presence of beautiful and sublime objects. They are *æsthetically* uneducated, for without special spiritual culture the appreciation of beauty and sublimity remains undeveloped.

3. Why is it that the same æsthetic feelings are produced by objects so different? According to 49 we know that for the production of a feeling there is a basis or measure required, whereupon a given impression can be measured. If this basis be altered, the feeling will be correspondingly altered—other measures, other measurements (52). Now, in consequence of the development of man, his earlier measures must necessarily change in the course of time. The pictures, poems, pieces of music, etc., which we considered beautiful when young, do not come up to the more perfect types we attain by advancing education. The pictures, etc., which delighted our boyhood, are now measured upon a basis so different that we wonder how it was ever possible for us to have found them beautiful. The *things* have not changed, our *ideals* have changed. The little girl imagines herself smiled upon by her doll, because she transfers her own happy state to it. A young lady of twenty has gained, through her knowledge of men and affairs, a measure altogether different—stands upon a higher plane—and this prevents her from transferring her devotions to a lifeless doll. However charming its expression may be, she cannot imagine the smiling face as endowed with life, and therefore it ceases to be an object of beauty. Now we can understand why feelings of the beautiful and sublime may originate in different persons, even in the same person at different ages, from quite different objects; and also why the same objects, although unchanged, lose their character of beauty and sublimity as the mind advances in culture. Persons who are charmed with works of a low artistic nature, and who do not

appreciate those of higher value, show that they are still on a low plane of mental culture.

4. Why in some persons do feelings of the sublime originate more easily than feelings of the agreeable?

Feelings of the sublime are never found in persons with weak and dull primitive forces. This formation requires a high degree of energy and acuteness (53). He who is in possession of such qualities will naturally acquire a rich, deep and energetic mental development. Upon the basis of such highly developed mental modifications, mere sensorial impressions will be felt as flat and common; and thus the feelings of the agreeable, which in such cases would originate in less strongly developed minds, cannot come into existence. When, however, on the contrary, such minds are acted upon by objects which, in consequence either of the kind or the abundance of their excitants, correspond to this elevated state of mind, a substratum of suitable modifications will be present, and feelings of the sublime will originate readily. Agreeable feelings we find, therefore, most predominant in children and persons not of very strong capacities, inasmuch as vivid and acute primitive forces are sufficient for their formation. By a corresponding mental development, however, in consequence of a certain degree of energy of their primitive forces, persons of lesser capacity will also attain to feelings of the beautiful and sublime in their way. This beauty and sublimity, however, will be of a lower grade compared to that which develops itself in deeper minds, to whom the beauties and sublimities of the former must appear rather flat and imperfect. Still it is a necessary mental development in either case, and confirms only the truth of the old proverb: *De gustibus non est disputandum*.

Impressions acting overwhelmingly, as for instance, those produced by a heavy thunder-storm, may and do prevent in some persons the formation of æsthetic feelings altogether. Such impressions, which by their violence are capable of producing in the strong mind the sublime feeling of greatness and power, waken in the weak the consciousness of their own helplessness to such a degree as to fill the soul with fear and terror.

Condensing the above-given explanations, we may re-state briefly the points as follows:

1. Æsthetic feelings are the result of external impressions and internal developments. They originate in this way: Not satisfied with the mere external appearance of things, we try to penetrate into their inner being and life, by transferring our interior into theirs; *id est*, we imagine their inner being and life analogous to ours, and thus spiritualize mere sensorial impressions.

2. Such translations must be done correctly, that is, we must underlie objects only with such feelings and dispositions as correspond accurately with their impressions upon us, which impressions alone represent the interior of external things.

3. Nevertheless, mistakes will frequently occur in such processes, for the reason that the interior of external things remains forever hidden to us. We can merely suppose them to be endowed with certain qualities, and as each one who forms an æsthetic perception can underlie only what is *in him*, we see that the correctness of such processes depends also upon the grade of mental development to which the observer has attained. If now, as we have seen, the standard of mental development has its root especially in the qualities of the primitive forces, it is easily seen that the degree of æsthetic perfection depends upon the degree of energy and acuteness one possesses in his primitive forces; but these qualities also require training and education.

4. Agreeable feelings originate without the need of such translations. They are simply the result of pleasurable stimuli, and consequently we cannot call them *æsthetic* feelings. Common language frequently calls beautiful that which is merely pleasant or agreeable. It is a very wide-spread disposition to exaggerate pleasure as well as pain. Lower degrees of the beautiful we signify by the terms: Pretty, nice, fair, charming, lovely, naive, etc. Allied to the sublime are feelings, as the noble, the dignified, the grave, the splendid, the magnificent, the solemn, etc.

5. Æsthetic feelings are free from self-interest, because

they carry satisfaction within themselves. They are pleasurable conceptions that appease and elevate the mind, and to work them into shape and form is the artist's greatest delight. Æsthetic feelings may, and frequently do, originate in the absence of external objects, and even painful sensations may be sublimated into æsthetic feelings, of which, however, it is not the place here to speak fully. (Compare Beneke's *Pragmatische Psychologie*, II., p. 222 *et seq.*) A very excellent explanation of the æsthetic feelings may also be found in the work: "Das Æsthetische nach seinem eigenthümlichen Grundwesen und seiner pädagogischen Bedeutung dargestellt." Eine gekrönte Preisschrift von Friedrich Dittes. Leipzig, Julius Klinkhard, 1854.

55. FEELINGS OF STRENGTH OF THE SEVERAL MENTAL MODIFICATIONS.

In consequence of the attraction of like to like, each new impression is added to the vestiges of former similar impressions (6, 9, 10), thus adding to the number of similar vestiges previously obtained. In this respect all mental modifications vary more or less. Some consist of few, others of many similar vestiges. Things which are constantly around us should, therefore, accumulate the greatest number of vestiges, and they do so, generally speaking, provided each new impression gives rise to a distinct change of corresponding primitive forces. However, this is not always the case. Such impressions are usually received so fleetingly that a thorough transformation of new primitive forces does not ensue, and thus it becomes intelligible why such modifications do not grow further in strength. What is true of common perceptions applies equally to pleasurable conceptions and desires. The oftener these acts have been repeated, the more must the number of their vestiges have been increased, provided always that these acts were perfect enough to insure a thorough transformation.

Nobody can tell the number of vestiges his several modifications consist of; but by closer observation we are able to

distinguish with tolerable certainty those modifications which consist of few, from those which consist of many vestiges. Let me illustrate: If we recall to consciousness a conception which is the product of a great number of perfect impressions, and at the same time another consisting of only a few, we will feel the difference between the two at once, the first manifesting itself as the *stronger* of the two. This is equally true of desires. The desire consisting of most vestiges will always predominate over another of less number of vestiges, so that if we see a man preferring to spend his last penny in the bar-room instead of saving and applying it to relieve the wants of his family, we may safely infer which of his desires is the stronger, his desire for strong drink or his desire to do his duty to his family. We may say in short: *That mental modification which consists of a greater number of vestiges always manifests itself with a feeling of greater strength than another consisting of a less number of vestiges, when they rise side by side into consciousness.*

The number of vestiges a mental modification consists of may be *figuratively* called its "*space*." Hence we may say: This mental modification fills a greater, the other a smaller, space in the soul. This term accords well with expressions of ordinary language, as for instance: "This one idea filled his whole soul, there was no room for anything else," meaning that this idea, care, or whatever it was, was very strong, and consisted of a great number of vestiges. *Space* and *strength* designate then the same thing, and signify the number of vestiges of which a mental modification consists.

56. FEELINGS OF CLEARNESS, INDISTINCTNESS, AND OBSCURITY OF CONCEPTIONS.

We all know from experience that whatever we know we had to learn. When the little boy sees for the first time an *A*, it appears to him as a rather strange figure, and remains so for a while, until many perceptions have united their similar vestiges and a clear conception of it arises in his mind. From that time on nobody could make him believe that he did not know the *A*, or that *A* sounded *O*. By the union of so many

vestiges it has attained a *clearness* of consciousness, and to practice such a *quid pro quo* upon the boy would be a vain attempt. With a beginner in the A-B-Cs, on the contrary, we might have success. In him only a few vestiges of the *A* perception have arisen, which cannot possibly yet constitute a clear consciousness of the *A*. Compared with the conception which he has of his playthings, it is *vague, indistinct, dim*. Therefore we find that children, in the first few weeks of their attendance upon school, frequently confound different letters with one another. Most frequently is this the case when the teacher has been in too great haste to accomplish too quickly what naturally requires more time. Of course, the discovery of such confusion in the head of the pupil must be quite unpleasant to the teacher; and I have no doubt that often it is unjustly attributed to the child's stupidity, while, in fact, it is entirely the teacher's fault, the instructor not understanding the nature of mental development. Such confusion is, indeed, easily explainable. Some letters have a great similarity to each other, and we know that not only the *like*, but also the *similar*, coalesce. Thus it happens that in the great hurry with which the different letters were brought before the child, the similar of the *m* and *n*, the *a* and *o*, the *u* and *v*, etc., united likewise indiscriminately in the soul of the child, thus mixing *like* with *unlike* vestiges. We find such mixtures of like and unlike vestiges often enough, even in grown people. Many are not able to distinguish lead from tin, or a composition of low metals from silver (counterfeits would otherwise have a poor chance of being brought into circulation). Others cannot discern rye from wheat, quinces from apples, hemlock from parsley, etc. Even bats have often been taken for birds and whales for fishes. In these cases there are like and unlike constituents mixed together. Only after closer investigations and comparisons could the like alone join and the unlike be separated.

So long as such unlike elements are kept together for the want of better knowledge, they may manifest themselves according to the number of vestiges they consist of, with great strength; but when closer observation shows them to be of a

mixed character, and they arise with another modification of pure composition into consciousness, they will be felt immediately as *obscure* or *confused*.

The feeling of *strength* in regard to conceptions varies, then, in this manner: A great number of like vestiges gives a feeling of *clearness*; a small number of like vestiges produces a feeling of *dimness*, *indistinctness*; while a mixture of like and unlike vestiges is characterized by a feeling of *obscurity* or *confusion*. These truths are also applicable to pleasurable conceptions.

57. VALUATION—ESTIMATION OF WORTH:

We have already in 38 seen why or when we consider objects (persons and things) as good or evil. However, a very important condition, that of *feeling*, could not be spoken of at that stage of investigation, although acts of feeling are continually associated with these processes. We will be able now to give a better insight into what is signified by the terms good and evil.

Suppose a bird to be pleurably exciting us by his color, or song. The bird causes thereby a pleasurable modification which differs from others of less full stimulation. During their co-existence in consciousness, the pleasurable modification is measured upon the basis of the other, or is *felt* as a fuller stimulation. It is thus elevated to a *feeling* of pleasure, and the object from which this pleasurable stimulation emanates is valued as good. If other modifications were serving as basis, our valuation might be altogether different (52). However, we may say: *We value an object (according to the feeling of pleasure it causes) by the kind of impression it makes upon us, and consider it accordingly a (greater or lesser) good.*

Let us use fire for the purpose of illustration. Its action upon us may be so beneficent that we value it as a great good. On the other hand, it may burn us, it may destroy our property, etc., thus causing feelings of *pain* of greater or less intensity, and we then consider it an *evil*. In like manner all other things, in the degree in which they cause feelings of pain, we consider *evil*.

Hence, our valuation of things depends upon their action upon us. If they cause feelings of *pleasure*, we value them as *good*; if they cause feelings of *pain*, we consider them as *evil*; and as, according to 38, all things affect us more or less in the one way or the other (those even which produce a full stimulation), we may define the *valuation of things in general as the sum of all pleasurable and painful modifications, which originate first as mere sensations in consequence of the different kinds of stimulation with which external things act upon us* (25), then gradually, by multiplication, grow to self-conscious modifications, which, by comparison or measurement with others, manifest themselves as feelings either of pleasure or of pain.

What we call good and evil is, therefore, nothing but the feeling of the value of things and persons, caused by their kind of action upon us. So far as this action upon us (pleasurable or painful) remains in independent vestiges, its reproduction will be either a pleasurable or a painful *conception*. So far, however, as the primitive forces retain their conative power (compare 27 and 34), it will manifest itself either as *desire* or *aversion*.

So long as our feeling of the value of things consists merely in pleasurable or painful conceptions, such conceptions do not exert any influence upon our actions. They manifest themselves merely as acquired (pleasurable or painful) modifications, and constitute in general our *practical* wisdom or prudence (in contradistinction to theoretical knowledge). When, however, our valuations of things manifest themselves in the form of *desires* or *aversions*, they become the basis, that is, the *motive for our actions*, which may be good or bad. Thus we see that mental modifications representing the value of things, may manifest themselves in three different forms: 1, as *conceptions*; or, 2, as *desires or aversions*; and, 3, as *feeling*. Feelings are the immediate consciousness of the difference between the present impression of a thing or its conception, and other modifications which are conscious at the same time.

58. GRADATION OF GOOD AND EVIL.

Although feelings are merely the immediate consciousness of the difference between mental modifications, nevertheless, as the *factors* of mental modifications during their co-existence in consciousness are conjoined by mobile elements into groups, they endure in these groups; and it therefore follows that if one factor is roused into consciousness, the other is likewise roused, and in this manner the same feeling is reproduced (39. and 48). We may speak in this way of feelings "*acquired*," ready for use. Furthermore, as each new impression modifies void primitive forces, which as new vestiges add a new supply to the similar vestiges already acquired, it is clear that by such increase of the one factor, its difference from the other must become greater. The increased factor must manifest itself as increased, and the feeling, therefore, must gain in strength. This fact applies as well to the feelings of pleasure as to those of pain.

Suppose, now, we meet a stranger. How shall we estimate him? At the first instant we would estimate him as we would any other stranger. We measure his worth with the same measure we have for men in general, so long as he shows nothing extraordinary in manner or character. The impression he makes upon us corresponds to this measurement. But suppose we were thrown in his company for a longer time; that we gradually discovered a great many good qualities in him; or, in other words, that in the course of time he had produced in us say 1,000 pleasurable stimulations, and consequently, a pleasurable modification of 1,000 vestiges; would he not now stand much higher in our estimation than a great many other men, higher even than those of whom we possessed only 100 or 500 pleasurable stimulations? Indeed, his value in our eyes would increase, just in the ratio as his influence in producing pleasurable stimulations upon us increases in the course of time; for what gradually increases its beneficial influence upon us, grows in the same ratio to be gradually a higher good for us, because the multiplication of the pleasurable stimulations causes so strong a modification

that its difference from others must manifest itself as a strong feeling of pleasure. On the contrary, had this person affected us disagreeably, our valuation would be a different one. Instead of a feeling of pleasure we would have a feeling of pain, and thus we would consider him as an evil, although we may, for all that, be far from hating him, because other modifications of strength keep us above this feeling. We might, nevertheless, pity his perversity and withdraw from his company; and such a feeling would be the stronger the *more* unpleasant the impressions we had received from him. This is also true in other respects. If we had been unpleasantly acted upon by walking a bad road caused by rainy weather 1,000 times (I choose arbitrary numbers), and only 100 times by walking a bad road caused by snow, we would surely not fancy either of them. The measure we apply for their valuation is the conception of a good dry road, and the other roadways will be felt as inferior and unpleasant. But as the first of these modifications consists of 1,000 vestiges, it would surely be felt as the stronger of the two, and we will fear a bad road caused by rain more than a bad road caused by snow, or, in other words, we consider the first as a greater evil than the second. The pioneer might laugh at us on hearing us complain of *our* dirty roads, for compared with the knee-deep mud through which he sometimes has to wade they are splendid. He applies, we see, an altogether different measure. We may say then: *Whether we consider anything as a greater or lesser good or evil, depends upon the strength of the pleasurable or painful modification it has caused by its action upon us, and upon the basis or measure with which it is compared.* We gain thus a norm for the gradation of all good and evil. We can easily see why some persons value things highly, or consider evil, which things others look upon with perfect indifference. We can understand now why the little girl cries over the loss of her doll, in spite of its broken face; or why some lady feels quite unhappy because her new dress does not agree entirely with the latest fashion, however absurd this fashion may be; why one man eagerly ransacks all dung-hills and jumps for joy if he has found a little, insignificant insect, or another walks for

miles to hunt up a small plant; why the one travels around the earth and another remains at home during his whole lifetime.

People often say they cannot understand how persons can enjoy certain things. True, they cannot understand it; that is, they are not capable of appreciating the feelings which in others have conditioned the kind of valuation criticised, because these things have either not acted upon them, or not to so pleasurable a degree as they have upon the others. If such action had occurred fully they would very readily realize this kind of valuation, and would not wonder if in some persons they find great aversion to certain things upon which they themselves are accustomed to look favorably. We again come to the same result: *The valuation of different things depends entirely upon the strength of the pleasurable or painful modifications they have caused by their action upon us, and the measure or basis upon which their difference is felt.*

59. THE GRADATION OF GOOD AND EVIL IS THE SAME IN ALL HUMAN BEINGS, BECAUSE THAT GRADATION IS CONDITIONED BY THE INBORN NATURE OF THE PRIMITIVE FORCES.—TRUE VALUATION.

In the preceding chapters we have seen how and why we learn to consider different things good or evil. In 7 we learn that vestiges are the more perfect and lasting the more energetic the primitive forces are (which, by the influence of external stimuli have been developed into vestiges). We must bear in mind that vestiges are nothing but objectively developed primitive forces in their latent state. The most perfect vestiges, therefore, we find in the higher senses of man—in the faculties of sight, hearing and touch (8).

The union of many like vestiges produces *strong* modifications. But, supposing that in a developed mind all its modifications consisted of *the same number of vestiges*, there would even then necessarily be a great difference in strength between those of the higher and those of the lower senses, for the simple reason that in the lower, as the less energetic, vestiges are not

modified in such a degree of perfection as in the higher senses. A modification of 100 vestiges in the lower senses must, therefore, be far from reaching the strength of one in the higher senses consisting of the same number and also much more perfect vestiges. In the lower senses the impression fades away; in the higher senses the impression is retained unaltered; that is, by it the primitive forces have been developed so characteristically and lastingly, that long afterward the impression may be reproduced in consciousness without the aid of external stimuli, in a perfection almost equal to a perception.

What is true of modifications of strength is true also of modifications of debility. No matter how the primitive forces be developed, whether in the direction of perfection or defectiveness, the vestiges of either development remain more perfect in the higher than in the lower senses.

From this fact it follows *that feelings of the higher senses (of pleasure or of pain) must manifest themselves with greater strength than those of the lower senses, provided the number of vestiges in both instances be the same.*

Knowing now, as has been detailed in 8, that the primitive forces in all men gradate in the same manner, as regards their tenacity, from the higher to the lower senses; knowing also that the external stimuli are everywhere the same, acting according to their nature upon all human beings in like manner; and knowing, finally, that in all human souls the same law of attraction of like to like produces homogeneous units (9), we may safely infer *that these like factors must produce like products; that, therefore, the feelings must gradate in regard to their strength in all human beings in the same manner.* A feeling of pleasure or pain, of the higher senses, must in all men have a greater strength than one in the lower senses, provided always, that the number of vestiges in both be alike, and that the basis whereupon they are felt remains the same, which latter condition is, indeed, a condition of all acquired, stationary feelings (58).

If now, as we have seen in 56 and 57, we value a thing according to the strength of the feeling of pleasure or pain it

has produced by its action upon us, it follows that there *exists a gradation of good and evil which is the same for all human beings*. That is, all objects (persons and things) affecting the higher senses (pleasurably or painfully) must in all human beings gain a higher valuation than those affecting only the lower senses. This gradation of good and evil must *necessarily* be the *same* for all human beings, because it is conditioned in all by the same factors, namely, by the same gradation of retentive power of the primitive forces, by the same external elements, and the same law which unites similar vestiges into homogeneous aggregates.

We thus come to a general *norm* for all valuation, which places all good and evil in a strict order, an order which is conditioned by the very nature of the mind itself and the things acting upon it. A correspondence of our valuation to this natural gradation of good and evil, we call the *true or correct valuation*; and inasmuch as the valuation of things when reproduced in the form of desires, constitutes *the motives for our actions* (51), we find in this natural norm *the highest moral law, or the fundamental principle of morals*, which may be expressed in the form of a commandment: "Thou shalt value everything according to its rank in the natural gradation of good and evil;" or, applied to a special case: "Thou shalt always do that which, according to the true valuation, lies highest in the natural gradation of good." Accordingly, prefer an enjoyment of the higher senses to one of the lower, a lasting perfection of the mind to a transient pleasure, the good of a whole community to thine own personal interest; for what benefits thousands ranks much higher in value than what benefits only thy own single self. In short, prefer always the high to the low, the noble to the ignoble, the lasting to the transient. There is no moral law, howsoever it may be expressed, or from whence it may originate, which demands anything higher or better than this.

60. APPARENT CONTRADICTIONS.—FALSE VALUATION.

Daily experience does not seem to agree with the above statements. We find quite often lower pleasures preferred to higher ones—good eating and drinking to mental perfection, riches to honesty, selfish aggrandizement to public good—conditions, indeed, which do not seem to prove the necessity that all men must value the higher as higher, and the lower as lower, and act accordingly.

We must, however, remember that we cannot speak of this moral norm as a something the mind brings already developed into this world.

There are no innate powers of any kind beside the primitive forces. What has been asserted and what is to be proven is that such a norm is merely *conditioned* by the nature of the mind—that is, its laws and gradation of the primitive forces, which are alike in all human beings. This norm, then, is not a preformation but a predestination, which, in the course of development, may be subject to various deviations and deficiencies in the single individual. It is here as it is with the norms of logical thinking and correct grammatical speaking. For both mental operations there are norms of general validity, but they are not in all minds developed with equal perfection. This premised, we shall find no difficulty in solving the above-stated apparent contradictions.

A feeling of pleasure or pain attains only to a greater and lasting strength if its one factor, the pleasurable or painful modification, has originated in the higher senses, and consists of *numerous* vestiges (58). But when, for instance, indulgent parents allow the low gustatory forces of their child to be predominantly stimulated by dainties, and neglect to perfect its higher senses, we need not wonder that, notwithstanding the naturally greater energy of the higher senses, the pleasurable modifications of the lower will by far outweigh in strength those of the higher, on account of their *more numerous vestiges*. The development of the higher senses, which even in such cases originates, and must originate, is but a feeble one, while that of the lower attains a plentitude of vestiges that

will always overbalance the naturally greater but undeveloped energy of the higher senses. We need not wonder, then, when in life we find that minds thus developed prefer mere sensual pleasures to higher enjoyments. It follows that, *by an accumulation of a larger number of vestiges, the modifications in the lower senses must eventually predominate in strength over those of the higher, although the lower senses possess by nature only a low degree of tenacity.* Such a state of things is surely wrong, inasmuch as the development of the higher should always overbalance that of the lower; but, nevertheless, we find this wrong does exist and originates what we may term a *perverted* order in the normal gradation of good and evil—an order, in consequence of which things that gratify the lower senses are valued more than such as perfectuate the higher. We are now able to understand how and why a *false valuation* of things, or a *perverted practical view* of good and evil, originates in so many minds. The *true valuation*, or a correct practical norm, has, in such instances, not been developed at all, or not properly; not because of a natural deficiency of the innate primitive forces, but on account of a faulty education or unfortunate circumstances. But such perversion of normal valuation needs no less time for its development than the acquirement of a correct valuation. No one ever became bad at once, and no one ever became good at once. No one can abruptly be brought from an ignorant to a scientific state of mind. These conditions are all the result of slow, gradual development, as I believe has been sufficiently shown. Sudden conversions from bad to good are, therefore, not possible. Where they are said to have taken place, for instance, in criminals, by the impressive exhortations of a spiritual adviser, we ought to be rather careful in considering a contrite condition of the mind, in sight of the gallows, as a total change from wickedness to godliness. The gallows out of sight might easily prove this sudden godliness “a standpoint soon overcome.” But some persons have really been converted from a dissolute life by sudden changes, as their whole life afterward has proved beyond any doubt. On examining such cases we will always find a nucleus of good of earlier date, which merely had been

covered over by the exuberant growth of low desires and low tendencies, which good, by some soul-stirring event, has regained its consciousness and natural power. But even when the moral norm has come in the main to a correct development, there will still exist in most men valuations not entirely corresponding to it. Even the best of us are not so perfect but that false or incorrect valuations have been developed.

61. THE FEELING OF STRENGTH IN DESIRES AND AVERSIONS.

All men acquire, in the course of time, a more or less extensive knowledge of the world. By the various impressions the things make upon men's senses, they gain a practical knowledge of the value of things. So far, however, as these impressions originate pleasurable or painful modifications, they create desires and aversions that become the basis of, or motives for, our actions. Our valuation of the things may manifest itself, therefore, in two distinct forms. It is reproduced merely as valuation; that is, as the *feeling* of the value of the various things which we have gained by their actions upon us, and which, if expressed in words or sentences, shows either our wisdom or our folly; or it is reproduced in the form of desires or aversions, of which impressions are the necessary causes. (Compare 57, also 27, 33, 34.) Valuations then become the basis of, or the motives for, our *actions*. In either case their strength will depend upon the number of vestiges of which they consist, according to the law that all that is similar unites in one. If it is a valuation, it will be felt the stronger the oftener we have produced it. If it is a desire or aversion, its strength will manifest itself according to the number of vestiges of which it is the aggregate. We note, therefore, differing degrees of strength in these conative manifestations, even in common language, by such expressions as these: Inclination, disinclination, disgust, disposition, propensity, passion, etc.

62. IMMORALITY.—MORAL RUDENESS.

The oftener certain desires are repeated, the greater they grow in strength; and we may easily understand why such

developments come in direct opposition to the moral norm, or the true valuation of good and evil. Take, for example, a desire for a particular good, which, on the scale of true valuation, stands twenty times higher than some other good. Suppose the desire for the latter to have been renewed forty times, consisting thus of a forty times greater number of vestiges than the single desire. It is clear that the forty-vestiged desire will act with double the strength of the former, notwithstanding the fact that it is on a much lower range in the scale of true valuation. Taking it for granted that the higher was developed in full perfection, and that it received its proper valuation, even then the lower desire would predominate by virtue of its more numerous vestiges. This statement, accepted, proves that the strength of a desire, being derived from the number of its vestiges, is altogether of a *subjective-accidental* nature. The fact that a desire has frequently been repeated gives it a greater strength only in *me*; in somebody else the same desire may have been developed altogether differently or not at all, or even in myself it might, under different circumstances, have attained a much less or a still greater multiplication of vestiges. In short, the *strength* of a desire derived from the number of its vestiges has nothing to do with the *objective value* of the thing, the impressions of which have caused the desire. Its objective value may stand quite low on the normal scale of good; but an undue repetition of pleasurable stimuli may cause a very strong desire, so strong that it becomes a deviation from the moral norm, or from what is right.

Accordingly, we find many persons who are well aware of the much higher value of health than of a mere transient pleasurable gustatory stimulation, the gratification of which frequently impairs health. When tempted, however, they cannot resist the desire. The true valuation is here overpowered by the excessive strength of an immoderate *desire* (or *aversion*). Such deviation from the moral norm we call *immorality* or *corrupt will*.

In summing up what has been explained in the previous paragraphs, we come to these results: *Deviations* from the

true valuation of good and evil (59) may develop in two different forms: Either as *false valuation*, when, by undue accumulation of vestiges, single *feelings of pleasure or of pain* gain a disproportionate strength, known as *folly* or a *perverted practical view of the world*; or, as *immorality*, when, by undue multiplication of vestiges, single *desires* or *aversions* gain an excessive strength, and thus corrupt our will and pervert our actions from good ones into bad ones.

From these two forms of deviations from the true valuation of good and evil *moral rudeness* differs essentially. Moral rudeness is that *uncultivated state of mind* in which true valuation has not been developed at all, or not to the height the general standpoint of civilization demands. Children are in this condition. Children must first acquire the various values of good and evil, from the lowest personal profits to the highest human interests, and they acquire them the more easily and correctly the better and more advanced the persons are by whom they are surrounded, or by whom they are gradually brought up, either intentionally (by education), or unintentionally (by the mere force of example).

This explains at once the various grades and shades of moral culture in different classes of people of even civilized nations, and the almost total want of it among savages. Children are not only the receivers of what has been accumulated by the progressive development of nations for thousands of years, but they are also themselves products of this long chain of progressive development. They are drawn up and pushed forward by external as well as by internal agencies, all of which agencies, however, exist variously distributed among different classes of people. The poor savage child lacks these advantages almost entirely. The culture it receives from its tribe is extremely limited, and it is itself the offspring of an ancestry so poorly organized that progress in the child alone is scarcely ever recognizable. We see, therefore, a steady gradation in moral culture from savage rudeness to the philanthropic sentiments of the nineteenth century.

Greatly advanced as this latter may be, in comparison with that of former ages, it has, by far, not reached all possible per-

fection. Indeed, moral as well as intellectual perfection is without limit, and is never wholly attainable by any one age or individual.

63. MALICIOUSNESS, WICKEDNESS.

Maliciousness or wickedness is a form of immorality complex and serious in nature. The malignant feel displeased at the elation (the joy, good fortune, the intellectual and moral superiority) of others, and become pleased at their pain, sorrow, misfortune, or want. This is obviously a *reversion of natural feelings*. The pleasure or pain of others we conceive on the basis of our own feelings of pleasure or pain, and we must, therefore, feel others' pain as pain, and others' joy as joy. What reverses this natural order of things? Even in the rude savage we recognize sympathetic feelings, and the immoral (notwithstanding the excessive strength of desire) is not at all hindered from appreciating others' pleasure or pain as such. The malignant must be *selfish*; that is, the group of mental modifications relating to himself have grown to such strength that they far overbalance the group of modifications relating to his fellow-beings. In consequence of this immoderate strength of the self group, the conditions of others are perceived faintly and superficially, and are not measured upon the present conscious modifications of the selfish, but merely serve as a basis for the measurement of *them*. Herein consists the reversion.

In the presence of a perception of pleasure in others, personal conscious excitations, if they are not of a highly pleasurable nature themselves, are felt as inferior or as pain; while, in the presence of a perception of pain in others, the personal conscious excitations appear superior, and are felt as pleasure. In the same way we may have a feeling of regret at the sight of a gain we expected to be doubly great, or we may feel glad in bad luck, when we consider that the luck might easily have been much worse. It depends altogether on the measure or basis whereupon the present conscious excitation is measured. The measure or basis is always the less conscious

modification, while the most prominent modification in consciousness is that which is measured and which conditions the feelings. (Compare 48 and 52.)

This reversion of natural feelings alone does not constitute the character of maliciousness. The malicious must also be *embittered*; that is, in consequence of many disappointments, failures, misfortunes, etc., merited or unmerited, there have arisen a number of modifications of debility (33), and these fill his mind with ill-humor. "Depend upon it," says an American author, "in nine cases out of ten, the evil tongue belongs to a disappointed man." This bitterness must become so predominating in the mind that no modifications of strength will arrest it. Transient bitterness may even arise in otherwise benevolent persons, and during the duration of this bitterness such persons may be overcome by a feeling of envy on seeing others gain, without merit or labor, what they themselves have been earnestly striving for in vain for a long time. But this feeling soon passes over. Bitterness is not a lasting trait of their minds; it is only the consequence of a transient excitation, conditioned by external circumstances. Modifications of strength soon prevail, and the benevolent disposition is restored. Not so with the malicious. His mind is wanting in such correctives, and he continues in his reversion of natural feelings, which reversions gradually, by repetition, become a disposition with him.

A third fact must be added. The malicious seeks the cause of his disappointments, failures, misfortunes, etc.—in short, the cause of his own subjective bitterness—outside himself, in others, as if others were to blame for his difficulties. In his selfishness he overlooks his own faults, and turns the consequences thereof over to his fellow-beings. He perverts the comparison between his self-group and altruistic groups, and gives his maliciousness direction. It appears to him that the good fortune, preference, etc., of another is not merited; that the misfortune, the misery, the want, etc., of another is indeed merited, because, in his embittered state, he considers another as the cause of his own misery! These are the three moral deviations which, when *combined*, constitute the character of maliciousness.

Selfishness is the seed from which maliciousness grows; but selfishness alone is not maliciousness. Take passion for glory or power, which passion often instigates war; avarice, which enslaves fellow-beings; passion for honor, which overrides mercilessly all who are in the way. Surely all three are deviations from the moral norm, but are not maliciousness. There is no *reversion* of the natural feelings. It is only an excess of desire, which, in its strength, overlooks the possible unhappiness of others consequent upon the achievement of selfish ends. Unhappiness for others, however, is not desired, but the gain of glory, position, money, etc., is sought in spite of others' sufferings. Maliciousness, on the contrary, seeks the misery of others, and enjoys it.

Bitterness of mind is the soil in which selfishness grows; but an embittered state of mind alone is not maliciousness. One may have had a great many severe losses, misfortunes, disappointments in life, and yet not be embittered. Modifications of strength prevent this result. Only when by the absence of strong correctives the mind is subdued under the dominion of modifications of debility, bitterness prevails. Even when bitterness is produced by an accidental train of unlucky circumstances, it may cause a continual pondering over the same, a scorning of all participation in any pleasure, an indifference to all that concerns others (even if it were of the highest importance), a melancholic state of mind, even craziness; and yet this state need not necessarily cause maliciousness. Maliciousness needs still for its complete establishment an unfavorable *comparison with others*, which, by frequent repetition, has become a disposition. We find, therefore, maliciousness most easily originating where disappointments, losses, etc., have been caused *by others* and *intentionally*. The feeling of revenge in the oppressed against the oppressor is of this character. It is true, too, that quite accidental conditions may originate such comparisons with others. For example: Sickness, when the sufferer grows peevish, although only transiently, and spiteful, irritable, even envious against those around him who are well and cheerful. This comparison mostly takes place with equals; those much above or much

below are out of the range of it, unless brought nearer by special circumstances, as in the case of hate which an anarchistic wretch feels against all who possess, or in the devilish malevolence of a tyrant, who continues to persecute his victims even in the dungeon. The comparison takes place at first in consequence of external circumstances; by frequent repetition it grows to be a disposition, unless mental modifications of a higher order prevent the formation of the disposition. In selfishness the moral deviation consists in a *reversion of natural feelings* (the conditions of others serve merely as a basis for the state of mind). In maliciousness it consists of a perverted comparison with others. The malicious destroys the *real* good of another, in order to get rid of a miserable feeling of his own; he enjoys the actual loss, misfortune, etc., of another, although he really gains nothing by it but the gratification of his morbid disposition. He compares his *subjective* condition on the basis of the real objective state of others. This occurs when, by repetition, it has become a disposition of the mind—the most characteristic element of *maliciousness*.

64. THE FEELING OF DUTY—CONSCIENCE.

Thou *shalt* do this, or thou *shalt not* do it, often says an internal something in my soul, as it does in others. Thou hast done *rightly*, or thou hast done *wrongly*, I am distinctly conscious, was uttered by the inner feeling. What is this inner monition, and how does it originate? Is it something accidental or whimsical, or is it something necessary—unavoidable—a constant sequent? If one feels that his health is of a much higher value than a mere transient sensual pleasure, the gratification of which often ruins health, we see that in his mind two mental modifications are conscious: A *normal valuation*, and a *desire* which deviates therefrom. The first is the necessary consequence of an harmonious development of the mind, to which its innermost nature compels (59); the second is a modification which has arisen from pleasurable stimulations of the lower senses, and it is a *deviation* from the natural norm if

it has been *repeated too often*. This repetition depends upon circumstances. The strength of the desire is, therefore, *accidental*. Under different circumstances it might *not* be so strong, and might, therefore, *not* deviate from the natural norm (60). Thus, we may say, there are, in this case, two modifications side by side for comparison; a *true valuation* (a constant sequent), and an *excessive desire* (an accidental deviation). The difference between the two will manifest itself in one of the following two ways: If the true valuation is the basis whereupon the excessive desire is measured, we will feel the desire as a *deviation* with the admonition: *Thou shalt not* do it. If the desire is the basis on which the normal valuation is measured, we will feel the valuation as *right* with the admonition: *Thou shalt* act accordingly. The *feeling of duty* thus originates. Suppose, now, that in case the desire be so strong that it overwhelms the true valuation of health. The impulse of the inordinate longing will be gratified, notwithstanding the presence of a true valuation of health. What will be the consequence of such perverted action? So soon as the gratification induced by indulgence in the pleasure has passed away, the normal valuation will again be conscious, and upon the restored normal basis the enjoyment of such sensual pleasure will be felt as *wrong*—as a *deviation from the moral norm*. As common language expresses it, after such conduct we will have a *bad conscience*. Should, however, the true valuation prove the stronger of the two, the longing for the sensual pleasure will not be gratified, and this victory over a low desire will be felt as *right*, as corresponding to the moral norm, and we will have, as is commonly expressed, a *good conscience*.

From this explanation we can easily see how closely related are *duty* and *conscience*. In fact, both are *feelings*, that is, measurements between true valuation and desires, which either precede or follow our actions. If it *precedes*, it will be either admonitory or warning, according to the conformity or deviation of the desire with or from true valuation. We call this feeling a *feeling of duty*. *Following* our actions, it will be approving or condemnatory, according to the correspondence or deviation of our action with or from the moral norm. It

is called *conscience*, and when corresponding, a *good*, when deviating, a *bad conscience*, *repentance* or *remorse*. There is still another difference between duty and conscience, in the common use of these terms. Of *conscience* we speak especially when the moral norm is brought in comparison with our own actions, while by *duty* or *the voice of duty* we understand more generally what the moral norm demands of all persons, so far as they should act under the same circumstances. We thus consider duty as a general rule for the action of all persons in special cases.

Another question is: How far does conscience or the feeling of duty exist and extend in men? In this respect we see, indeed, quite remarkable differences, not only in different men and different nations, but also in the different ages of the same human being and of the same nation. The savage kills his enemy and devours him without compunction of conscience; he feels afterward as quiet and happy as any Christian after a kind deed to his enemy. In the dark ages nobody (those who did were surely exceptions) thought it wrong to apply horrible means to force the criminal to confessions. The punishment for crime, or what was considered crime, was horrible—so horrible, that nowadays we can scarcely believe it. War, in the present age, although stripped of much of its former cruelty, is, on the whole, still barbarous. More advanced ages will not tolerate war even in its present form. Rude men abuse animals. Bad men defraud, deceive, belie their neighbor, without feeling in the least disturbed about their actions. Where is *conscience* in such cases? Does it sleep? Indeed, *conscience does not exist, it has not originated at all*. We have seen above that conscience is a *feeling* of the difference between true valuation and a deviating desire. True valuation must first have originated before certain desires can be felt as deviating on its basis. This has not taken place in either of the above cited instances, to a degree in which their actions would be felt as wrong. Their moral culture corresponds with their actions. We need not wonder at this. We know (62) that moral development is never complete in any one age or individual, but that it is growing continually to

higher perfection, and that its growth is without limit. We see that conscience and the feeling of duty exists and extends in men only so far as *the true valuation of good and evil has been developed in them*. So far as this development is wanting it cannot manifest itself either as admonitory or condemnatory. In short, thus far man has no conscience or feeling of duty. To speak, therefore, of an inborn conscience, is erroneous, if it is intended to signify an innate power ready for use; and it is just as erroneous to ascribe to the developed mind *one conscience*, if the term is meant to signify one solitary power. On the contrary, man has as many consciences and feelings of duty as he has special feelings of his various desires upon the basis of his acquired true valuations. This true valuation, or moral norm, however, consists, as we have seen, of single modifications which singly serve as a measure for single desires only. If we take conscience in the abstract, we may speak of *the* conscience as we speak of *the* understanding or *the* will.

An "*erring*" conscience we find where *false* valuations act in the place of *true* ones. It may happen that a thing of lesser importance than something else is estimated too high. For instance, when a person overvalues diligent industry and frugality to such an extent as to deprive himself of all necessary recreation and pleasure, or when one is painfully affected at the least mistake or oversight in the exercise of external politeness. The same error may occur on the ground of selfish narrow-mindedness, which may be confined to the exclusive love of family, or the interest in a certain rank, or order, or party, or sect, or particular nation. We need only think of the partiality in distributing offices to relatives or partisans, of the unjust criticism of public men of the same and the opposite party or sect, or of the character or interests of our own nation and of foreign nations, etc., and we find that only too easily a public conscience develops which not only endures moral deviations, but even sanctions them. It is a similar corruption of conscience when people censure mildly scoundrels (or praise them even as "smart") who have successfully cheated communities out of hundreds and thousands of dollars.

Conscience, too, may err from an *insufficient intellectual* basis. For example, if one feels conscientiously compelled to benefit an unworthy person because he *thinks* him worthy; or if one, for the same reason, supports a lazy man who might much better earn money to support himself, or if one feels himself conscientiously bound to have inebriety routed by compulsory means, or another abstains from openly attacking a public evil for fear he might make matters worse (because he underrates his abilities). In this category of erring conscience belongs, more or less, also the punctual observance of *external* religious rites transacted merely mechanically, or the execution of good deeds without participation of the heart; the self-tormenting denial of bodily comfort, or infliction of bodily pain, to gain the heavenly kingdom, or the over-estimation of external good behavior. As a further example: If two persons are prone to debauchery and one avoids it because of stinginess, or if two are alike disposed to cheating or bribery, but one is held back from the overt act for fear of detection, is the one who does the immoral act worse than the other? The one who does the evil makes himself guilty before the law, but the other is morally as bad, or rather worse, notwithstanding the illusion of the non-actor that conscience is the better for his not having perpetrated the immoral deed. (Compare Beneke's *Grundlinien der Sittenlehre*, Vol. I, page 477, etc.)

Of an *inactive, sleeping conscience* we might speak in cases of perplexity and embarrassment, where the necessary comparison does not take place, although its factors exist in the mind.

65. FREEDOM OF WILL AND ACCOUNTABILITY.

Upon the basis of our investigations (thus far advanced) there will be no great difficulty in solving the much-vexed question of the free will and accountability of man.

We have seen that desires, inclinations, will, etc., are gradual developments of the mind just as much as are intellectual modifications. There does not exist an inborn power to pro-

duce the numerous and often very complicated mental acts of which we have spoken. They are all products of the same primitive forces and the same mental laws. Of the *intellectual* abilities we may say they are, to a certain degree, predestined; for a certain degree of energy, acuteness and rapidity is required for the formation of certain talents. One whose primitive forces are lacking greatly in these particulars will surely fail to acquire such talents. The same may be said of moral development. A high degree of acuteness of the lower senses, with only a low degree of energy of the higher, may favor deviations from the moral norm. But then this favoring is no actual deviation, neither is it a necessity of its development. If a chain of circumstances does not necessitate such development, it never comes into existence. In the chain of circumstances, then, lies the necessity of moral and immoral development. Are these circumstances in the power of man? If not, how about his free will and accountability? This is exactly the dilemma the question of freedom of will and accountability has always encountered. In order to secure clearness in the discussion of this seeming confusion, we must narrowly discriminate between two things: 1. *Between the relation of a certain action of a man and his interior (from which it springs), that is, his will, his disposition in general, his moral qualities; and,* 2. *Between the formation of this interior, or of this will, by the external circumstances under which he lives.*

Freedom of will and accountability can be spoken of properly only in the sense of the first relation. To declare that a man is *responsible* for an act means the act is counted against him, as having been derived from him, or as having been morally produced by him. An opposite illustration will make this point still clearer. A man is *not* responsible for an act if the act was produced either by *mechanical compulsion* (for instance, when one chained is made to pull a rope by which a weight falls and injures another), or by *psychical constraint* (when one, on the ground of false news, which he believes to be correct, withdraws his help from a needy family, etc.), or by an *abnormal state of mind* caused by poisonous substances, or during fits of insanity. In all these cases the act is not derived from

the *moral disposition* of the man, is not a product of his *moral development*, and therefore the act does not *morally belong to him*. It cannot be *counted to him* (as having been derived from him or as being morally produced by him), and therefore he is not accountable for it.

Freedom of will means exactly the same, but from another standpoint. Freedom is *independence, self-determination*; which qualities in a free act show themselves in a two-fold manner. Morally a free act is independent of *all external causality*, in consequence of which an external necessity for its performance does not exist. ("None who can die, can be forced;" "*Niemand muss müssen*," Lessing.) It is independent also from *all internal causality which is not the will or the disposition*. The morality of an act is purely and solely conditioned by the moral state of man, that is, of his will, his disposition, etc. This point may be illustrated still further. If one who had been bribed excused himself by urging the greatness of the temptation he was subjected to, we would object. Another might, by the same temptation, have remained entirely pure. Not the temptation, then, but his own immoral disposition, did the wrong. Of course, if the temptation had not offered, he would not have done the deed, but he would, nevertheless, have been the same immoral character who, on another occasion, when opportunity offered, would have proven himself guilty. Temptation does not pervert a good will into an immoral will; it merely draws out *what* interiorly exists and *how* it exists. Notwithstanding the temptation, his deed was entirely and only conditioned by his own *will* or disposition, and therefore it was a *free act*.

"But," say some, "*my will is free, when I can will to do just what I please; for I might as well have acted differently.*" This is true, if rightly understood. He might have acted differently if it had *pleased him otherwise*; that is to say, if *his disposition or his will had been different*. The morality of our action is strictly conditioned by the moral nature of our will. Only so far as both correspond is our action free. If, therefore, his will or disposition had been different, or if it *had pleased him otherwise*, he would have acted differently; but, again, *strictly*

according to the nature of his disposition or will. For "whatever freedom the will has, must lie within its own proper sphere of action, and not without it; must relate to that and not to something else." (Jos. Haven, D. D., p. 539.) This will appear still more clearly, if we remember that man's practical development consists in the sum of his acquired *single* practical dispositions. From these his actions are derived, and derived strictly according to the nature, the strength, the combination, etc., of the same, so that in the degree in which *they* had been different, in that degree he would have acted differently. But so far as they are acquired—that is, so far as man is developed internally as he is, they necessarily condition man's actions (in the relation of cause and effect). No one can, no one does, act otherwise than is conditioned by his disposition or his will. Herein consists the freedom of his will, for his will would be annulled were he in any way forced to act differently.

Man *must* act *morally*, so far as his dispositions correspond to the moral norm, and overbalance opposite desires, because he *wills* so; and he *must* act *immorally*, so far as his dispositions are of an opposite nature and strong enough to subdue better ones, because he *wills* so. Just because there is this strict causal relation between what a man *is* (that is, his developed dispositions and will) and his actions, he is *accountable* for his deeds; for we surely could not hold him accountable for that which he was not the cause of, or what had not been derived from his own disposition or will. Thus, freedom of will and accountability are inseparably one and the same. We cannot deny the truth of the one without annulling the other, or admit the one without admitting the other.

There are, however, still some points that need clearing up. It might appear, according to the above, that man has no *choice* between good and evil, or right and wrong; for as he *is*, he must will to *do*, thus establishing a contradiction with the freedom of his will, in consequence of which he can will to do just what he pleases. Nothing can be clearer than that there is really no such contradiction. We must bear in mind what has been explained on almost every page of this work—that the human mind is gradually, but constantly

growing, developing itself from childhood to old age; that therefore, always and constantly, the most diverse desires, inclinations, etc., are developed according to the various impressions and circumstances acting from the outer world. Besides such impressions as correspond to the moral norm, there also originate impressions that deviate from it. There exists no one human being in whom the sum of developments is all good or all bad. From this it follows that, in a great many cases where a moral question has to be solved, we will have to *choose* between good and evil, or right and wrong. The result will always show which of the two *predominates* in our soul. It will always be the *strongest* desire or disposition which causes our action, again vindicating our free will, or the power to will to do what we *please*. So long as we have opposite inclinations of nearly the same strength, our choice will be quite difficult, because a struggle must necessarily ensue between the opposing dispositions. The strongest will surely conquer.

The choice, however, between the good and evil, will become lighter and easier, the more the one or the other of the conflicting dispositions overbalances the opposite in strength; and for a person who has, in a given case, no contrary dispositions, there will be no struggle at all. His choice will appear spontaneously. We can, therefore, if we accurately know a man's disposition, *foretell* how he will act in a given case. We know this from ourselves so far as we know ourselves accurately. *Accurately*, I say; for, in a great many instances there is no certainty of knowing beforehand how anyone, or how we ourselves, shall act under certain circumstances. We have been deceived so many times in others and by ourselves in this respect, that we must confess that such predictions are more or less uncertain. Does this prove the existence of the strict causal connection between our actions and our dispositions? Surely it does not disprove this connection. The uncertainty of predicting how a man will act under certain circumstances, does not lie in the causal relation of his actions, his motives, but in our imperfect *knowledge* of these motives. The uncertainty is, therefore, not founded upon a break in the links

between cause and effect, but entirely upon the deficiency of our knowledge of those links. If we knew a man accurately, entirely, minutely, we would always be able to foretell his actions just as certainly as we would be able to foretell any other effect of which we know the cause. But our knowledge of others, and even of ourselves, is so limited, that only in a very few exceptional cases we can absolutely foretell. Just these exceptional cases prove the truth of the strict causal relation existing between action and motive. Knowing the causes accurately, we know also the effects.

Objections are raised against this view on account of small external occurrences. Some say, for instance, "we are entirely at liberty to raise our right or left arm just as we please." "*As we please*," exactly! But does this not prove that whatever they do has its cause in their disposition? This disposition has necessary causes for its existence in their interior development, as well as in various existing influences. The actuating causes are, therefore, quite numerous, and may differ greatly in regard to their strength and excitation, and be beside of so *minute* a character, that a *prediction* which arm they will move is utterly impossible. But, whichever arm they move, it is nevertheless moved in a strict causal connection. One arm is, perhaps, stronger than the other, and the obscure sensation of it decides the motion, or the object reached for lies nearer or more convenient for the other arm, or whatever else just this motion may provoke.

"But," they may say, "if we now, in spite of this, move the other arm?" Very well, then it is just this spiteful disposition which overrules the motion of the first arm. "But we might as well suppress this, and do the contrary?" All possible; but then the cause lies again in this second disposition to suppress that caprice, while another in whom the second disposition does not exist, follows his spite, and a third one gives way to the first impulse founded in the greater natural convenience, because no caprice induces him to act differently.

We thus come to the same result of strict causality between will, disposition, or motive and action. Because of this causal connection, no act of ours is performed without a correspond-

ing disposition of ours, or of our will, and we enjoy freedom of will. *It is always we who will to do as we please*, and for this reason we are *accountable for our deeds*.

It is a different thing, however, when we come to consider *the formation of our interior, or of our will or dispositions, by the numerous external circumstances surrounding us*. Even these have by some been asserted to belong in the scope of free will and accountability. That some one has just such a disposition or such a will they consider as the effect of his freedom, and therefore he must be accountable for it. To some extent this may be said to be true. We often find moral deviations of a *later* date to have their cause in earlier ones, as, for instance: Inebriety, in consequence of laziness, to kill time and ennui; cheating and fraud, in consequence of inordinate longing after enjoyment; desire for revenge and malevolence, etc., in consequence of vanity or longing after fame or power, which desires have often been disappointed, etc. The first single deviation excites desires or aversions of another kind, which remain as vestiges, and develop, by repetition, into other moral deviations. Or, the same deviation which originally is only weak, grows by fostering indulgence to indomitable strength. In all these cases we must acknowledge the *later* deviations as *effects* of the *former*, and as the former constitute part of man's will or disposition, the latter must be considered, not only as a present quality of his character, but also, in regard to *their formation or their origination*, as having been derived from him, and are *thus far justly accountable to him*.

So far the assertion "that man is accountable for his present disposition, because it is the effect of his free will," is correct, but only *so far*; for if we consider carefully *how* he came to be as he is, we find that there is no such strict causal connection between these single steps of internal development as between his motives and actions. Thousands are lazy without ever becoming inebriates; thousands with an inordinate longing for enjoyments remain honest; thousands who are vain, or thirst for glory, never develop anything like malevolence or hatred, and so on.

There are quite numerous and diverse *external circumstances*

necessary to make a man what he is. Under different circumstances he might have developed altogether differently—that is, as to his *moral being*; for although, as we have seen above, the latter may also, in the relation of motive and action, be provoked by external circumstances—when, for instance, the self-interested actually cheats because of a great temptation, without which he would *not* have done the mean deed—yet, even here, it is only the external doing which is provoked by the temptation, and not his inner moral being, which was as bad before as after the deed. The external circumstances, therefore, did not form his moral state, but merely brought to light what already existed.

Here, however, where we speak of the *formation* or the *origin* of the dispositions, it is altogether different. They grow, as has been shown in different places, out of single external stimulations, as circumstances offer them. We see this the more clearly the farther back we trace the moral being of a man. We come then to more and more innocent periods of his life, and at last to the entirely indifferent moral state at his birth. Here the external circumstances have commenced to act upon the undeveloped soul in various forms of stimulation, and have thus caused modifications of strength or of debility. By and by, according to their nature and repetition, modifications which either correspond with or deviate from the moral norm are formed. We find thus the cause of man's moral development, or of the formation of his dispositions or his will, actually given in those relations which the external circumstances under which he lives provide for him. This is demonstrated also quite clearly in cases where a certain train of circumstances under which a man has been developed in a certain direction, are at once cut off.

For instance, a rich “good-for-nothing” loses his money and is forced by hunger to work and apply himself to a regular mode of life; or, a foolish flirt loses by sickness her pretty face and is thus drawn to more sober and substantial thoughts. Had the first circumstances continued, both would have grown in the first direction—that is, from bad to worse. But when the external conditions upon which this growth was based

suddenly ceased, the further development in the first direction was also stopped.

Although this stoppage does not take away the dispositions already formed, it prevents at least their further growth by the impossibility of further fostering; and as by the new conditions of life new interests are excited, which keep the former in unconsciousness and inactivity, the new may so gain the ascendancy over the old dispositions, that, indeed, an entire change is finally wrought in the moral disposition of the individual by external circumstances. This shows clearly the mighty influence of external circumstances upon the formation of man's dispositions, or his will, and so far as these external circumstances are not under man's control, we cannot consider their effect the direct result of man's action upon *the formation of his dispositions*, nor as belonging to the scope of his free will or accountability.

Indeed, we have no right to so consider them, unless we are allowed to mix things which do not belong together. The freedom of will consists, as we have seen, in the causal connection between motive and action. That is to say, no act of ours is performed without a fully corresponding disposition of ours, or of our will. It is always *we* who will do as we please; and, therefore, *we* are accountable for such actions.

But where this causal connection between motive and action ceases, there freedom and accountability cease also. The *formation* of our dispositions, that is to say, the how and why we must will as we do, lies in a limited degree only in our will; it depends much more upon the external circumstances under which we live and over which we have no control, and thus far we have no right to talk of freedom of will or accountability.

The question *why* the one is placed under such, and another under other circumstances, obviously does not belong to the scope of our investigations. (Compare Beneke's *Grundlinien der Sittenlehre*, Vol. II., p. 498 *et seq.*)

66. FEELINGS OF SIMILAR CHARACTER INCREASE THEIR EFFECT WHEN CO-EXISTING IN CONSCIOUSNESS.

We experience this truth when we make one of a pleasant family party. The various amusements offering themselves to senses and mind, although differing singly, unite, nevertheless, in their general pleasing character, and cause a total feeling of much higher elation than any of the single amusements alone could produce. We find, under such conditions, a little joke quite exquisite, a little amusing occurrence exceedingly funny, etc., while the joke or occurrence at other times might leave us unaffected. The great effect of such a union of diverse similar feelings into one totality we experience especially in poetical figures and parables, the character of which consists of this, that an idea, or rather the feeling which it is meant to produce, is heightened by the excitation into consciousness of other ideas capable of producing similar feelings. In this way originate feelings of the beautiful, of the sublime, of the great. It is the same in music, where a single tone gains by the accompaniment of other harmonious notes; the totality of its effect lies in its harmony. Dissonances interfere for the moment, but the predominance of harmony decides the totality of its effect.

The feeling of *gratitude* belongs in the same category. Beside the pleasurable feeling of the received kindness we conceive also the benevolence of the benefactor, or his excellent character, or his high attainments in science, etc. Clearly, these latter are only remotely similar to the pleasurable feeling of the received kindness; still, being of a pleasurable nature, they help to heighten the first into greater intensity. That this is so, we can readily find if we subtract the latter, and suppose one to be benefited by somebody whom he does not know. The received benefit will also surely excite in him a feeling of gratitude, but certainly not in the degree as in the case where other pleasurable conceptions of the benefactor help to heighten this feeling. Suppose the manner in which the benefaction is tendered be of an offensive, parading nature, the feeling of gratitude will sink to a still lower plane—perhaps not be excited at all.

But not only similar *pleasurable* feelings unite by their concurrence in consciousness in a totality of higher intensity. We find the same effect produced by the concurrence of similar *painful* feelings. Little unpleasantnesses, when following each other in rapid succession, may become intolerable. Great losses, when occurring together, may cause a total feeling of perfect dejection and despondency. The feeling of mortification is composed, not only of the pain produced by reprehension, insult or neglect, but also by a feeling of our unworthiness, no matter whether this unworthiness really exists in us or whether it is merely forced into our consciousness by the strength with which the abuser conceives it. The feeling of regret is caused by the unpleasant consequence of our actions, and is much lighter to bear than the feeling of penitence with which a consciousness of our folly, or frivolousness, or immorality, is associated.

67. DISSIMILAR FEELINGS WHEN CO-EXISTING IN CONSCIOUSNESS RESTRAIN THEMSELVES IN THEIR EFFECT.

We experience the effect of dissimilar feelings when in a merry company a bodily pain (toothache, or headache, or some other trouble) prevents our feelings from reaching the height we see produced in our friends, who have not to contend with such unpleasantnesses. Still we are better off in merry company than at home, where, without the pleasurable excitations, we would feel our troubles doubly strong. It follows that dissimilar feelings, when simultaneously excited, restrain or weaken each other mutually. We have here an altogether different relation from that spoken of in 48 and 49. The dissimilar feelings do not measure themselves one with the other; that is, the toothache, headache, or whatsoever unpleasant feeling it may be, is not the basis whereupon the pleasurable excitations of the merry company are measured, or *vice versa*; but both the pleasurable and the painful are together measured with other mental states, and the total effect of such a mixed mental condition is likewise of a mixed character. Neither the pleasurable nor the painful stimuli can gain full exten-

sion, because the one restrains the other of its full development. We cannot feel quite so merry as those around us, and we cannot feel quite so miserable as we would were we alone without these pleasurable excitations. We may say the pain has spoiled our pleasure, and the pleasure has ameliorated our pain.

Clear examples of such mixed feelings are those of *hope and fear*. In both we have groups and series of mental modifications which relate to the realization or avoidance of something good or evil in the future. In both cases these groups are a mixture of modifications of strength and of debility. In a case where the modifications of strength predominate, we have *hope*; when, however, modifications of debility have the upper hand, we have *fear*. If these groups relating to the realization or avoidance of some future good or evil, consisted of nothing but pleasurable feelings (modifications of strength), the sum of them would be a feeling of *assurance* and *joy*, and if they consisted of nothing but painful feelings (modifications of debility), the sum of them would be a feeling of *despair*. Hope and fear require a mixture of pleasurable and painful feelings, co-existing in consciousness, whereby they mutually restrain themselves of their full sway.

68. CONCLUDING REMARKS.

I have thus far endeavored to condense in the smallest possible compass the mechanism of mental evolutions. I may call it a mental analysis, which, in all respects, reaches, in exactness, to any chemical analysis. The most complex mental phenomena have been dissolved into their elementary constituents, and in the highest mental modifications we have been able to demonstrate their organizing processes from out of the simplest elements. This has been done on a purely psychological basis, by the aid of inner perception. From this it appears how incorrectly Dr. Maudsley judges, when in his "Physiology and Pathology of the Mind," p. 11, he says: "May we not then justly say that self-consciousness is utterly incompetent to supply the facts for the building up of

a truly inductive psychology?" We will have to consider his arguments against the psychological method, which, indeed are much older than Maudsley's inquiries, in a later paragraph. I may state at once, however, that I fully agree with him in the adoption of the inductive method, "which makes man the servant and interpreter of nature, and which is, in reality, the systematic pursuance of the law of progress in organic development" (p. 6); for all psychological evolutions are, indeed, as I trust I have sufficiently shown, organic developments, which can be satisfactorily explained only on a basis of scrutinizing observation of mental life, wherever and however that mental life may manifest itself; but not by preconceived general ideas from which the old psychology has in vain been trying to construe a science true to nature. There is a point wherein I perfectly agree with Dr. Maudsley, and acknowledge with pleasure his advanced ideas on mental development. Neither the will, nor the understanding, nor the sphere of feelings "are innate and constant faculties, but gradual and varying organizations;" and this has been shown by no one more clearly and convincingly, because based upon experience, than by Beneke in his numerous works during the years from 1820 to 1853.

It is rather a perplexing fact, however, that Beneke has received so little acknowledgement, even from writers who, in their researches, boast of their inductive methods. All I can find in their works is a mere mention of his "*Lehrbuch der Psychologie als Naturwissenschaft*," a book written for the use of his students, as a guide during his lectures. To judge from this skeleton-book the profound life which has flowed from this deep and well-trained mind is, to say the least, scarcely just or up to the times. The old psychologists, especially the followers of Herbart, decried him as an "empiricist," who was unfit for any sort of speculation (*Hartenstein über die neuesten Darstellungen und Beurtheilungen der Herbart'schen Philosophie*); or, as a half-bred pupil of Herbart, who stuck fast half-way in the deep mysteries of Herbart's Philosophy, and who, in order to hide his real intellectual origin, used only a new terminology, and so forth (*Drobisch*,

empirische Psychologie, p. 325, ff.). The physiological school, on the other hand, has barely mentioned, as above stated, his text-book for students. Now, it is true Beneke was no materialist, and in his mode of investigating mental phenomena he did not need the aid of physiology, although he never despised any facts, if they were well grounded, from whatever source they might arise. On the contrary, he was open and alive to all observations pertaining to mental evolutions, of the truth of which assertion any of his larger works may be cited as proof. Even if it was not by this method he reached such results, I may say of Beneke what Dr. Maudsley says of Locke: "It was because he possessed a powerful and well-balanced mind, that the results which he obtained, in whatever nomenclature they may be clothed, are, and ever will be, valuable, because they are the self-revelations of an excellently-constituted and well-trained mind" (p. 25). We need not, then, be afraid of the strenuous efforts of the adherents of physiological views to explain mental phenomena on the basis of physiological experiments. On the contrary, we must welcome them as sincere co-laborers in the great cause of unveiling the great mystery—"man." Indeed, there is no reason for rejecting any help from whatever source it may arise. Adolf Horwitz, in his "*Psychologische Analysen auf Physiologischer Grundlage*" (p. 58), is quite right when he says: "If the body be the cause of the soul, then true information of the mind's actions can be had only by a clear understanding of the formation of the body and its organs; if the body be the design or product of the mind, we assuredly will gain a better insight of the intending means by a close knowledge of the intended bodily effects. Or, on the other hand, if the soul be the cause or builder of the body, we may the better judge of this unseen cause, the better we understand its product; and finally, if the soul be the design or product of the body, then, of course, a knowledge of the latter will best further a knowledge of the former." In no way, then, can the newly-awakened interest of physiologists for investigations of mental phenomena interfere with psychology as a natural science. What will clearly appear in our later investigations

I may briefly state here: Physiological researches will complement the observations of inner perception in those spheres which, by their nature, are capable of developing only a faint consciousness, or none at all, under ordinary circumstances. It is thus a helping hand from below up, which we thankfully accept and will not reject, even if we should find now and then that its tendency was rather downward instead of upward. We shall, however, always strenuously decline to tolerate that superficial self-sufficiency and onesidedness which thinks itself in possession of all the wisdom extant, and considers others, with other views and other experiences, as fools and knaves.

69. SUMMARY.

I. *The primitive forces.*

Faculties predominantly endowed with the qualities of *energy* and *acuteness* favor the origin of feelings of the *sublime*, while a predominance of *rapidity* is more adapted for the production of feelings of the *agreeable*. A favorable combination of the three qualities promotes the formation of feelings of the *beautiful* (53). The sublime and beautiful require, however, for their production also an interior treasure of mental modifications, which must correspond to the sensorial impressions. We, then, underlie the latter with our own feelings and dispositions; transfer, so to say, our interior, as corresponding to them. In short, we spiritualize the external things. Herein consists the nature of the *æsthetic feelings* (54).

The greater the energy of the primary forces, the more readily do we attain feelings of *strength* of the single modifications, for then the vestiges are much more perfect (55). Conceptions which consist of many such perfect vestiges are reproduced with *clearness* and *distinctness*, while such as consist of only few vestiges are felt as *dim* or *indistinct*. A mixture of like and unlike vestiges gives the feeling of obscurity or confusion (56). But also pleasurable or painful and conative mental modifications receive, by the multiplication and preservation of vestiges, their peculiar character as

feelings (58). The stronger pleasure we feel as of greater value, or as a greater good, and the stronger desire manifests itself with greater force (61). Knowing, from previous chapters, that the primary forces gradate in all men in the same manner as regards their energy, from the higher to the lower senses; knowing also that the external stimuli are always the same, acting according to their nature upon all human beings in like manner; and knowing, finally, that in all human souls the same law of attraction of like to like produces homogeneous units, we come to the conclusion that the feelings, too, must gradate, in regard to their strength, in all human beings in the same manner; that, therefore, a feeling of pleasure or pain of the higher senses must in all men have greater strength, be of greater value, than one of the lower senses; provided, always, that the number of vestiges in both be alike, and that the basis whereupon they are felt remains the same, which latter condition is indeed a necessity of all acquired, stationary feelings. This natural gradation of good and evil, necessarily conditioned by the nature of the primary forces, is the basis of all *true and correct valuation*; and, inasmuch as the valuation of things, when reproduced in the form of desires, constitutes the motives for our actions, it is at the same time the *moral norm*, or the *highest moral law*, which may be expressed in the form of a commandment: "Thou shalt value everything according to its rank in the natural gradation of good and evil."

II. *The external stimuli.*

According to the quantitative relation of external stimuli to the primitive forces, the latter cause either feelings of *non-satisfaction* or of *pleasure*, of *satiety* or of *pain*; in short, all pleasurable and painful feelings. These various stimulations gradually form the character of man (51).

Sensations differ from *perceptions* by their embryonic consciousness. Perceptions are multiplied sensations (51).

A peculiar relation of external stimuli to the primary forces—the pleasurable stimulation—is also the cause of the formation of feelings of the *agreeable*, of the *sublime*, and of the *beautiful*.

III. *The fundamental processes of the mind.*

1. The transformation of primitive forces by external stimuli, in consequence of which sensations and perceptions originate, is the cause of all *feelings*; for a feeling can originate only when several (at least two) mental modifications, *differing* from each other, co-exist in consciousness. The immediate consciousness of this difference we call a feeling (47). As all that has been formed in the mind with any degree of perfection remains as vestiges, it can easily be understood why the sphere of feelings is so great, and why our feelings are so unstable and varied; for one and the same mental modification can manifest itself now as one and now as another kind of feeling, according as it co-exists now with one or now with another mental modification (49 and 51). The greater the difference between mental modifications co-existing in consciousness, the stronger, *fresher*, or more *vivid* is the feeling (49).

2. The *attraction of like to like* causes the feeling of *strength* of the single mental modifications, which, in the sphere of conceptions, manifests itself either as *clearness* (a union of many like vestiges), or as *indistinctness* (a union of few like vestiges) (55 and 56). The union of a greater or less number of pleasurable or painful stimulations determines the value things assume in our eyes. Too great an accumulation of like vestiges in one or another direction causes deviations from the natural gradation of good and evil, or *false valuation* (60). In the sphere of conation this law produces the strength of desires and aversions (61). If single desires and aversions grow too strong in relation to true valuation, we have *immorality*, or *perverted will* (62). *Maliciousness* is the product of selfishness, bitterness of mind, and a perversion of natural feelings (63). The correct or excessive strength of pleasurable, or painful, or conative modifications, manifests itself immediately as a feeling. If, upon the basis of true valuation, an excessive desire is roused into consciousness, we feel this desire as deviating, or as *wrong*; if, on the other hand, a true valuation is measured upon the basis of an excessive desire, we feel the first as *right*. Thus originates the feeling of *duty*. This feeling, applied to our own actions, is called *conscience*. When is it good? When bad? How far does it extend? What is an erring con-

science? (64). *Freedom of will* is independence from all external and all internal causality, so far as the external and internal causes are not the product of *the will or disposition*. But between our will, or dispositions, or motives, and our actions, there is always the strictest causality. Because of this causal connection, no act of ours is performed without a corresponding individual disposition, or of our will to do that act. *It is always we who will to do as we please*, and for this reason we are *responsible* for our deeds. The strongest disposition or desire will always determine our actions. So long as we have opposite inclinations of the same strength our choice will be difficult. It will grow lighter the more the one or the other of the conflicting dispositions overbalances the opposite in strength. There will occur no struggle at all where there are no contrary dispositions. The formation of our dispositions lies in a limited degree only in our will. It depends much more on the external circumstances over which we have no control (65). Feelings of similar character, when co-existing in consciousness, increase in strength. Herein lies the charm of poetical figures and parables. This is the nature of the feeling of gratitude. Single unpleasantnesses accumulating grow unbearable. The feelings of mortification, penitence, and the like, are subject to the same rule (66). Dissimilar feelings, when co-existing in consciousness, restrain each other in producing effects. Such is the character of the feelings of hope and fear (67).

3. The *diffusion of mobile elements*, in consequence of which there is a constant flowing of mobile elements from one mental modification to another, causes the continual transmutation of our mental acquisitions from delitescence into conscious excitation, and *vice versa* (32). Without this process feelings could not originate. In order to attain a consciousness of the difference between different mental modifications, these modifications must be excited side by side into consciousness; and as the mobile elements unite at the same time the single modifications, during their coexistence in consciousness, into groups and series, they are the cause of those stationary or acquired feelings which we have ready for use, and which endure as long as the union of their factors remains undissolved (48).

PART IV.

PHYSIOLOGICAL PSYCHOLOGY.

"The more minutely we investigate the phenomena of living matter the less likely does it appear that the causes of these will be discovered in the domain of physics, or that any vital, as well as all non-vital, actions, will prove to be in the grasp of physical law." (Lionel S. Beale, in *Protoplasm*, p. 343.)

70. SENSIBILITY AND IRRITABILITY.

There are usually assigned to man five senses: Sight, hearing, smell, taste and feeling. They are represented by bodily organs: The eyes, the ears, the nose, the tongue, and the innumerable fine sentient nerves which are distributed all over and throughout the body. Even a superficial investigation, however, of the reaction of these nerves, through the so-called "common or general sense of feeling," makes it apparent that they respond to stimuli widely diverse in nature. What we discern, for example, by the points of our fingers and toes, the lips, and tip of the tongue (by touch), differs widely from the sensations we receive by the skin in general, or by the action of our muscles, or by the operation of the lungs, the stomach, and other organs. This we shall have to inquire into further on. Here it may merely be stated, in general, that where sensations originate we find bodily organs of peculiar structure, which organs are adapted to the reception of certain kinds of stimuli. According to the nature of the stimuli, the recipient organs vary in structure. All organs, however, consist in a central and a peripheral apparatus joined by conducting cords of peculiar matter called *nerves*. Certain nerves have the peculiarity, that in a normal bodily condition they convey im-

pressions from the periphery to the centre, hence their name *afferent* nerves, in contradistinction from others which carry central impressions to the periphery, and which, therefore, are called *efferent* nerves. We shall speak of the latter more fully in some future paragraph. The afferent nerves, with their peculiarly constructed peripheral and central arrangements, form the bodily basis of the senses.

Glancing over the various classes of living organisms, we do not find any signs of a nervous structure in the whole class of beings designated by the name of Protozoa. This class consists of a perfectly homogeneous mucous substance. Nevertheless, they appear to possess a kind of sensibility to external stimuli, as, according to Trembley's observations, the Hydra moves towards the light, while, according to Cavolini, the Gorgonia and Sertularia shun the light. We may descend still lower in the scale of creation to the vegetable kingdom, where nervous structure is entirely out of question, and find even here clear signs of reaction against external stimuli. Of the very numerous instances of this kind, I need single out only the generally known plants, the *Mimosa pudica* and *Dionæa muscipula* (Venus' fly-trap). In these cases reaction against stimuli does not depend upon a nervous structure at all. The same independence manifests itself in the irritability of the muscles when their nerves are severed; in the growth of the ovule, and its subsequent development after fecundation until the period when the first traces of nerves appear; in the growth of such parts of the body in which no nerves as yet have been discovered—for example, the cartilages, the lenses, the vitreous humor; in the respiration of the red blood-corpuscles and the motion of the white corpuscles outside of the body. Life is inherent in the *cell* (Virchow); or more accurately, according to Beale, in the bioplasm or protoplasm, which consists of colorless and structureless masses, the smallest of which are spherical, the largest always assuming the spherical form when free to move in a fluid or semifluid medium.

Still there must be a difference between the irritability of cells possessed of and those devoid of nervous elements. It might, indeed, be impossible to draw a line of distinction

between the two when they first commence to appear as separate organizations, as in the case of the lowest classes of animal organisms. But the line of demarcation will become sufficiently plain if we follow their development to its more advanced stages. These latter stages show unmistakably an entirely new form of development, and one invariably associated with the nervous organization, the development of *consciousness*. However perfect a cell may be, or however perfect its combination with other cells in forming a complex organism, as, for example, in plants, the cell nowhere shows signs of consciousness. Not until nervous structure appears is the development of consciousness discernible; but only the advanced stages of nervous development show the essential tendency of the primary or elementary nerve-structure definitely realized. What at first is indiscernible gradually unfolds itself, and we come, by retrograde reasoning, to the conclusion that whatever peculiar property belongs to an advanced nervous structure, must belong equally in kind, though more faintly in degree, to the nerve-element in its nascency. If we thus hold nervous structure apart from all other cell-structure, we shall be able to distinguish between the sensibility of nerve-structure and the irritability of all other living cells. In nerve sensibility there is a capacity for development into *consciousness*, and this capacity is constantly struggling to realize itself, while the irritability of all other living cells exhausts itself in a reaction to maintain life, that is, in the preservation and upbuilding of nutrition and form. We see this clearly manifested, not only in those plants which consist of a single cell, especially the Algæ, living unattached in the water and in the spores of plants, but also in the various cells of the animal organism. The automatic properties of the cells have been described by Virchow (in his *Cellular Pathology*, p. 355, 4th German edition) as consisting of the following characteristics: They change their form continually by projecting and withdrawing single parts of their substance, which is seen with special clearness in the young cells of the cartilage and of the enchondroma; they have molecular motion within themselves in their protoplasma, as observed by Reinhardt in pus-corpuscles, and by

Remak in mucus-corpuscles; they form vacuoles in their protoplasma; they cause separations of single parts from the main body, and swallow up and incorporate with great voracity other cells and foreign substances, as has been observed by Preyer and others. Preyer saw colorless blood-corpuscles twist around and envelope red ones, and press them into their interior; and others observed that colorless blood-corpuscles as well as other cells incorporate indigo, carmine, cinnabar, in much the same way as is known of Infusoria, who possess neither mouth, stomach, nor outlet, but take up or suck in foreign substances, and throw them off more or less changed at any point of their surface. All these processes have been observed to go on in the living cell, independent entirely of any nervous influence. They are the cell's essential life property, its irritability or innate nutritive and formative power, in consequence of which the cell becomes a living organism, and is life in its incipient stage, vegetable or animal. By it the cell multiplies and aggregates, and gives rise to the growth of the different organisms.

71. THE NERVOUS SYSTEM.

No doubt the nerve-cell too, considered merely as a living cell, has the same inherent capacity and tendency toward nutritive and formative processes, otherwise its growth would be impossible; but superadded to this is another capacity, higher and generically different, the capacity for development into consciousness. In its primary impulse this manifests itself in a gradual development of the special senses, that is, as a sensibility for the reception and appreciation of special external impressions. The first indications of this capacity are, indeed, very faint. Not until we arrive at the class of Radiata do we find traces of a nervous system. The Acalepha present a nervous ring around the entrance of the stomach or mouth, as the first phase in the development of nervous matter. This arrangement is persistently repeated in the various species of this genus. In the Mollusca and Articulata this œsophageal or oral circle is one of the most essential features of nervous

structure. From this nervous ring gradually more and more nervous cords are distributed to other portions of the body, and as the functions of these organisms become further differentiated several centres of nerve ganglia make their appearance.

Thus in the higher Mollusca the oral or œsophageal nervous centre is divided into an upper and lower centre or ganglia. The upper, or *cephalic*, gives off nerves to the labial and olfactory tentacula, to the eyes, and to the muscular apparatus of the mouth; the lower, or *pedal*, sends nerves to the foot and to the organs of hearing. A third centre, the *parieto-splanchnic*, is usually situate on the posterior part of the body, and distributes its nerves to the muscular and sensitive parietes of the body, to the shell muscle or muscles, to the branchial apparatus, and to the heart and large vessels. These different centres are connected by commissural bands.

Beside the foregoing ganglia and nerves, we find in many of the Gasteropoda a separate system connected with the complicated apparatus of manducation and deglutition. This set of nerves and ganglia may be called, from its distribution, the *stomato-gastric* system. A distinct *visceral* or sympathetic system of nerves, consisting of a multitude of minute ganglia and of a network of filaments, dispersed through the various parts of the apparatus of organic life, and communicating with the stomato-gastric system, has been clearly made out (by Mr. Hancock and Dr. Embleton, in *Philosoph. Transact.*, 1852, and others) among the nudibranchiate Gastropods, and it probably exists elsewhere. (Carpenter, *Comparative Physiology*, p. 647.)

In the Articulata, except in their lowest forms (the Vermiform tribes), we find a longitudinal gangliated cord corresponding to the spinal cord of the Vertebrata, with this difference, that instead of lying beneath the *dorsal* or upper surface, as in the Vertebrata, it occupies the *ventral* or inferior surface of their bodies. In its function it corresponds precisely with that of the spinal cord of the Vertebrata.

But "there is no distinct trace, in Articulates generally, of anything that can be fairly considered homologous with the cerebrum or the cerebellum of Vertebrates; the first sub-

œsophageal ganglion (cephalic ganglion), which has been likened to the latter, being really homologous (as the distribution of its nerves abundantly proves) with the medulla oblongata." (Carpenter, *Comparative Physiology*, p. 656.)

With the Vertebrata the arrangement of the nervous system takes another turn. The longitudinal gangliated cord now occupies the *dorsal* portion of the body, and its cephalic ganglia become an immediate continuation of it; all lie *above* the alimentary canal, and form a continuous mass of nervous matter—the *cranio-spinal axis*, which consists of the medulla spinalis, the medulla oblongata, and the chain of sensory ganglia. The œsophageal ring, which was the most characteristic feature of the previous classes, disappears.

In the lowest class of these new organizations, the Amphioxus, there is no trace of either a cerebrum or a cerebellum, and the Cyclostome fishes in general show no other advancement save a larger development of their sensory ganglia. In all the higher classes of fishes, however, and Vertebrata in general, we find an additional development of nerve-matter, namely, the *cerebral* ganglia or hemispheres, which overtop the sensory ganglia, and the *cerebellar* hemispheres, which overlap the medulla oblongata. At first the sensory ganglia by far predominate over the rudimentary beginnings of the cerebral hemispheres, until after many intermediate and successive developments from one type to the other, the cerebrum gains so much predominance in size, as well as in complexity of structure, that the sensory ganglia become completely covered and hidden by it. The cerebellum likewise begins merely as a rudimentary thin layer of nerve-matter on the median line, until by successive developments it gradually attains, in the higher classes, to considerable size and complexity of structure, consisting of a central portion and two lobes or hemispheres. (Compare Carpenter, *Comparative Physiology*, p. 663.)

This gradual development of the nervous system we find invariably associated, not only with a gradual differentiation of tissues, organs and functions in the animal economy, but also (and this is our most important consideration) with a

more and more pronounced *conscious* activity or *intelligence*, a development which exists nowhere except in organisms endowed with nerve-structure. This inseparable union again demonstrates the existence in nerve-structure of a potential capacity for development into consciousness.

72. THE SYMPATHETIC NERVOUS SYSTEM.

Conscious development we find least pronounced in the sympathetic system; yet that a certain degree of sensibility exists in its ganglia we would necessarily be compelled to infer (even if positive experiments had not proved it) from the observation of subjective sensations. We may count in this class the pleasurable feelings of bodily comfort, ease, convalescence, of health, vigor and strength; the painful feelings of bodily oppression, anxiousness, restlessness, sickness, wretchedness, indisposition, heaviness, goneness, exhaustion, feverishness, etc.; the conative feelings of loathing, nausea, hunger, thirst, uneasiness, etc.; the positive bodily conations or desires for light and air, for all sorts of food and drinks, for evacuating the bowels or bladder, for sexual intercourse, for being carried about (in children), or moving about, or keeping still, or being lazy, etc. Many more sensations might be added, and many are so obscure as to defy description. It is possible, however, that some of those just enumerated do not belong to the sphere of the sympathetic system alone, as this system is blended throughout its extent with cerebro-spinal nerves. But to assign the separate origins of these lowest conscious developments, neither internal perception nor anatomical and physiological observation is competent. What anatomical and physiological researches have brought to light in regard to the sympathetic system is briefly as follows: "The sympathetic ganglia receive motor and sensory filaments from the cerebro-spinal nerves, as already stated, and some filaments of the sympathetic pass to the cerebro-spinal centres. The filaments of the sympathetic are connected at or near their termination with ganglionic cells, not only in the heart and uterus, but in the bloodvessels, lymphatics, the submucous

and muscular layer of the entire alimentary canal, the salivary glands, liver, pancreas, larynx, trachea, pulmonary tissue, bladder, ureters, the entire generative apparatus, suprarenal capsules, thymus gland, lachrymal canals, ciliary muscle, and the iris." (Mayer.) "The sympathetic ganglia prove to be endowed with a certain degree of sensibility, which, however, is of a duller nature than that of the ordinary sensory nerves." (*Nervous System*, by Austin Flint, p. 424.)

Comparing these results of anatomical and physiological research in the sympathetic nervous system with the results of observation upon ourselves, we find that they closely correspond. The feelings or sensations we have in these nerve-centres (some of which have been enumerated above) are for the most part of a very obscure and indefinite character indeed. Nevertheless, these sensations may be roused sometimes to such intensity that they overshadow and thwart even the higher mental developments of sound judgment, etc. To exemplify this, I need refer only to hypochondriacs and hysterical women. In both cases there exist morbid disturbances of the sympathetic system which make themselves felt in its nerve-centres. These sensations first appear obscurely, but gradually, through their long continuance, attain an intensity which gives them actual preponderance over higher mental modifications. Such persons cannot do otherwise than constantly talk of their misery, and, trying to discover its cause, frequently work themselves into the strangest and most absurd delusions.

In conformity with the view that a nerve-cell in general possesses a potentiality of conscious development, we must claim this power for the ganglia of the sympathetic system also. We would otherwise be at a loss where to locate the commencement of this power. To deny to one tissue what we attribute to another of the same kind, would surely not be admissible in logical reasoning. Therefore to the nerve-cells of the sympathetic system we must assign a certain capability for conscious development, however feeble. In the chain of animal organisms we find the simplest nerve-structure to be the starting point of conscious development, and in the human organ-

ism we may consider the sympathetic system as the lowest base for the unfolding of the same process. This view is further enforced by the similarity of the sympathetic system with the cerebro-spinal system. Both have their ganglionic centres, and both are connected at or near their peripheral terminations with ganglionic cells.

By the rami communicantes filaments from the cerebro-spinal nerves the sympathetic system is in certain communication with the spinal and cerebral centres. This explains the mutual, though limited, influence of one system upon the other, which is so clearly defined in cases where conscious developments of the sympathetic system become so intense as to obscure the consciousness of a higher plane, and where, on the other hand, mental emotions greatly influence the sympathetic system; as, for example, in the well-known instances where fright blanches the cheeks, or the bashful blush, or where worry impedes and success increases digestion, etc.

The sensibility of the sympathetic system has never been considered as constituting anything like an independent sense. At least, its peculiar manifestations, which could not well be denied, have been thrown with other sensations into one common class, the so-called "common or general sense of feeling;" and this again has been crudely confused with the sense of touch; for all the world still speaks of five senses: sight, hearing, smell, taste, and feeling. But scores of convictions, sanctioned by centuries, have sunk into oblivion before a widening science; and we need not recoil from the doubt as dangerous, if even the sacred limitation of our senses to five should prove to be a product of incomplete observation. The latest researches of Mayer in Stricker's *Handbuch der Lehre von den Geweben*, Leipzig, 1871, p. 820, show "that near the terminal filaments of the sympathetic, in most of the parts to which these fibres are distributed, there exist numerous ganglionic cells;" and, as this is precisely a characteristic arrangement of all the other "special" senses, we are fully entitled also to consider the sympathetic system as being the basis of an independent sense.

This view is strengthened by psychological considerations.

Hunger, thirst, sexual desire, and a great number of other sensations in the sympathetic system, are so distinctly *sui generis*, that only great laxity in discrimination can allow them to be classified with the "general sense of feeling." This is best illustrated by the system of provings of drugs upon the healthy body, which was introduced by Hahnemann and has been continued by his followers, consisting of the closest observation of subjective symptoms arising from the drugs taken; symptoms, by the way, which frequently are of the highest importance in the selection of the corresponding remedy in a given case of disease, but hidden from the self-styled "physiological" school by their crude ignorance of the finer shades of drug action. Still, it must be admitted, as has been intimated, that a distinction between sensations of the sympathetic system and the general sense of feeling is not practicable in every given case, because these sensations are of the lowest order of conscious development, and the sympathetic nerves are so intimately interwoven with cerebro-spinal filaments, that anatomical research has not been able as yet to trace them separately to their respective terminations.

73. GENERAL SENSIBILITY, OR COMMON OR GENERAL SENSE OF FEELING.

The nerves through which the general sense of feeling finds expression are cranio-spinal nerves, and their action is said to differ from the other "special" sensory nerves in that a stimulation of the same causes *pain*. Now, this assumption rests wholly upon the crude observations which have been mainly made by cutting, pinching, and cauterizing. The stimulation of these nerves does not cause pain, unless it is an *over-stimulation*, and an overstimulation will certainly, and in the case of every nerve, cause pain. In fact, overstimulation of a nerve is the very definition of pain (25). Pain is always and everywhere the product of an overstimulation in any of the sensory nerves, and it cannot, therefore, be considered as a special phenomenon of the general sense of feeling. Beside, pain is very different in its character, according to

the nature of the stimulus which causes it, and the nature of the organs in which this overstimulation takes place. Fire burns, acrid things smart, a blow stuns, a fall causes bruised pain, and so on. Overstimulations in the nerves of mucous membranes are frequently characterized as burning, affections of serous membranes mostly as acute stitching, affections of bones as boring, affections of muscles as bruised, sore, lancinating sensations, and so on; while neuralgia proper assumes all sorts of painful sensations, such as burning, stinging, throbbing, beating, etc. This being so, it is plain that "pain" is only a general expression signifying overstimulation of sentient nerves. Since overstimulation may be caused by the most varied stimuli, and takes widely diverse and opposite forms even in the same organ, pain cannot be considered as the special function of the general sense of feeling.

In the explication of these particular sensations, however, we must always bear in mind that in the lower senses it is frequently most difficult, and sometimes impossible, to decide absolutely whether certain sensations originate in the sympathetic system, or in sentient nerves of the cranio-spinal system, for reasons above stated. There are forms of hemicrania, for instance, which undoubtedly seem to be caused, according to Du Bois-Reymond's observations, by an irritation of the cervical portion of the sympatheticus, causing tetanus of the muscular coats in the vessels of the affected side; while on the other hand numerous other forms of neuralgia appear to have nothing to do with the sympatheticus. Such are the neuralgiæ of the facial, intercostal, crural, sciatic, and other nerves by irritation of some kind, and the numb feeling, the crawling and tingling, etc., from pressure and the like upon them, or from pressure upon or disease of, their centres. As further instances of the functions of the general sense of feeling, may be mentioned the sensations we receive from the coolness or warmth of the atmosphere, and from its sultriness, dampness, or dryness; also the sensations of tickling, irritation, itching, burning, etc., caused by various agents, when applied to the skin, or to its inverted portions, the mucous membranes of the respiratory organs, or the alimentary canal; also sensations of

comfort or distress, which well-fitting or ill-fitting apparel may produce. In these last instances we see that sensations of the general sense of feeling border closely on the sensations derived from the sense of touch. Anatomical researches fully explain this. We find the tactile corpuscles and terminal bulbs of Krause spread, to some degree, over a large portion of the general surface, so that a commingling of both kinds of sensations must frequently take place.

What we know thus far of the terminations of nerves ministering to what we call general sensibility, as distinguished from the sense of touch, is the following: Non-medullated nerve-fibres pass to the true skin between the cells of the rete Malpighii. There they assume the form of small cells, which lie between the cells of the lower stratum of the rete, from which still smaller filaments issue toward the upper stratum, and finally, somewhat enlarged, terminate beneath the stratum corneum. These nerve-fibres have no connection with the tactile corpuscles. (Paul Langerhaus, Virchow's *Archiv*, vol. 44, p. 325; Max Schultze, in Stricker's *Lehre von den Geweben*, vii, p. 136.) Further: "Medullated nerve-fibres form a plexus in the deeper layers of the true skin, from which fibres, some pale and nucleated, and others medullated, pass to the hair-follicles (Köl liker), divide into branches, penetrate into the interior, and there are lost. A certain number of fibres pass to the non-striated muscular fibres of the skin; a certain number pass to the papillæ that have no tactile corpuscles. In the mucous membranes the mode of termination is, in general terms, in a delicate plexus just beneath the epithelium, coming from a submucous plexus analogous to the deep cutaneous plexus." (Austin Flint, *Nervous System*, p. 44.) The nerves of touch, on the other hand, terminate in tactile corpuscles, probably also in the terminal bulbs of Krause, and in Vater's or Pacini's corpuscles. The difference between general sensibility and touch is also proved by the fact that when the tactile corpuscles have been destroyed (by ulceration, for instance), touch is gone, but pain may be produced; or that the sense of temperature may be lost, while the sense of touch still remains. Now, these two lowest senses, that of the

sympathetic system and that of the sentient cranio-spinal nerves (called the general sense of feeling), we might designate as *vital senses* in contradistinction to those yet to be considered (the *organic senses*), as their office seems to be to announce the regularity or irregularity in which the *functiones vitales* of the organism are performed. The sense of the sympathetic system seems to be acted upon mainly by stimuli within the organism itself, while the sense of general feeling receives impressions from external stimuli. But this distinction is of no great importance, inasmuch as the stimuli within the organism itself are just as well external to the recipient nerves as those which come from outside of the body, to stimulate all the other sensory nerves.

74. THE MUSCULAR SENSE AND THE SENSE OF TOUCH.

"The muscles undoubtedly possess nerve-fibres other than those exclusively devoted to motion; for, in addition to the motory fibres, Kölliker and some others have noted fibres with a different mode of termination. These Kölliker believes to be sensitive nerves, but their mode of termination has not been so definitely described as in the fibres with terminal motor plates." (Austin Flint, *Nervous System*, p. 33.)

"The muscles, too, possess sensibility, but it is of a peculiar nature, as stinging, burning or cutting do not cause any noteworthy sensations, but they feel sore from long-continued action, become painful from convulsive contractions or pressure, and have a very fine feeling of their own contraction, to such a degree, that they discern the slightest differences in their exertions needed for different exercises." (Kölliker, *Mikroskopische Anatomie*, Vol. I, p. 267.)

"There can be no doubt that in every exertion of the will upon the muscular system we are guided by the sensations communicated through the afferent nerves, which indicate to the sensorium the state of the muscle. Many interesting cases are on record which show the necessity of this muscular sense for determining voluntary contraction of the muscle. Thus Sir C. Bell (who first prominently directed attention to

this class of facts under the designation of the nervous circle) mentions an instance of a woman who was deprived of it in her arms without losing the motor power, and who stated that she could not sustain anything in her hands (not even her child) by the strongest effort of her will, unless she kept her eyes constantly fixed upon it, the muscles losing their power and the hands dropping the object as soon as the eyes were withdrawn from it. Here the employment of the *visual* sense supplied the deficiency of the muscular." (Carpenter, *Comparative Physiology*, p. 680.)

"I have seen a similar instance recently of a woman, epileptic in consequence of syphilis, who had lost the muscular sense in her left arm, and who did not know, except she looked at the limb, whether she had got hold of anything with her hand or not; if she grasped a jug she could hold it quite well as long as she looked at it, but if she looked away she then dropped it; she had no loss of *tactile* sensation. Ollivier details a case in which the patient had lost the cutaneous sense of touch throughout the side in consequence of concussion. At the same time he was able to form a correct estimate of the weight with his right hand. The physician, observed by Marcet, who was affected with anæsthesia cutanea of the right side, was perfectly able to feel his patient's pulse with the fingers of the right hand, and to determine its frequency and force, but in order to determine the temperature of the skin he was obliged to call in the aid of his left hand." (Maudsley, *The Physiology and Pathology of the Mind*, p. 174.)

This muscular sense is extended over all the voluntary muscles, to which it is the indispensable guide for their actions. The wonderful adaption of movement of both eyes for seeing purposes; the no less wonderful concert in the action of the muscles to produce talking and singing; the skilful exercises of the hands which the artist as violinist, pianist, painter, or engraver, etc., which the mechanic, the writer, the seamstress, etc., perform; the motions of the legs and body in walking, jumping, dancing, and gymnastic exercises, and so on. None of these would be possible without a muscular sense, an ability to perceive the exact state of muscular tension or relaxation,

and an exact estimation of the degree of contraction necessary for a required motion. This implies, indeed, not only the very great acuteness of the muscular sense, but also the great celerity with which the impressions upon it are received and executed.

The sense of *touch* is anatomically easily distinguished by its tactile corpuscles, and probably also by Krause's terminal bulbs, which bear some analogy to the tactile corpuscles and Vater's corpuscles, but are much smaller and more simple in their structure. They are found in the conjunctiva bulbi, the lips, the floor of the buccal cavity, the tongue, the glans penis and the clitoris. The functional action of the sense of touch is very closely blended with that of the muscular sense. By both we perceive the externality of things, their extension, form, hardness, softness, roughness, smoothness, etc.; but this is possible only by certain muscular motions and a fine estimation of the force applied necessary to appreciate the form of external objects, which, as has been stated, is the particular office of the muscular sense. We become conscious of the extension, form, roughness, or smoothness of things by moving our fingers over their surfaces, and their hardness or softness reveals itself to our consciousness if we make a certain pressure upon them, and thus find, by estimating the force required to change their form, the actual resistance of the substances against pressure; that is, their hardness or softness.

75. THE SENSE OF TASTE AND THE SENSE OF SMELL.

A part of the glosso-pharyngeal, which is the smallest of the three divisions of the eighth pair, and a small filament from the facial to the lingual branch of the fifth pair, unite to form what are collectively called the *gustatory* nerves.

According to the researches of Remak and Kölliker, there is a difference between the microscopical terminal structures of the glosso-pharyngeus and lingualis. The first terminates in microscopic ganglia, which the lingualis does not possess (compare Kölliker's *Mikroskopische Anatomie*, Vol. II, p. 32), and

it is quite possible that this difference in their terminal arrangement determines also a difference in their functions. The principal localities of taste are the upper surface of the root of the tongue (especially the *papillæ circumvallatæ*), the edges of the tip of the tongue, and probably also the front part of the soft palate. The terminal apparatus of gustation, only lately discovered and described by Loven and Schwalbe, consists of numerous microscopic groups of cells, which are superimposed upon the fibres of the glosso-pharyngeus, and which have been called *gustatory buds* ("Geschmacks-Knospen" by Loven, and "Schmeckbecher" by Schwalbe). These buds are imbedded within the little cavities formed by the epithelium of the mucous membrane, which they completely fill out. The form of these cavities resembles that of a round-bellied bottle or retort; their bottoms rest upon the surface of the connective tissue of the mucosa, and their necks pierce the stratum corneum of the epithelium, where they form a circular opening or mouth. The gustatory buds are frequently found by hundreds on the lateral portions of the *papillæ circumvallatæ*, in less number on the lateral portions of the *papillæ fungiformes*. They consist of fifteen to thirty ellipsoidal cells, which are arranged in a manner similar to the leaflets of a flower bud. Their upper or peripheral portion gradually tapers off in width, and terminates near the mouth of the cavity, either in the shape of a *peg* ("Stiftchen") or in the shape of a *rod*. Their bodies consist of a vesicle-like nucleus, while their lower cylindrical extremity at a short distance from the nucleus, diminishes suddenly to one-third the size of the upper process, and splits into two somewhat smaller branches, which again divide once or several times before they reach the surface of the mucosa. The connection of the nerve-fibres with these gustatory buds has not been yet fully ascertained. We know only that the fibres of the glosso-pharyngeus, shortly before their entrance into the *papillæ circumvallatæ*, contain microscopic groups of ganglion cells. From here several bundles of fibres enter the *papillæ* and divide into numerous fine, winding and decussating filaments, which radiate toward the epithelium. These filaments split into still finer branches and,

close beneath the epithelium, form a plexus. Most probably these finest filaments connect with the lower part of the gustatory buds. (Th. W. Engelmann, in Stricker's *Handbuch der Lehre von den Geweben*, p. 822.)

The sense of *smell* has for its instrument the *olfactory nerve*, distributed to that portion of the mucous membrane lining about the upper third of the nose, and called the olfactory region. This surface is covered with epithelium, which consists of two layers, an outer or ciliary and an inner or cellular layer. The cells of the inner layer are of two kinds, *larger* ones of oval shape, situate more peripherally than the more numerous *smaller* cells, which are of spherical shape, lie lower in the inner layer, have two long and fine processes, of which the upper and thicker goes to the periphery, while the lower may be traced to the stratum of the subepithelial connective tissue. The upper terminates in the fine cilia above mentioned as the outer layer of the epithelium. These cells, with their terminal appendices, constitute, according to Max Schultze, the terminal apparatus of the sense of smell. How the peripheral cells of the organ of smell are connected with the olfactory nerve-fibres has not yet been fully demonstrated. It is probable, however, that the smallest fibrils of the olfactory nerve are in some way connected with the lower processes of the olfactory cells. (Babuchin, in Stricker's *Handbuch*, p. 964.)

Smell and taste are closely related. We may perceive the same property of an object nearly alike with either of these senses. For instance, "sour or sweet," etc., can be recognized by both senses, and in the middle high German the expression for tasting and smelling is still not clearly separated by distinct words for either.

The nature of the stimuli which excite the gustatory, as well as the olfactory nerves, we do not know. We only know that the gustatory sense requires them in a fluid and the olfactory in a gaseous form; that they probably appertain to the chemical constitution of different bodies, and also that we cannot become cognizant of them by any of the other senses.

76. THE SENSE OF HEARING.

With even greater perfection than the preceding senses we find the terminal arrangements of the sense of hearing constructed. Max Schultze found in the internal ear, especially in the vestibule and ampullæ, the terminal fibres of the auditory nerve project through the epithelium and terminate in fine fibrils or cilia. The termination of the auditory nerve in the cochlea, which Corti first described, is a wonderfully complex and fine mechanism, in which rows of fibres with pedunculated cells are found combined in such a manner as to forcibly suggest to the mind a striking resemblance to the keys and strings of a piano. It is difficult, however, to decide which of these terminal structures are nervous and which are not.

The external stimuli, or the sounds which originate in the various ways by which the surrounding air is thrown into a state of vibration, have to take the following course before they reach the recipient faculties. At first they wind their way through the external meatus, and cause a corresponding vibration of the *membrana tympani*. This vibration is transferred through the ossicles from the *tympanum* to the membrane covering the *fenestra ovalis*, which again sets into vibration the fluid contained within the labyrinth, and thus the original external stimulus finally reaches the wonderfully constructed mechanism within the labyrinth. There are about three thousand fibres of varying length and tension contained within the walls of the cochlea. They are regularly arranged side by side like the keys of a piano, and their functions have been explained by Helmholtz on the theory of the sympathy of sounds. It is generally known that strings of the same length and tension, when in close neighborhood, commence to vibrate if only one is set in motion, and that they all sound if the impulse upon the first is strong enough to cause a sufficient intensity of vibration. In case, however, of strings of different tension and length, although lying in close neighborhood, the vibration of one may cause the other to move but not to sound, as the degree of movement of their vibrations is altogether different. In like manner, according to Helmholtz, out of the

numerous and variously tuned fibres of Corti, only those answer to external impulses which correspond according to their length and tension with these impulses; and thus it is possible, for instance, to discern in a complicated piece of music the many and various notes even singly. Of course this requires a perfect and well-tuned mechanism of Corti's fibres within the ear. But even here the course of the external stimuli has not ended, for these fibres do not hear, they merely vibrate, and not until this peculiar stimulation is transmitted by special nerve-filaments of the auditorius to the central organ is this vibration perceived as sound or noise.

77. THE SENSE OF SIGHT.

The sense of sight is the most perfect of all the senses. After the optic nerve has made its entrance into the bulb of the eye at a place called the *papilla nervi optici*—or sometimes the blind spot of the retina, from the fact that it is not susceptible to the impressions of light—its filaments, losing their medullary substance, spread in all directions and form partly the anterior layer of the retina, which joins by its limiting membrane the hyaloid membrane of the vitreous body. Back of this expansion of the non-medullated optic nerve-fibres there have been distinctly traced several other layers, which constitute the retina, and which, in the order from front to back, are as follows: A layer of ganglion cells; a layer of gray nervous substance, which is a fine granular layer, and which has also been called the inner fibrous layer; a layer of granule cells, or the inner granular layer; an intermediate granular layer, or the outer fibrous layer; an outer granular layer, and the layer of rods and cones. The terminal parts of the rods and cones consist, according to recent researches of Max Schultze, of extremely fine and transparent lamellæ, which are bounded by the dark pigment of the choroidea. They appear of different thicknesses, but are so fine that from thirty thousand to seventy thousand would be required to make one inch of thickness.

The various colors of a soap-bubble furnish the instance

most popularly known, in which fine lamellæ, although colorless in themselves, assume various colors when they reach a certain degree of tenuity, and the degree of tenuity determines the color they reflect. It is possible, then, although it is not proved as yet, that this terminal structure of the rods and cones of the retina responds to the various colors of light in a similar manner as the fibres of Corti in the cochlea answer to their corresponding sounds; and, as Max Schultze has further observed, that the terminal filaments of the optic nerve-fibres are accessories to the rods and cones on which they exteriorly lean, it appears, and it is thus histologically scarcely to be doubted, that the vibrations of light first communicated to the lamellæ of either the rods or cones, accordingly as they correspond, are thus transmitted to special terminal nerve-filaments, by which they are conveyed to the central organ. It is thus not the eye that sees, although its wonderful construction is the necessary condition for the reception of the vibrations of the ether, causing light.

78. STIMULI, EXCITANTS, OR EXTERNAL STIMULI.

It may be here stated in general, that it is not the external things themselves which act as stimuli upon the recipient organs, but that it is only certain qualities of the same which, being varied and different, require for their reception sensory organs constructed in reciprocal relation to them. From this consideration alone it may be surmised that the knowledge we gain of the external world will never amount to an *adequate cognition* ("An-sich-Erkenntniss"), but will remain forever a *cognition of its effects* ("Wirkungs-Erkentniss") only.

So far as the luminous stimuli have been investigated, we are told by physicists that they consist, like those of heat, of various vibrations of the ether. The relatively greatest rapidity is produced by the violet rays of the spectrum, while the relatively slowest motion is that of the red rays. Above and below these in rapidity of vibration are still others, which, however, cease to excite our visual apparatus under usual conditions. Those equalling and exceeding the violet rays in

rapidity of vibration are called actinic (chemical) rays, while those below the rapidity of the red rays are perceived as heat. Now, if all this be correct, and if smell and taste are perceivers of the chemical constitution of external bodies, and the nerves of general sensibility perceivers of heat (beside other qualities), we would recognize the most rapid vibrations of the ether by smell and taste, and the slowest by the nerves of general sensibility. Provided that these investigations are correct, we would be capable of seeing chemical as well as thermic vibrations of the ether, if the terminal apparatus of the optic nerve had been made responsive to them. It appears, then, that what we call light, luminous stimulus, or visual excitant, is practically limited to boundaries fixed by the terminal structure of the eye. There are indeed cases of innate incapability for seeing certain colors, as for instance the extreme red, which would denote an unusual narrowing of the natural visual limit. An extension above or below the fixed limits of normal human vision is unknown, and whether it may or may not exist in the various species of animals has never been ascertained.

The *auditory* stimuli consist of vibrations of the air, which, according to Helmholtz's measurements, range between sixteen vibrations to thirty-eight thousand in a second. This, however, relates only to very fine ears; less delicately constructed organs do not perceive audible vibrations to such an extent. Thus, for instance, it is asserted that some people are absolutely deaf to the song of a lark, the chirping of a locust, or the scream of a bat, but have no other than this one special auditory disqualification. The real musical tones are limited in their rapidity to a range between forty and four thousand vibrations in a second, while, as has been stated, the range of audible sounds in general is much wider.

The question, then, comes up, do vibrations that overpass these limits at either extreme produce no sound whatever? Or, are there no other sounds than those which lie within the boundaries of sixteen and thirty-eight thousand vibrations in a second? For the human ear, it seems, there are none; but it is surely conceivable that among the lower orders of animals

some may possess organs so constructed both for producing and receiving sound, that there exists for them a range and a variety of vibrations where the human ear perceives absolutely none.

The stimuli which act upon the *olfactory* and *gustatory* nerve-fibres are probably, as has been stated, related to the chemical constitution of external bodies, and as such would exceed in rapidity the visual vibrations of the ether. We have no further knowledge of them.

The stimuli for the sense of *touch* and the *muscular sense* seem to consist of various degrees of pressure and traction upon the corresponding sensory nerves. It does not matter whether this pressure or traction be caused by the motion of external things, or by the motion of our own muscles in relation to them. In either case it is motion by which we become cognizant of the quality of resistance which external things manifest when in contact with our own body, and which we recognize by the joint action of the sense of touch and the muscular sense. We may state, then, that even in the case of these senses the essential character of their stimulation consists of *motion*.

This relates probably in some degree, also, to the stimuli which act upon the sentient nerves, or the sense of *general feeling*; although a very important part of their action seems to consist in the perception of heat, which again, as has been stated, is motion, namely, the vibration of the ether, of less rapidity than that of the red rays of the spectrum.

The nature of the stimuli by which the *sympathetic* nervous system is affected, is wrapped in still greater mystery, but consists probably to a great extent of the molecular motions unceasingly going on within the living organism. So long as these motions proceed in harmony, they are not perceptible; only an excess or deficiency in their action, that is, a disturbance in the equilibrium of the natural molecular motion, manifests itself in corresponding sensation. One must have been a prover of drugs in order to be capable of appreciating this wonderful reaction of the human organism against even the finest agencies.

We may, then, sum up and define the various stimuli which excite corresponding sensory organs, as agencies (the essential nature of which consists in *motion*) of motion of the ether, of the air, of solids, of fluids, and of molecules.

79. THE SENSORY NERVE-CENTRES.

The origins of the nerves are far from being discovered. We know only that they centre in the gray matter or in the vesicular nervous substance (distinguished from the white by its dark reddish-gray color and soft consistence). It is composed in great part, as its name implies, of vesicles or corpuscles, commonly called nerve or ganglion corpuscles, containing nuclei and nucleoli. These nerve-corpuscles vary in *size* and *shape*. Some are larger than others; some have one, two or more processes, which occasionally divide and subdivide into numerous branches, and terminate in fine transparent fibres, which either become lost among the other elements, or may be traced until they become continuous with an ordinary nerve-fibre.

Of gray matter we may distinguish the following groups:

1. The peripheral layer of the cerebrum, or its *cortical gray*;
2. The conglomerations of gray matter in the cerebral ganglia (corpora quadrigemina, thalami optici, and corpora striata), the *ganglionic gray*;
3. The gray matter which lines the ventricular surfaces from the tuber cinereum to the conus medullaris, the *central* or *cavity gray*;
4. The gray matter of the superficial and deep layers of the cerebellum, and the gray substance which lies imbedded between the fibrous matter of the cerebrum and the cerebellum; and,

5. The gray matter of the numerous ganglia outside the brain and spinal cord. (Compare Meynert, in Stricker, 1872.)

The *optic nerve* arises from the ganglionic gray of the thalami optici, of the corpora geniculata, which appear like appendices to the thalamus, and of the corpora quadrigemina. These variously derived fibres combine in one flattened band,

the optic tract, where they are again joined by some fibres issuing from a small yellow stria of spindle-shaped nerve-cells, which is inserted between the substantia perforata anterior and the optic tract. A similar augmentation of fibres takes place in the anterior surface of the chiasma or commissure from the lamina cinerea terminalis and the pedunculus corporis callosi. (Compare Henle, *Nervenlehre*, p. 248, etc.)

Physiological experiments do not seem to agree fully with these anatomical researches. For, although the destruction of the corpora quadrigemina is followed by blindness, or the destruction of the bulbus by atrophy of the corpora quadrigemina (in both cases of the opposite side), experiments with the thalamus have not sustained its anatomical relation to the optic nerve. The fibres derived from it serve probably some other purpose or purposes thus far unknown, while the actual capability of receiving the external luminous stimuli seems to be located within the corpora quadrigemina. The structure of these bodies is quite complex, and their connection with other parts of the brain is manifold.

The *auditory nerve* (Sömmering's eighth pair and Willis' portio mollis of the seventh pair) arises from the central gray around the floor of the fourth ventricle. According to Henle (*Nervenlehre*, p. 208, etc.), it has three nuclei from which it issues, a superior, inferior and lateral. The relation, however, which these different roots bear to the different parts of the inner ear, and whether the division of the auditory nerve into the nervus cochleæ and nervus vestibuli is founded in its different roots, or whether the additional fibres of the nervus facialis and nervus intermedius bring any new and peculiar elements into its functions, is not yet known.

The *olfactory nerve*, or the first pair of cranial nerves, is the only sensory nerve which takes its origin in the cortical gray, namely, in the inferior surface of the anterior lobe of the cerebrum. It arises from three roots, an external or long, a middle or gray, and an internal or short root. By these roots the nerve is connected with various parts of the lobe and the great ganglia of the brain. In uniting, these radical fibres form the olfactory nerve, which, in its course forward, expands into the

bulbus olfactorius, from which numerous filaments depart to be distributed over the olfactory region of the nose.

The *gustatory nerves*, consisting of part of the glosso-pharyngeus and part of the trigeminus, both arise from the central gray of the floor of the fourth ventricle. (Henle, *Nervenlehre*, p. 221.) How they act together or differ in their function of gustation is entirely unknown.

A still greater want of positive knowledge (anatomically as well as physiologically) we meet when we wish to trace the nerves of *touch*, of the *muscular sense*, and of the "*common or general feeling*" to their respective origins. Indeed, in this respect we know only that they arise from the central and cavity gray of the spinal marrow, with the exception of those sentient nerve-fibres which, as the greater portion of the trigeminus and the sentient part of the glosso-pharyngeus, take their origin within the central gray of the floor of the fourth ventricle. But of the origin of their separate fibres as distinguished by different functional qualities, we know nothing at all.

Lusanna thinks (Meissner's *Jahresbericht*, 1870), that the nerves of the muscular sense have their centre in the cerebellum, as injury or extirpation of the same is attended with a loss of equilibrium in motion, which equilibrium, according to his view, is sustained by a healthy operation of the muscular sense. But as, according to Schiff, animals which have been deprived of their cerebellum, if they remain alive, regain after a lapse of some time the regular use of their limbs, Lusanna's and also Flourens' hypothesis—according to which latter the cerebellum is the centre of co-ordinate motions—becomes doubtful, as an extirpated *centre* could hardly ever find its functions compensated by any other organ.* In short, we are not yet able to trace the nerves of general sensibility to separate origins, which would in any way correspond to and explain their actually different functional qualities.

Regarding the "*molecular*" sense, if I may use this expression

* Still more recent experiments of Nothnagel, Fritsch and Hitzig seem to place the centre of the muscular sense in the external end of the post-frontal convolution. (Brown-Sequard's Archives, 1873.)

to signify the sensations we receive through the ganglionic or sympathetic nervous system, it appears that its nerves originate in the gray matter of the very numerous ganglia outside the brain and spinal cord, which are found in the two gangliated cords, one on each side of the vertebral column, from the base of the skull to the coccyx, and also numerous in such organs as minister specially to the generative and vegetative functions of life. The cells of the sympathetic ganglia have for the most part several processes; they are, as it is termed technically, multipolar. These processes are either continuous with nerve-fibres, or serve as communications with other cells. Beale and J. Arnold have independently discovered that in the ganglion cells of the sympathicus there are two kinds of filaments, a *straight* one, and a *spiral* one wound around the straight one. As to the manner of their origin within the cells histologists do not agree, neither do they know the physiological meaning of these different processes. The sympathetic system is intimately connected with the cerebro-spinal centres by the rami communicantes, which consist of fibres running from the spinal marrow to the sympathicus and, *vice versa*, from the sympathicus to the spinal cord. (Compare Dr. Sigmund Mayer, in Stricker, p. 809 *et seq.*)

80. THE SENSORY FACULTIES.

All these investigations do not, it appears, bring us much nearer to an understanding as to how and where our sensorial perceptions take place. The origins of the sensory nerves are still more or less wrapped in mystery. What has hitherto been taken for granted, viz.: that all the nerves arise from ganglionic cells, and that, therefore, not only sensorial perceptions, but all mental activities originate by some sort of chemical and molecular action within these cells, seems likely to prove fallacious. If the latest researches of Max Schultze are correct, it appears that the nerve-cell is essentially only an enlargement, with nucleus and nucleoli, of the axis-cylinder; that, therefore, it does not represent the beginning, but is merely an intervening expansion of the nerve in its course.

The bipolar cell is to be so considered. In the case of the multipolar cells of the spinal marrow, from which, according to Deiters' discovery, an axis-cylinder issues to pass toward the periphery, while many other processes spread in different directions, the cell appears to be an intermediate station for the convergence of innumerable nerve-fibrils from different regions, in order to unite and form one axis-cylinder. Even here the axis-cylinder cannot be considered as *originating* within the nerve-cell. It is only made up there like the bulk of a main stream, from numerous tributaries, the source of which no one has yet discovered. The researches of Deiters also make it probable that the groups of ganglion cells, from which the cranial nerves arise, and which have been made known by Stilling as the nuclei of sensory roots, consist of cells in form entirely similar to those of the anterior and posterior cornua of the spinal marrow, and that they, like these, send off only one axis-cylinder, which passes toward the periphery, while the other processes divide into innumerable primitive fibrils. (Compare Max Schultze, in Stricker's *Handbuch der Lehre von den Geweben*, 1872, p. 125 *et seq.*)

If, then, we regard these researches as correct, we are still as far off from the discovery of the origin of these nerves (and what concerns us here especially, of the sensory nerves) than ever before. What thus far has been considered the *source*, has, under the trained eye of the histologist, been resolved into innumerable primitive fibrils that defy all tracing. The receptacles of the external stimuli and the laboratories for the sensations derived therefrom are gone. The nerve-cells turn out to be mere stations, where primitive fibrils from various regions meet, in order to form new combinations. And what seems particularly ominous for the old belief, this beginning of the nerves corresponds exactly to their peripheral termination. Apparently, in both the periphery and beginning, there is a splitting into innumerable primitive fibrils. To what purpose? To meet on the one side external stimuli, the exact nature of which is covered with mystery; and, on the other side, to communicate with a something that equally eludes our keenest scrutiny. Much nearer the truth appear to be Beale's researches. (Compare 94.)

The honor is due to Henle, that amidst the strong current of "scientific" fashion and materialistic preclusions, he stands out boldly, and declares: "Only self-deceit can assert that a being (*Wesen*) which comprises all the manifold past and present modifications of our nerve-life into the union of self-consciousness, could be better understood by considering it a monad fixed in a certain place, than to regard it as an imponderable which pervades the entire body." (Henle, *Nervenlehre*, p. 14, 1871.) This verdict of a savant, whom no one can accuse of ignorance of the anatomical and physiological researches of the present day, brings us a step farther in our investigations. His acknowledgment of an imponderable being, the soul, which pervades the entire body, places him in direct opposition to those who regard mental life as a chemical and molecular activity and development of the nerve-cells. It behooves us to examine more particularly into the merits of this materialistic belief.

The belief that mental action consists in a chemical and molecular activity and development of the nerve-cells took its origin in the fact that a destruction of the brain involves a cessation of mental activity. Later, more exact experiments showed that a separation of the brain from the spinal column, although it withdrew the parts below the separation from all influence of the mind, did not deprive these parts of the capability of becoming excited by external stimuli. A complete extinction of their sensibility could be induced only by their separation from the spinal cord also. These results, based upon these conditions, led to the belief that it was the gray substance in which all nerve-force originated, and that the nerves themselves were only the conductors of this force. There is not a book on physiology in which we do not find this view expounded and illustrated by the phenomena of the telegraph, to make it comprehensible even to the dullest mind. As further microscopic investigation detected the gray substance crowded with innumerable nerve-cells, the theory was enlarged by the additional point, that these nerve-cells were the real source of mental activity, or still more pointedly in the language of the materialistic school, that what we call mind

consisted in the chemical and molecular action and development of these nerve-cells.

How slim a chance this belief will stand in the future may easily be judged, if the latest discoveries of Max Schultze, mentioned above, should prove to be correct. But independent of Schultze's discoveries, the belief has an unstable basis. The experiments of Flourens, always cited in proof of this theory, in reality deal it a disastrous, even fatal, blow. This eminent physiologist removed the cerebrum, slice by slice, from pigeons, and the results consequent upon the operation are quoted in support of the view that it is by the chemical and molecular action and development of the nerve-cells of the cerebrum, especially of its cortical layer, that mental activity is originated; but every anatomist knows that the cortical layer of the cerebrum is so thin that it would be removed with the first slice. This theory demands that with this removal there should be at least a proportionate decrease in the pigeon's mental faculties. Unfortunately, the issue does not bear out these expectations. The pigeon retains its faculties *fully*, until the last trace of the hemispheres is removed, and then—and only then—it *at once* sinks into utter stupidity. If, during this operation, a small portion of cerebral substance, which principally consists of *white* matter, is left, intelligence retains its hold; and thus it is proved physiologically, that psychical functions may, and really do, continue in spite of the loss of a considerable portion of the cerebrum and most of its gray matter, and that, therefore, the nerve-cells cannot be the real source of mental development.

Beside this, the materialistic view encounters still other difficulties. "Although," says Henle, "a specific difference of the nerve-fibres may be denied, if their specific faculties are considered as reactions of the central parts from which they issue, the specific nature of their *terminations* cannot be doubted, as they react against external influences quite differently, and as especially the single sensory nerves show an exclusive demeanor toward the so-called adequate stimuli, light, sound, flavors, etc. Now, how is the 'conduction' of these adequate stimuli through the sensory nerves into the brain to be understood?

It cannot be taken as a propagation of the vibrations of light and sound. The physical nature of the nerves forbids us to accept such a suggestion. Beside, it is disproved by the fact that these nerves, between their terminations and the brain, can be excited only by general stimuli (pressure, electricity, and the like), and not by their adequate stimuli, as is conclusively shown by Marriotte's experiment, which proves the retina blind at the spot where the optic nerve enters. The vibrations, therefore, which the external stimuli cause in the terminal apparatus must be transmitted to the nerve-fibres through which they pass, as an inconceivable quality, in order to be again transformed in the central termination of the nerve, where they are finally received as sensations. The theory is certainly not, as I have already remarked on former occasions, characterized by any degree of simplicity. The complication grows still greater by its application to those senses by means of which we receive impressions of the extension, form and size of things. Is it conceivable that the nerve-fibres of touch and sight, after all the inosculations and decussations of their branches and bundles, should place themselves in the brain in exactly the order in which they issue from the terminal apparatus? And if this were not the case, or if, as it often happens by the transplantation of a piece of skin, the position of the internal terminations become changed, what a confusion would it cause in the correspondence of the mind with the nerves of touch! About the same as would ensue if two telegraph wires were cut, and when repaired their ends were united in wrong directions. We escape all these difficulties if we place the nervous processes which manifest themselves in sensation and motion in the nerve-fibres instead of the gray substance, and thus admit that the sensorial perceptions take place within the sensory organs themselves. The connection between the sensory organs and the brain remains, nevertheless, an indispensable condition. . . . But if usage constrains us to consider the external stimuli to pass through the nerves into the brain, we have an equal right to conceive the nerves as the avenues through which the psychical agency transmits itself outward." (Henle, *Nervenlehre*, p. 13, 1871.)

To this I shall add the following passage from Dubois-Reymond: "The minutest knowledge of the brain, the highest which we can obtain of it, reveals nothing in it but matter in motion. By no imaginable device in the arrangement and motion of material particles, however, can a bridge be made into the domain of consciousness. Motion can produce only motion, or be transformed back to potential energy. Potential energy can produce only motion, can sustain static equilibrium, can exercise pressure or traction. The sum of the energy remains in all these processes ever the same. More than that which is conditioned by this law cannot take place in the corporeal world, and not less either; the mechanical cause is spent entirely in the mechanical effect. The mental processes, which are accompanied by certain material processes in the brain, fail, therefore, to have a sufficient cause for our understanding. They stand outside of the causal nexus, and are, therefore, incomprehensible as much as a mobile perpetuum would be. It appears to a superficial observation as though certain mental processes and capabilities, as for instance memory, the flow and association of mental modifications, dispositions, habits, etc., might be understood by the knowledge of material processes within the brain; but the least reflection shows that this is a delusion. We would become informed only of certain internal conditions of mental phenomena, much like those external conditions which are required for sensorial impressions; but we never would draw any knowledge of the originating of the mental phenomena by these conditions. What is the conceivable connection between certain motions of certain atoms in my brain and the original, indefinable, yet undeniable facts, that 'I feel pain or pleasure; that I taste something sweet, or smell the fragrance of a rose, or hear the sound of an organ, or see a red object,' and the consequent conclusion and immediate certainty, that 'I exist'? It is absolutely and forever incomprehensible, why it should not be a matter of entire indifference how a given number of atoms of carbon, hydrogen, nitrogen, oxygen, etc., are situate and move, or how they have been situated and been moving, or how they shall be situate and move in the future. In no

way is it conceivable, how consciousness could originate by their co-operation." (Emil Dubois-Reymond, *Ueber die Grenzen des Naturerkennens*. Leipzig, 1872.)

From all this it appears that the prevailing materialistic belief cannot boast of an unshaken foundation. Its mainstay, that the ganglionic cells of the gray matter are the receptacles and laboratory for external stimuli, has been made very problematic by the latest microscopical investigations of Max Schultze; that the gray substance of the brain is the real source of mental action, has been conclusively disproved by the physiological experiments of Flourens; that this theory does not simplify, but complicates difficulties that exist in regard to the explanation of psychical developments, has been shown by Henle; and that it is inconceivable how material processes can ever produce conscious, psychical phenomena, even of the lowest order, has been demonstrated by Dubois-Reymond.

For these reasons we shall maintain that the sensorial activity is dependent upon a psychic force, differing in its nature from the gray matter, its cells and its finest nerve-fibrils, as much as the external elements differ in their nature from the terminal ends of the sensory nerves. It is not without significance that Max Schultze finds the nerves dividing into innumerable fibrils at either end—at the point where they so long have been supposed to originate, and at the point where they terminate toward the external world. Strictly speaking, then, there is neither an origin nor a termination of the nerves. They exist as an indispensable apparatus, as a medium between the realms of psychic and corporeal forces, communicating with each other by innumerable attachments and at innumerable points. In consequence of this communication by means of the nervous system, the corporeal forces or external stimuli come within reach of the psychic forces and are assimilated by them, that is, are converted into their *kind*. This at once explains the sensorial function of the mind, and suggests at the same time the idea that there must be some kind of affiliation between psychic and corporeal forces without which assimilation would be impossible. Of what it con-

sists we do not know; but to deny that it may, even must exist, would be pretending an exactness of knowledge that, so far as the discussion has gone, we do not possess.

On the other hand, the psychic forces must not be conceived as undefined, shadowy, nondescript; as ideal existences which float about somewhere and yet nowhere, and can never be laid hold of. They are indeed well-defined, concrete forces, which every soul brings into this world, and in their own way are as distinct and specific as the organs of which the body is composed. They do not develop themselves as products of bodily organization, but they are given entities; they are born with the body, and they are invariably the same in all human beings. As the body consists of its various organs, tissues, vessels, etc., so this system of psychic forces consists of what we may well call *primitive or sensory forces of the mind*, the sum and substance of the soul, so far as we can judge of the soul from its manifestations by subjective as well as objective observations.

81. THE RAPIDITY OF SENSORIAL ACTION.

Notwithstanding the great similarity between some of the phenomena produced by the application of electricity and those attending the physiological action of nerves, the idea that the nerve-cells are the generators of an electric current has long been abandoned. The experiments of Prevost, Dumas, Matteuci, Longet and others, failed to detect the slightest evidence of an electric current with the most delicate galvanometer that could be constructed, so that what physiologists call nerve-force must be admitted to be a force *sui generis*. But a method of experimenting widely different has corroborated this negative result. Helmholtz and others instituted numerous experiments to show the velocity with which sensations are perceived, or will-efforts executed, and even to calculate the time which elapses between a sensation and its consequent will-effort. The result of these investigations, carried on by very ingenious methods and instruments, is about this: The velocity varies in different individuals, and under varying

external conditions ; that it lies between 24 and 94 metres in a second ; that in most cases, however, it amounts to about 30 metres in a second, while electricity, according to Wheatstone, travels 464 millions of metres, light 313 millions of metres, and sound 332 metres (according to Wertheim) in a second. (Preyer, *Ueber Empfindungen, Sammlung wissenschaftlicher Vorträge*, edited by Virchow and Holtzendorff, p. 16. Compare also Austin's *Nervous System*, p. 98 *et seq.*) This proves by another way the non-identity of nerve-force with electricity, and also the correctness of Henle's view (80) that the conduction of the adequate stimuli through the sensory nerves cannot be a propagation of the vibrations of light and sound, etc., itself ; that, on the contrary, the primitive forces have a rapidity exclusively their own, with which they seize and assimilate external stimuli, and produce all further mental developments dependent on them. These various experiments proceed a step further, and show that this velocity even differs in the different senses. It appears that a tactual stimulus to the forehead is more quickly perceived than a luminous stimulus by the eye, and this in turn more quickly than a sound. (v. Wittich, *Sammlung wissenschaftlicher Vorträge*, edited by Virchow and v. Holtzendorff, p. 28.) Professor Donders, on the contrary, shows that the time occupied in the transmission of a sensation through the eye to the brain, the formation of a judgment, and the transmission of a volition from the brain to the hand is .15 of a second ; but when the ear is the receiving organ, the time required is only .09 of a second. (*Boston Journal of Chemistry*, Jan. 1874, p. 84.) However this may be, there always will be found differences in the rapidity of sensorial action in different individuals, and we have already considered this subject in 14, where, upon a purely psychological basis, we arrived at nearly the same results.

82. THE ACUTENESS OR SENSITIVENESS OF THE PRIMITIVE FORCES.

In respect to acuteness of the primitive forces there exist, also, differences in different persons. The experiments made to

elucidate how minute a stimulus will perceptibly affect the sensory nerves, do not cover the whole ground. What has been ascertained is this: If a certain weight is laid upon the hand, an additional weight is not perceived unless it amounts to at least the one-thirtieth part of the original weight. For instance, if the original object weigh twenty-nine ounces, it requires the addition of a full *ounce* before any difference is noticed by the hand of the blindfolded experimenter; if the original weight is twenty-nine grains, one *grain* more will be perceived as an addition. This led to the discovery of the law (by E. H. Weber) that no matter what the original weight might be, an increment to be perceived is in an invariable proportion—about the thirtieth part of the original weight. This, however, throws no light upon the ulterior point, how small a weight can be perceived.

In regard to *temperature*, it has been ascertained that, in order to be perceptible, a variation, even under the most favorable conditions, must measure from one-sixth to one-tenth of a degree, Reaumur. A difference of temperature less than one-tenth of a degree is not perceptible.

A difference in the degree of *light* is perceived if it varies by a hundredth part of its original intensity. Eyes of unusual sensitiveness perceive a change of the $\frac{1}{133}$ d, and even the $\frac{1}{167}$ th, part in the intensity of the original stimulus. In short, the sensitiveness varies in different persons. The same is true of *hearing*. A fine ear distinguishes two notes which in regard to their vibrations lie as near as 1200 and 1201—a fineness of difference entirely imperceptible to a duller ear. (Compare W. Preyer, *Sammlung wissenschaftlicher Vorträge*, edited by Virchow and v. Holtzendorff, p. 28 *et seq.*) These attempts to reduce to numbers the degrees of acuteness possessed by the sensorial faculties, though imperfect, approximate the truth nearly enough to be received by us. They confirm what psychological observations have long before shown to be a positive fact, that the quality of acuteness differs in degree, not only in different persons, but also in the different primary faculties of the same person. (5.)

83. THE RETENTIVE POWER OF THE SENSORIAL FORCES.

The following passages we find in Henry Maudsley's *Physiology and Pathology of the Mind*, pp. 15-16: "Everything which has existed with any completeness in consciousness is preserved, after its disappearance therefrom, in the mind or brain, and may reappear in consciousness at some future time. That which persists or is retained, has been differently described as a residuum, or relic, or trace, or vestige; or, again, as potential, or latent, or dormant idea; and it is on the existence of such residua that memory depends." "Consciousness is not able to give any account of the manner in which these various residua are perpetuated, and how they exist latent in the mind; but a fever, a poison in the blood, or a dream, may at any moment recall ideas, feelings and activities which seemed forever vanished. The lunatic sometimes reverts, in his ravings, to scenes and events, of which, when in his sound senses, he has no memory; the fever-stricken patient may pour out passages in a language which he understands not, but which he has accidentally heard; a dream of being at school again brings back with painful vividness the school feelings; and before him who is drowning, every event of his life seems to flash in one moment of strange and vivid consciousness." Page 17: "So far from the mind being always active, it is the fact that at each moment the greater part of the mind is not only unconscious but inactive. Mental power exists in *statical equilibrium* as well as in *manifested energy*; and the utmost tension of a particular mental activity may not avail to call forth from their secret repository the dormant energies of latent residua, even when most urgently needed; no man can call to mind at any moment the thousandth part of his knowledge. How utterly helpless is consciousness to give any account of the statical condition of mind! But as statical mind is in reality the statical condition of the organic element which ministers to its manifestations, it is plain that *if we ever are to know anything of the inactive mind, it is to the progress of physiology that we must look for information.*"

In these passages we do not find anything new as regards the

retentive power of the sensorial faculties; they confirm what psychological observations have long since disclosed, and from a standpoint which assumes that any information about statical mind (vestiges) can be expected only from the further development of physiology.

Without going into the discussion, how far nervous structure participates in the development and execution of mental processes (that it is a necessary link between the external stimuli and the primitive faculties of the mind has been admitted before, and is proven by the fact that conscious developments do not take place until nervous structure makes its appearance) (71), it will nevertheless be well to refer again to the utter impossibility of even explaining the transmutation of material processes into psychical phenomena (80). How, therefore, physiology will ever become capable of unravelling inactive mind, is difficult to comprehend. It is asserted "that every phenomenon of mind is the *result*, as manifested energy, of some change, molecular, chemical or vital, in the nervous elements of the brain. Chemical analysis of the so-called extractives of nerve testifies to definite change or a 'waste,' through functional activity; for there are found, as products of retrograde metamorphosis, lactic acid, kreatin, uric acid, probably also hypoxanthin, and, respecting the fatty acids, formic and acetic acids. These products are very like those which are found in muscle after functional activity. In the performance of an idea, as in the performance of a movement, there is a retrograde metamorphosis of organic elements. The display of energy is at the cost of the highly organized matter, which undergoes degeneration, or passes from a higher to a lower grade of being; and the retrograde products are, so far as is at present known, very nearly the same. While the contents of nerves, again, are neutral during rest in the living state, they become acid after death, and after great activity during life. The same is the case also with regard to muscle. Furthermore, the products of the metamorphosis of nerve-elements, after prolonged mental exercise, are recognized by an increase of *phosphates* in the urine; while it is only by supposing an idea to be accompanied by a correlative change in

the nerve-cells that we can explain the exhaustion following excessive mental work, and the breaking down of the brain in extreme cases. These things being so, in a physiological sense, what is it we designate the *mind*? Not the material products of cerebral activity, but the *marvelous energy* which cannot be grasped and handled." (Maudsley, 1, p. 39.)

This is an infinitely more advanced conception of mind than the coarse view of Cabanis and Vogt, according to whom the brain secretes thought as the liver secretes bile. In fact, the quoted passage has been written in refutation of this view. And, while it endeavors to come nearer to a just appreciation of mind, as we view it, it is still only an hypothesis that will scarcely stand before a scrutinizing examination into all the physiological and psychological facts. In the first place it is taken for granted that the nerve-cells are the receptacles and laboratory of sensorial activities. This is by no means physiologically proved, and by the latest researches of Max Schultze made even quite problematic (80). Secondly, it asserts that every phenomenon of the mind is the *result* of some change in the nervous elements of the brain. With the same right we may assert that the correlative changes in the material substratum are the result of mental activity. We quite often see will-power hold in abeyance, not only the special workings of the mind, but also the entire bodily frame. This, however, will always remain a bone of contention, because "*correlative changes in the material substratum*" depend, as the term implies, upon *reciprocity*, and to determine in each single case which is cause and which effect may not always be possible. We shall, however, refer to this subject when treating of the relation between mind and body.

The once cherished conjecture that mental activity is based upon the consumption of phosphorus in the brain, "because phosphates appear in the urine in consequence of a retrograde metamorphosis of nerve-substance," must also be consigned to the "*dreams of science*," as Virchow says. (*Cellular Pathology*, 1871, p. 278.) Maudsley at last recognizes the mind to be "not the material products of cerebral activity, but the *marvelous energy* which cannot be grasped or handled." A marvelous

energy of what? Of the brain. As the working of a steam-engine represents its "manifested energy," so "thought represents the energy of nerve-cell." At first sight this reasoning appears very plausible indeed, to some minds even convincing. Its only fault is, that it confounds condition with cause. The working, that is, the functional manifestations, of an engine is not at all *its* manifest energy; it is the energy of a something altogether different from the engine, namely, the energy of *steam*, which, however, must find an appropriate mechanism to manifest itself—its energy. The engine is, therefore, not the *cause*, but only the *condition* of its so-called "manifested energy or function." The brain or the problematic virtue of the nerve-cells is only the *condition* of *mental* phenomena, or its marvelous energy, by and through which a something altogether different from the brain, namely the *soul*, manifests itself as the *cause* of all this marvelous energy. We have here an example of the "powerful" and now fashionable "tendency in the human mind to make the reality conformable to the idea, a tendency which has been at the 'bottom' of so many views advanced in physiological psychology to convert marvelous energies into objective entities, and allow them to tyrannize over the understanding." Here applies fully what Goethe says:

"Daran erkenn' ich den gelehrten Herrn!
Was ihr nicht tastet, steht euch meilenfern;
Was ihr nicht fasst, das fehlt euch ganz und gar;
Was ihr nicht rechnet, glaubt ihr sei nicht wahr;
Was ihr nicht wägt, hat für euch kein Gewicht;
Was ihr nicht münzt, das, meint ihr, gelte nicht."

Faust, Zweiter Theil, erster Act.

"By that I know the learned lord you are!
What you don't touch, is lying leagues afar;
What you don't grasp, is wholly lost to you;
What you don't reckon, think you, can't be true;
What you don't weigh, it has no weight, alas!
What you don't coin, you're sure it will not pass."

Bayard Taylor's Translation of Goethe's Faust, Part II, p. 18.

But this is not all. The "marvelous energy" does not advance us one step in discriminating the different sensory

forces in regard to their degree of retentive power, a point very obvious to the observation of the psychologist (6, 7). Where has physiology found a difference in the nerves or nerve-cells to warrant the acceptance of an equal difference in their energy? In the course of centuries, perhaps, it may. In the meantime, however, we must rest satisfied with what psychology proves—that the primitive forces gradate in their retentive power from the highest to the lowest senses (8), and that in this gradation is founded, not only the clearer knowledge we gain from the outer world by means of the higher senses, but also the moral norm which places man at the summit of the mundane creation (58).

84. CONSCIOUS DEVELOPMENT.

In 70 and 71 we have ascribed to the nervous structure a potentiality for conscious development. This proposition is denied by no one. The question is, is nervous structure the *cause* or the *condition* of such development? According to the conclusions we have arrived at in the last chapter, we contend that it is the *conditio sine qua non*, but not the *cause*. The humblest animal has *its* soul as well as has man. But the difference consists in the varied degrees of retentive power or energy with which the sensorial forces of the various classes of living beings are capable of holding fast and being lastingly molded by external stimuli.

In glancing over the variously shaded manifestations of intelligence as displayed by the different classes of animals, we find in animals lower than the class of articulates only very faint signs of conscious development. A much greater amount of intelligence is displayed by several tribes of the articulate class. I mention merely the well-known industry and skill of the bees; the orderly conduct of the ants in their household affairs; the cunning with which the spider selects a fit place for its hunting-ground, and the clever adaptation of its web to these localities. Compared with them it is doubtful whether the lowest vertebrate class, the fishes, can be attributed with a greater or even an equal amount of intelli-

gence; for that they can be made to assemble for their meals by the ringing of a bell is, perhaps, no sign of greater intelligence than the bee exhibits in learning to know its keeper; or than the ant showed that hastily turned back, on her accustomed way to the sugar-bowl, when she found several of her sisters killed, and, meeting others, seemed from the sequel to converse with them, for presently the whole crowd hastily disappeared to return no more. Not much greater than that of the fishes appears the intelligence of reptiles. Birds show a decided progress in intelligence, and still more plainly does intelligence manifest itself in some tribes of the mammalia. Thus conscious development varies greatly in the different classes of the animal kingdom, and not only is this apparent between whole classes of animals, but also between single individuals of the same tribe. Some dogs, for example, are much more docile than others. "This is easily explained," says the physiologist, "by the greater or less amount and perfection of the cerebral structure with which these different animals are severally endowed." It is but reasonable to expect that wherever we find a greater amount of intelligence, we should also find more perfect conditions for the display of this intelligence. But is the varied structure of cerebral development really an adequate explanation of the varied intelligence we find in the different classes of animals and in different individuals of the same species? It seems not; for there is no trace in all the articulates of anything that can be fairly considered homologous either with the cerebrum or with the cerebellum of the vertebrates; and yet who can deny conscious development to spiders, ants, bees, and other insects? Even the amphioxus and the cyclostome fishes in general exist without any trace of cerebrum or cerebellum (71), and yet conscious development, if ever so faint, they surely possess. We have here specimens of animal organization which, in their natural healthy state, without the mutilating interference of physiologists, prove that conscious development does in reality exist (1), not only without the presence of anything like a brain, but (2) with the further want even of a proper medulla spinalis. With what right, then, can the *brain* be considered as the only con-

dition, much less as the sole *cause* of conscious development? Here, as elsewhere, preconceived ideas have been allowed "to tyrannize over the understanding." Deeper than the brain, deeper than the medulla spinalis, deeper than the ganglionic cells in either the brain, the medulla spinalis, or any other of the nerve ganglions, lie the inborn psychic forces of all and every living being; and in accordance with their native energy or capability of being more or less lastingly molded by external stimuli, they develop consciousness in a higher or lower degree. Furthermore, as this energy rises in the ascending scale of animal creation, the conditions necessary for a corresponding display of these faculties become more and more elaborate, complex, and perfect; and in this mediatorial quality of nervous structure consists its potentiality for conscious development, its office as a medium between psychic forces and external stimuli. The faint energy of the psychic forces in retaining and assimilating external stimuli, as manifested by the lowest classes of animal life, requires but a simple structure of nerve-element. As the psychic forces in the ascending scale of animal life attain to greater and greater retentive power, and in consequence to greater complexity of conscious development, the means for the display of such development must correspondingly increase in complexity. It is, therefore, not because the higher animals have a medulla spinalis and a brain that they are capable of a more perfect development of consciousness, but because they are endowed with more energetic forces (which necessitate a more complex means for their activity) than the lower animals. This reversion of received physiological ideas is the necessary consequence of our investigations, which have proved that the brain is not the cause but only the condition of conscious development. We shall, however, further strengthen this view by subsequent investigations.

85. VARIOUS DEGREES OF CLEARNESS IN CONSCIOUS DEVELOPMENT.

A mere reference to what has been detailed in 8 will suffice to prove that mental modifications in man differ greatly in

clearness, accordingly as they are products of the higher or of the lower senses. Everybody knows that what he has seen, heard and touched, is retained more lastingly than that which he has smelled, tasted or felt (embracing in the latter term the so-called general feeling and sensations originating in the sympathetic system). There is a marked indisputable gradation in the conscious development of these several sensorial forces as to the clearness of their products, from the sense of sight down to the vital senses. All science and all clear, minute differential knowledge owe their origin and growth to the higher senses. We do not even approximately attain this clearness and discrimination by means of the lower senses. Why is this? Does physiology furnish any explanation? It might, indeed, refer to the greater perfection of the organs which minister to the higher senses. But is this not the same preconceived idea which confounds condition and cause? Is it not attributing to the nerve-cell an office which is by no means proved and is more than problematical? The question recurs: What is the cause of these differences? The answer, and as we believe, the only answer, must be gathered from the foregoing researches. He who has followed them intelligently must see that the differences of conscious development result from the different degrees of retentive power with which the sensory forces of the mind are severally endowed. By this difference of the sensory forces, in respect to retentive energy, their consequent products or vestiges are stamped with a corresponding difference. If the forces are of such a nature as to be capable of maintaining the development which has been effected by external stimuli, the product or vestige (which, as we have seen in 6, is the objective development of these primitive forces) will be distinct and lasting; if, however, the nature of the primitive forces is not capable of such lasting development, the product or vestige produced by the influence of external stimuli will be correspondingly weak and evanescent. Now, as according to the law of attraction of like to like (9), the single vestiges by repetition of similar impressions gradually grow to be aggregates, it is plain that the aggregates must share the character of their components. An aggregate of

definite and lasting vestiges will, therefore, be definite and lasting, a perfect and clear mental modification, while an aggregate of ever so many evanescent single vestiges will never attain to any clearness as a conscious development. This assertion agrees entirely with the facts before us. Man attains to clear ideas of the world around him by his higher senses only, and these ideas are again sublimated by the same law of attraction of like to like into still higher ideas (15, 16), and these are combined into new forms of conscious development, as in the acts of judging and reasoning (18, 20), all of which is possible and explicable only on the ground of the greater capability of these forces to be lastingly modified by the corresponding impressions of the outer world. In the lower senses this perfection of conscious development lessens more and more, until, in the vital senses, it becomes quite faint, shadowy, indefinite. This is true of the animal kingdom. The higher animals undoubtedly attain a conscious development analogous to that of of man. Yet, however striking in single instances this development may appear, it never reaches the depth and fulness of man's conscious growth. We often attribute to animals an intelligence not their due in amount or in kind. We see intelligence where we least expect it, and enthusiastically confound the mental glintings of animals with our broader mental light.

But we do not intend to deny a capability in animals for developing a consciousness analogous to that of man. In them the same laws prevail as in man. Man has no innate intellect, taking the word in the sense of the old psychologists, as a power to form ideas, judgments, and syllogisms (17, 20, 21), and in the animal nothing of the kind exists. But as man reaches his highest possibilities by the innate energy of his higher senses, the animal may attain to an intelligence which corresponds to the energy of *its* sensory forces. It appears that this retentive power of the sensory forces in animals is not distributed altogether, as it is in man, from sight down to the lowest senses. In dogs, for instance, and probably in some other animals, the most energetic sense seems to be the sense of smell, while the spider and bee, and probably many

other insects, rely most upon their sense of touch. However this may be, this much is certain, that none of the animals exhibit a conscious development, which, broadly considered, can be compared with that of a normal human being. The difference lies in the inborn energy of the sensory forces, and although this difference is only one of degree, the cumulative effects of its products make it a difference of kind. To say that a dog or any other clever animal, if it only could speak, would show itself as intelligent as many a man, is a confused way of reasoning. If the dog could speak, I mean humanly, it would cease to be a dog; but just because it never attains to anything higher than a dog's language, its mental life is specifically different from that of a human being. It is not language that makes man a man, but it is man, in virtue of his higher mental nature, who makes language; and so the language of the animal corresponds precisely to the standard of its mental development.

These higher developments of consciousness, with all their countless combinations, associations and activities, are believed to be "by all those who have most studied the physiology of the brain, and are best entitled to speak on the matter, the highest display of organic development in the nerve-cells of the gray cortical layers of the hemispheres." (Maudsley, p. 106.) I shall not repeat here the reasons why this belief is entirely fallacious (compare 80 and others), notwithstanding the fact that it is said to be the belief of all those who have most studied physiology. Even admitting the correctness of this view, "the organic processes of mental development which take place in the minute cells of the cortical layers, are so exquisitely delicate, that they are certainly, so far as our present means of investigations reach, quite impenetrable to the senses." (Maudsley, 107.) How then can physiology be considered a sufficient guide, much less the only guide to unravel mental life? Against such one-sided views Schopenhauer utters the following words, which, though cutting, should nevertheless be taken to heart: "There are persons who thrust themselves into the foreground as reformers of the world, who have learned nothing on earth but their chemistry, or physics,

or mineralogy, or zoology, or physiology; and they eke this out by other fragments of knowledge, namely, what has stuck to them from their schoolboy teaching of the catechism; and if then these two constituents of their learning do not appear to fit exactly, they at once turn out to be scoffers at religion, and next, absurd and shallow materialists. That there has existed a Plato and Aristoteles, a Locke and Kant, they have heard perhaps in school; but they do not deem such men worthy of closer examination, as they never used crucible, nor retort, nor even stuffed monkeys. . . . These persons we must bluntly call ignorami, who have yet to learn a great deal before they can be allowed to participate in the discussion.”— (“Da werfen sich Leute zu Welterleuchtern auf, die ihre Chemie, oder Physik, oder Mineralogie, oder Zoologie, oder Physiologie, sonst aber auf der Welt nichts gelernt haben, bringen an diese ihre einzige anderweitige Kenntniss, nämlich was ihnen von den Lehren des Katechismus noch aus den Schuljahren anklebt, und wenn ihnen nun diese beiden Stücke nicht recht zu einander passen, werden sie sofort Religionspötter und demnächst abgeschmackte, seichte Materialisten. Dass es einen Plato und Aristoteles, einen Locke und Kant, gegeben habe, haben sie vielleicht einmal auf der Schule gehört, jedoch diese Leute, da sie weder Tiegel noch Retorte handhabten, noch Affen ausstopften, keiner nähern Bekanntschaft werth gehalten. . . . Ihnen gehört die unumwundene Belehrung, dass sie Ignoranten sind, die noch vieles zu lernen haben, ehe sie mitreden können.”)

We may ask, too, how is this physiological view capable of explaining the countless associations of ideas?

“The anatomical connection of a nerve-cell in the cerebral ganglia does, of a necessity, limit the direction and extent of its action upon other cells; for it may be deemed tolerably certain that as the conduction in nerve-fibres demonstrably does not pass from one to another, except by continuity of tissue, so the activity of one cell cannot be communicated to another, except along an anastomosing process.” (Maudsley, p. 121). This is true, still the psychomotor cells are not pre-established, they are developed by age, through functional

exercise, as Charcot shows in his lectures on localization of diseases of the brain, p. 30. Is this explanation adequate to our every-day life experience? Do we not every minute form new combinations of old and new ideas? Have these combinations, so shifting and complex that no one can imagine the strangeness of their next grouping, been *preformed* by certain anastomosing processes between certain nerve-cells? Does not such a materialistic and inadequate explanation prove again the strong tendency of the human mind to make the reality conformable to preconceived ideas? As physiological anatomy is not capable of explaining even the lowest forms of conscious development, we need not wonder that its attempts to explain the higher forms must necessarily prove abortive.

86. THE EFFERENT NERVES.

These receive their name from the physiological observation that they convey stimuli from the different centres to the periphery. They are divided into such as terminate in striated muscles, furnishing a medium for the action of the voluntary muscles, into such as terminate in non-striated muscles, furnishing a medium for the action of the involuntary muscular tissue, and into such as terminate in the different glands, furnishing a medium for glandular action.

Those that furnish a medium for the action of the voluntary muscles "terminate underneath the sarcolemma by a coalescence of the sheath of Schwann with the sarcolemma. The sheath of Schwann accompanies the axis cylinder to this point. The end of the axis-cylinder is always an expansion of a considerably enlarged surface, which in all cases is formed by a flat ramification. This terminal plate is sometimes similar to a membranous, at other times to a fibrinous, expansion. In most cases the plate rests upon a basis of nuclei and fine nucleated protoplasm; in other cases these nervous plates exhibit so-called terminal nervous buds. In no case does the terminal end of the nerve penetrate into the interior of the contractile cylinders, and never does it embrace their entire periphery. Short muscular fibres are apt to receive but one nerve-fibril,

while long ones receive several." (W. Kühn, in *Stricker*, p. 165, 1872.)

The nerves that furnish a medium for the action of the involuntary muscular tissue, contain dark-bordered and pale fibres in varying numbers; they lie outside of the muscular structure (in its connective tissue) and form a plexus. From here finer fibres start in various directions to form a still finer network. At the points where they cross (*Knotenpunkte*) there are found corpuscles with distinct nuclei, which resemble nerve-cells. This fine network lies immediately upon or below the membranes of the muscles and surrounds the muscular fibres upon all sides. Although the finest nerve-fibrils appear to join the nucleoli of the corpuscles, these are still not to be considered as the actual terminations, because in numerous cases other nerve-fibrils issue from these nucleoli to pass in opposite directions through the substance of the corpuscles toward and into the intra-muscular network. The nucleoli are, therefore, not the ends but only the crossing-places of the finest nerve-fibrils forming this network. (J. Arnold, in *Stricker*, 1872, p. 143.)

The nerves that furnish a medium for glandular action, according to Pflüger, pierce the *membrana propria* and ramify in finer and finer fibrils around the epithelial cylinders, enter directly into a cylinder cell, or disperse themselves as a sub-epithelial network and dive into the glandular cells. According to later researches, this same connection exists between the nerves and the liver-cells. (Pflüger, in *Stricker*, 1872, p. 313.) Since even the most recent advances in microscopic physiology have not dispelled all doubts in regard to the termination of these nerves (which Virchow collectively calls "working nerves," *Cellular Pathology*, p. 294), how can we expect an assured and scientific precision in deciding upon their central beginnings? The chief conclusion we are warranted in drawing is that the nerves which are the media for voluntary action arise from the brain and the anterior roots of the spine; while those which are the media of involuntary and glandular action take their origin in the sympathetic nervous system. The cells with which the motor nerves stand in con-

nection within the spinal column, are somewhat longer than those with which the sensitive nerves are connected. In other central parts, however, a similar distinction in size has not been found. Neither does the calibre of the different nerve-fibres furnish a criterion as to their several functions.

87. THE WHITE SUBSTANCE.

The white substance of the brain and spinal marrow is principally composed of fibres or tubes, hence it is also called the *fibrous* substance. These fibres are continuations of the millions of nerve-fibres which arise in the gray substance.

It has been a general usage to trace the nerves from their peripheral terminations upward toward their centres in the different groups of gray matter. As, however, it is more conformable with our psychological view, we shall reverse this order and adopt the plan of Theodor Meynert, as developed in his treatise "*Vom Gehirn der Säugethiere*," in *Stricker*, 1872, p. 694 *et seq.*, in explaining cursorily the relation of the white substance to the different groups of gray matter.

Considering, as we do, the gray matter as the inmost and highest vital organization, by means of which the mind stands in communion with the external world, we shall take it as the point from which the white substance issues. "The sensory nerves can then be likened to its feelers and the motory nerves to its fangs." These multitudinous nerves, emerging from the entire surface of the cortical gray, converge and constitute the corona radiata, in their downward course directed toward the central or cavity gray of the brain. Their further emergence (still converging) takes them through the foramen magnum, and thus to the central gray of the spinal marrow, from whence they again issue in the form of innumerable peripheral nerves, diverging to their respective organs. This sweeping delineation, however, needs more special explanation. The white substance, after emerging from the cortical gray and forming the corona radiata, does not pass uninterruptedly to the central or cavity gray of the brain and spinal marrow. The conglomerations of gray matter in the

cerebral ganglia are its first destination, namely, the corpora quadrigemina, thalami optici and corpora striata. With this first link in the chain of the white substance projecting from the cortical gray, we must count also the *corpus callosum*, which, by its transverse fibres, connects the two hemispheres of the brain, and forms their great transverse commissure, and the *longitudinal commissural fibres*, which connect together distant parts of the same hemisphere. In the intervening ganglionic masses, or in the second group of gray matter, a *second* link in the projection of the white substance is developed, forming the *crura cerebri*, or the *peduncles* of the cerebrum, which proceed to the pons and medulla oblongata to constitute the peripheral white substance of the spinal cord, which finds its termination in the central or cavity gray of the medulla spinalis. The *third link* of this projection of white substance develops itself in the third group of gray matter. This group, the *central or cavity gray*, begins in the region of the third ventricle, surrounds the aquæeductus, extends to the sinus rhomboideus, and in the lower half of the oblongata, and in the medulla spinalis, encircles the central canal. The fibrous substance here projected constitutes all the nerves from the third pair of cranial nerves arising in the gray of the aquæeductus Silvii down to the last and lowest nerves of the spinal marrow. Thus it appears that the innumerable multitude of nerve-fibres in the cortical gray converge at first into several masses, which for the most part radiate respectively to the corpus striatum and the nucleus lenticularis, to the thalami optici and the corpora quadrigemina. In the second link these several masses become reduced to only two, the peduncle and tegumentum of the crus cerebri, which proceed respectively to the anterior and posterior portion of the pons and medulla oblongata to merge at last in the spinal cord, and find their termination in the central or cavity gray of the spinal cord. From here and from the cavity gray of the brain, as has been stated above, the last link of the projecting fibrous matter issues, diverging in the form of the peripheral nerves to be distributed over the entire body. For further particulars, especially in regard to the relation of the cerebellum to the

cerebrum and the second link of projection, I must refer to the original and elaborate treatise of Th. Meynert cited above.

88. CONNECTION BETWEEN THE GRAY AND WHITE SUBSTANCE OF THE SPINAL AXIS.

Although the spinal axis has been the subject of very numerous and elaborate anatomical as well as physiological investigations, the exact relation between its two constituents is not determined beyond all doubt. We shall continue to reverse the customary way of tracing the course of the nerve-fibres, and begin with the second link of projected fibrous substance which at last represents itself as the white substance of the spinal cord. The proportion of the white substance to the gray matter within is greatest in the cervical region, from whence it gradually decreases in quantity throughout the whole extent of the cord, until at the *intumescencia lumbaris*, and still more at the *conus terminalis*, it is reduced to a very thin coating of the irregularly shaped gray matter beneath. What has become of this multitude of fibres? Where did they gradually lose themselves?

The idea, formerly entertained, that the fibres of the nerve-roots ascend in the column which they enter, and that by this means the white substance gains by degrees in quantity from below upward, is not tenable; for it is anatomically proved that, if not all, at least the great majority, of the root-fibres pass directly, either horizontally or obliquely, through the white substance into the gray matter without taking any part in the formation of the white columns. This is especially plain and easily demonstrated in the case of the anterior roots and anterior columns. However, we ought not to say the root-fibres pass into the gray matter, as, in fact, they originate there and pass out of it through the white substance. For in holding this standpoint, that is, in considering the *cavity gray* as the third great nerve-centre which receives the second link of projected white substance to form and mold it for final distribution all over the body, we shall gain a much more lucid insight into the extremely complicated course which the nerve-fibres present within the gray and white substance of the spinal cord.

In fairness, however, to the eminent physiologists whom I have quoted, it is but right to say that the following view as to the connection between the gray and white substance of the spine, is wholly my own, though it seems a logical result of their investigations.

The white substance of the spinal cord, which anatomically has been divided into the two anterior, the two lateral, and the two posterior columns, enters the cavity gray in the following manner, namely: The different columns resolve gradually into primitive fibres, which they give off continually all the way down to corresponding portions of the cavity gray within. Thus the anterior columns send off fibres to form the *anterior white commissure*, which is found throughout the extent of the spinal cord lying directly in front of the anterior gray commissure. Its formation is affected in this way: The fibres which emerge from the *right* anterior column curve toward the left, and taking a horizontal course, enter the anterior cornua of the *left* side, while the fibres which emerge from the *left* column curve in the opposite direction, and pass in the same manner toward the *right anterior horn* of gray matter. This causes a decussation of the fibres of the two anterior columns immediately in front of the gray commissure, which is known under the name of the *anterior white commissure*. The correctness of this view is strengthened by the anatomical fact that the width of this commissure increases or decreases with the volume of the corresponding gray substance.

The anterior portion of the lateral columns gives off fibres to the anterior cornua of the same side, while the fibres of the posterior portion of the lateral columns bend toward the corresponding posterior cornua. A similar relation exists between the fibres of the posterior columns and the corresponding posterior cornua of the cavity gray, but this relation is not nearly so simple nor so easily demonstrable.

The question, then, "What becomes of the multitude of vertical fibres which constitute the spinal cord?" is thus answered: Its compact mass gradually resolves into primitive fibres, and because these continually pass off to corresponding parts of the spinal gray, the gradual diminution of the white substance

in quantity, as it passes from above downwards is the natural result.

Our next inquiry relates to the course of fibres within the gray columns. These latter are invested by groups of numerous nerve-cells, larger ones in the anterior, smaller ones in the posterior cornua. These cells may, as has been mentioned before, be compared with stations in which numerous nerve-fibrils converge from different regions, and from which one passes in a horizontal direction to the *anterior* roots. This view is strengthened also by the anatomical fact that in the cervical and lumbar enlargement of the spinal cord, where we find an increase of root-fibres, there exists also a decidedly larger number of nerve-cells.

Less clearly defined is the relation between the cells of the posterior cornua and the posterior roots. It is, however, not the place here to enter into a discussion regarding the various views of the different authors upon this subject. This much is certain, that some of the fibres pass horizontally backward through the substantia gelatinosa into the posterior columns and the posterior portion of the lateral columns, where they, as primitive fibres, enter into a corresponding posterior root; that others pass in various directions through the posterior cornua, enter the posterior columns, in which they run for a shorter or longer distance upward in order to join a root situate higher up, and that still others, pursuing originally the same course, after entering the posterior columns, turn downward to join a lower root. Beside these fibres there are others which likewise pursue a horizontal or nearly horizontal course. In this category belong the anterior and posterior gray commissures, which form links of connection, the first between the anterior (right and left) cornua, and the second between the posterior (right and left) cornua. Other fibres pass directly from the anterior through the posterior cornua and columns to corresponding posterior roots. There are also many fibres which pursue either an upward or downward course in the gray columns to form connective links between different portions of the spinal marrow (Henle, *Nervenlehre*, pp. 63-73). The several starting points, however, of these

various nerve-fibres have thus far not been ascertained. According to Gerlach it appears that the first and finest nerve-fibrils form an exceedingly fine nervous plexus, from which some of them converge to corresponding cells, to be conveyed and distributed as axis-cylinders in various directions, while the destination of others is entirely unknown.

89. FUNCTION OF THE SPINAL CORD.—REFLEX ACTION.

A series of interesting phenomena has been termed by Prochaska, a Vienna physician, over a century ago (1778), *reflex action*. By this is understood that an impression made upon the general sensory nerves is conveyed to the spinal gray, where it is transformed into an excitant of corresponding motory nerves, by which again certain voluntary muscles are set into motion. In short, by means of the spinal gray a sensation is converted into a movement. Reflex action, then, physiologically speaking, requires afferent nerves, gray central substance, efferent nerves, and muscular tissue. The afferent nerves receive the external stimulus, the gray substance transforms and reflects it, and the efferent nerves carry it to the muscular tissue, which contracts and thus causes motion. Reflex action differs from voluntary action in that the external excitation is immediately converted into muscular motion, while voluntary action originates from a central or will stimulus. But "reflex phenomena are by no means confined to the action of the spinal cord. The movements of the iris are reflex, and yet they take place in many instances without the intervention of the cord. The movements of respiration are reflex, and these are presided over by the medulla oblongata. Movements of the intestines and the involuntary muscles generally are reflex, and they involve the action of the sympathetic system of nerves. Impressions made upon the nerves of special sense, as those of smell, sight, hearing, etc., give rise to certain trains of thought. These involve the action of the brain; still they are reflex. In this last example of reflex action it is sometimes difficult to connect the operations of the mind with external impressions as

an exciting cause; but it is evident, from a little reflection, that this is often the case. This fact is illustrated by operations of the brain which take place, as it were, without consciousness, as in dreams. It has been clearly shown that a particular direction may be given to the thoughts during sleep by impressions made upon the sense of hearing. A person sleeping may be made to dream of certain things, as a consequence of hearing peculiar noises. Examples of this kind of mental reflex action are sufficiently numerous and well authenticated. (Compare Hammond, *Sleep and its Derangements*, Philadelphia, 1869, p. 127 *et seq.*). From the above considerations it is evident that the term reflex may be properly used in connection with many phenomena involving the action of the sympathetic system, and of the brain; but it is generally understood as applying especially to involuntary movements, occurring without consciousness, as the result of impressions made upon the afferent nerves, and involving the independent action of the spinal cord. (Austin Flint's *Nervous System*, 1872, p. 299.)

This explanation of reflex action implies that external impressions cause *sensations* which are *unconscious*. But are *unconscious sensations* not a *contradictio in adjecto*? If we remember what has been stated to be the difference between sensation and perception, and also what has been said in regard to the development of consciousness in 9 and 10, we shall find no difficulty in comprehending this term.

Sensations are, in the sense of the new psychology, elementary modifications (a development of single primitive forces by corresponding single external stimuli) in which the quality of consciousness yet exists in an embryonic form. Not until many similar acts have united into one homogeneous aggregate does the consequent mental modification rise into consciousness; and in the lower senses, from want of retentive power, consciousness does not grow very marked and clear even by the repetition of similar impressions (16). An impression of external elements, if it does not excite similar vestiges previously obtained, which in virtue of their multitude and combination possess the quality of consciousness, may,

therefore, properly be said to cause an *unconscious sensation*, that is, an elementary action of single external elements upon corresponding single primitive forces, which has not yet ripened into consciousness. Even Virchow, from his materialistic standpoint, recognizes unconscious sensations.

In his lecture on the spinal marrow (*Sammlung Wissenschaftlicher Vorträge*, edited by Virchow and Holtzendorff, V. Serie, Heft 120, p. 25) he says: "The leg of a paralytic which jerks when stung, without feeling the sting or being conscious of it, would undoubtedly remain perfectly quiet if there were no sensible nerves which carried the message of the sting to the spinal marrow, and if the spinal marrow did not pay attention to this message. The spinal marrow, then, acts in this case in place of the brain of a man with unbroken connection in his nervous system; what in another case, perhaps, might have been produced by an act of the will, takes place here by virtue of the innate power of the spinal marrow. Shall this be called sensation? This term of course can easily be misunderstood, as we are accustomed to consider each sensation as a conscious act, and it needs first some explanation, even a certain mental training, in order to learn that there exist also perceptions which lie outside of the range of consciousness, and which, nevertheless, appear in all other respects like sensations. As the same movements are conveyed by sensible nerves and are distinguished from other conscious sensations by the fact that they are prevented from reaching the brain by mechanical obstacles and becoming conscious, it is, indeed, difficult to find another expression for them. Nay, it is even a necessity to preserve this expression, as there are also reflex phenomena in which the brain participates, and in which, therefore, really conscious sensations take place, while the movements resulting therefrom are forced and involuntary. A person who looks into a very bright light and shuts his eyes in consequence, makes reflex movements; for with a normal sensitiveness of his eyes he is scarcely capable of preventing these movements of the eyelids, and yet it is a conscious sensation upon which this forced and involuntary motion of his eyelids follows." We may, then, properly assume that even

reflex actions in their simplest forms take place on the basis of psychic forces. The want of consciousness in these acts is attributable either to the low degree of retentive power possessed by the respective primitive forces, or to the elementary nature of these acts, or, lastly, to the fact that the similar vestiges, previously obtained, are not excited into consciousness by the new impression (as, for instance, in cases of mechanical obstacles, or in cases where psychic causes intervene). We shall speak of this later. We shall see this view reinforced by evidence explicit and telling, when we consider the more complex forms of reflex action. They are, as Virchow remarks, often so plainly marked as conformable to a purpose, that they appear to be acts of design. To this also belong in a certain respect all that has been collectively designated by the word *instinct*.

We have also remarkable experiments of Pflüger upon this point. "These experiments have been repeatedly confirmed, and there can be no doubt with regard to their accuracy. Pflüger carefully removed from a frog the entire encephalon, leaving only the spinal cord. He then touched the surface of the thigh over the inner condyle with acetic acid, to the irritation of which frogs are peculiarly sensitive. The animal thereupon rubbed the irritated surface with the foot of the same side, apparently appreciating the locality of the irritation, and endeavoring by a voluntary effort to remove it. The foot of this side was then amputated, and the irritation was renewed in the same place. The animal made an ineffectual effort to reach the spot with the amputated member, and failing in this after some general movements of the limbs, rubbed the spot with the foot of the opposite side." (Austin Flint's *Nervous System*, p. 305; Pflüger, *Die Sensorischen Funktionen des Rückenmarkes der Wirbelthiere*, Berlin, 1853, p. 124 *et seq.*)

Considering these facts in an unprejudiced manner, it is certainly a fruitless attempt to explain them *mechanically*, or to evade explanation altogether by simply calling them *automatic*. These experiments, repeatedly confirmed, prove clearly that an external stimulus is capable of causing not only simple reflex movements, but a whole train of actions conformable to

a purpose, carried on *designedly* and persistently to its final realization.

By the weight of these considerations Pflüger found himself drawn to the conclusion that the spinal cord is endowed with a special consciousness of its own (*Rückenmarksseele*). This view, of course, found much opposition among those who cling to the hope that all mental phenomena will one day be explained upon a purely materialistic basis. Although this conjecture is open to other objections than those urged with this view, we must consider it as a very remarkable and sensible suggestion, especially since it originated in the soil of experimental physiology. Pflüger goes on to strengthen his views by a series of experiments made upon persons while asleep, all of which tended to confirm more or less his previous observation made upon frogs. But there are also *morbid* states of the system which testify to the same effect. As such may be mentioned some forms of somnambulism. A case to the point is related by Hammond in his monograph, *Sleep and its Derangements*, p. 205, Philadelphia, 1869, which occurred under his own observation.

A young lady, who had lost her mother, became affected with symptoms resembling those met with in chorea. These were succeeded by attempts to get out of bed during her sleep, and to walk about the house. In this state Hammond had the opportunity of examining into her condition. She came out of her sleeping apartment partly dressed, went slowly down-stairs to the parlor without noticing anybody around her; took a match which she had brought with her from her own room, rubbed it several times on the under side of the mantel-piece until it caught fire, turned on the gas and lit it. She then threw herself into an arm-chair and looked fixedly at a portrait of her mother which hung over the mantel-piece. A large book, held between her eyes and the picture, did not stop her from gazing in the same direction; neither did several motions with the hand, as if about to strike her in the face, make her wink. "I was entirely satisfied that she did not see, at least with her eyes." Upon the application of pungent vapors to her nose, she gave no evidence of feeling any

irritation. Sour and bitter substances inserted into her mouth had no other effect. Scratching the back of her hand with a pin, pulling her hair, and pinching her face, appeared to excite no sensation. On tickling the soles of her feet, however, she at once drew them away, but no laughter was produced. "The spinal cord was therefore awake." She was finally roused from her sleep by shaking her head, when she burst into a fit of hysterical sobbing, but had no recollection of anything that had passed, or of having had a dream of any kind.

This interesting case brings before us an instance in which it plainly appears that mental modifications (here the all-absorbing longing for a beloved mother), although seemingly unconscious, were, nevertheless, capable of producing a whole train of actions as correctly as if their execution had taken place under the full light and guidance of consciousness. These same phenomena we may witness going on under perfect normal conditions, if we observe the actions of a new-born child. "The new-born child," says Virchow in his lecture cited above, "is a beautiful specimen of an almost purely *spinal being*. It does not show the least sign from which we could infer that its volitions or actions are conscious. All its actions bear the spinal character, and so far they may be called essentially instinctive. Let us look upon such a child when it is hungry. It begins to be restless, and makes various motions, especially with the head; it turns the mouth toward the side and moves the lips. 'It seeks the mother's breast.' If the breast is given, it at once takes hold of it, and commences to suck and to swallow. When satisfied, it lets it go, stretches itself contentedly and goes to sleep. If, on the contrary, it does not find the breast, then its motions become livelier; its face assumes the expression of vexation or anger, and turns red; it begins to cry. The more it cries the more violent grow its motions, until the whole body becomes involved in them. If we now put a finger into its mouth, it presently commences to suck and to be quiet, but soon 'it finds out that it is being deceived,' and cries louder than ever. Can we recognize these actions as truly *conscious* or made with *design*? Surely not;

we merely impute to the child what from long experience we have learned to be our own conscious motives. We say: 'the child will,' 'it seeks,' 'it is vexed;' but in truth it knows nothing at all of these mental acts. It has yet to learn them all by many sad experiences in the course of time as its 'spirit develops.' But what it completely possesses is the general sense of feeling. The restlessness, the vexation, the contentedness which it shows, manifestly prove that (in the above chosen instance) it not only has a sensation of hunger and of satisfaction, but distinguishes also the conditions of its body as pleasurable or painful. It possesses, therefore, a *faculty or power of estimating* its own sensations, by means of which, so to speak, the value of the sensations and of the conditions of the body based thereon, are measured. It has the faculty of perceiving whether a condition be beneficial or injurious; it shows pain or delight. Does it really judge? Does it think without knowing it? Does it reflect without willing it?" In this passage Virchow remarkably intermixes truth, half truth, and wrong conclusions. It is true that the new-born child is a notable instance of an almost purely spinal being, and for the simple reason that its higher senses are not at all developed, or so little that a decided influence of the same over the lower is absolutely indiscernible. The lower or vital senses, on the contrary, have at that time a considerable start of the higher. Already during the period of gestation the faculties of the sympathetic system, as well as those of the general sense of feeling, and from the second half of the period of gestation at least, the muscular sense too, have been in continued exercise—that is, they have been continually acted upon by external stimuli, of which numerous vestiges, according to their similarity, have united into various mental aggregates. Although these aggregates by themselves never attain to any high degree of consciousness, they nevertheless are, in their nature and their activities, entirely like all other mental modifications. They bear, so far as they consist of many similar vestiges, the character of conceptions, if ever so dim, in comparison with the light of higher mental developments. They assume the character of conation in all forms of desire and aversion, and in quite a

considerable degree, as the external stimuli are not held very tenaciously by this class of primitive forces; and when several of these modifications are simultaneously excited into consciousness, they naturally produce that consciousness of their difference which we have called feelings of pleasure or of pain. As these various aggregates, by means of mobile elements, are constantly conjoined into various groups and series, which, in consequence of this union, enjoy a common re-excitation, we need not wonder when we see the child born with "a faculty or power of estimating its own sensations," or see it "wish, seek, or desire, or getting vexed, or acting in various manners to a purpose," because these mental acts do really and truly exist in its lower senses, and are the necessary consequences of mental development anywhere. As, furthermore, these lower senses have their bodily substratum in the central gray of the spinal cord (for the sympathetic system is most intimately interwoven with the spinal cord by the rami communicantes), it is plain why the first manifestations of a new-born child are essentially of a spinal character. We may apply this psychological explanation, in its full bearing, to the experiments of Pflüger upon decapitated frogs. As long as the animal *lives* after such mutilation, its lower senses, the substratum or medium of which has not been injured, continue to act in their accustomed ways, not *mechanically*, not *automatically* (which term explains nothing), but strictly in accordance with the psychic developments previously obtained. It is not a *special soul* which animates the spinal cord, but it is the lower senses which find the centre of their medium or substratum located therein.

Virchow evidently feels the weight of Pflüger's experiments, but is nevertheless averse to his conclusions. He says, "Undoubtedly, the power of estimating its own bodily conditions (*Schätzungsvermögen*) has its seat in the spinal cord. But shall we conclude that the spinal marrow of the frog has a soul (*Gemüth*)? Are the feelings of pleasure and pain, the awakening desires and effects, the actions consequent thereon, to be ascribed to a special soul? Or, are not the anatomical elements of the spinal cord, the several living parts of the same, fully

sufficient to explain the sensation as well as the estimation of it, and the consequent actions, by the peculiar and mutual action of these living parts upon each other?" Although he cannot prove the assumption which lies embodied in the last proposition, he, nevertheless—from want of an adequate insight into the elementary psychical processes, and actuated by his preconceived ideas that all mental phenomena are the result of chemical and molecular changes in the nerve-cells—takes this view, which he expresses in the following sentence: "It is impossible to accept, beside the organic structure of the spinal cord, still another particular, unanatomic, or, as some prefer to call it, an immaterial agency, which feels, thinks, wills, and acts;" and further on: "Nothing speaks for such an assumption (of an immaterial agency), which is contradictory to all experience and logic, but our ignorance of the finer construction of the spinal gray, and the difficulty, yet unsolved, to unravel the interior connection of this incredible and at the same time infinitely complex tissue." As all this is merely a reiteration of the common materialistic belief and a confession of the defectiveness of physiology for the explanation of these problems, with a hopeful view that the future might yet be able to solve them, I need not again repeat what has been said in refutation of it, and shall simply refer to the respective chapters of this work. But when he undertakes to strengthen these views by alluding to the fact that the excitability of the spinal organism may be increased or diminished at pleasure by poison, medicine, or stimulants, and then asks: "Shall we suppose that these substances act upon the immaterial substance? that strychnine or curare affect the spinal soul or the general sense of feeling?" we have then to reply that this is, as in the case of Maudsley, a mixing-up of condition with cause. These substances indeed act upon the primitive forces of the "general sense of feeling" as well and in the same way as other external stimuli do. When we see that strychnine increases the irritability of the spine, and that curare paralyzes the nerves without affecting the irritability of the muscles, it is plain that these substances act as poisons, as overdoses, and attack the bodily substratum in such a degree as to alter and change the

means or conditions by and under which a normal activity of the primitive forces alone is possible. The "spinal soul," or the "general sense of feeling," is only secondarily affected, so far as its normal activities are interfered with by the abnormal condition of its bodily means to execute them.

90. VOLITIONS.

Theodor Meynert, in his highly interesting essay on the brain of mammals (in *Stricker*, p. 694, 1872), makes the following remarks: "The first attribute to be ascribed to the nerve-cell is *capability of sensation* ("Empfindungsfähigkeit"). The results of physiological researches do not yet entitle us to place the process of sensation in one certain section, for instance in the brain only; for the fact constrains our fair consideration that the amphioxus shows unmistakable signs of *conscious* animal life, although it is endowed only with *spinal* central gray. *But to attribute to any of the nerve-cells any other fundamental quality, as for instance that of a motory principle, is entirely inadmissible.* Motory quality is possessed only by the muscular tissue, and if any excitation of a nerve-cell, which may be identical with the process of sensation, finds means and ways to be converted into muscular force, then the relation of a central organ to the movements is sufficiently explained by this arrangement, and it does not matter at all whether the motion follow upon the sensation in timely continuity or discontinuity, whether the stimulation be carried through the direct diameter of the spine, or find a medium in an incalculable chain of interruptions along the conducting arches of the cerebrum."

Fritsch and Hitzig (*Ueber die elektrische Erregbarkeit des Grosshirns*; Reichert and Du Bois-Reymond's *Archiv.*, 1870, p. 300), found "that the excitation of distinct and limited localities (centres) of the anterior convex portion of the brain produced movements of certain muscular groups on the opposite side of the body, while the same excitation of portions of the hemispheres, situate more posteriorly, produced no such effect. Thus they found the centre for the muscles of the nape of the

neck situate in the middle of the præfrontal convolution (gyrus præfrontalis), the centre for the extensor and adductor muscles of the anterior extremity at the extremity of the external end of the post-frontal convolution; and, somewhat behind, the centre for the flexor and rotator muscles of the same extremity. The centre for the muscles of the posterior extremity is also situate in the post-frontal convolution, but more behind and toward the median part than the centre for the anterior extremity. The muscles innervated by the facial nerve are controlled by a centre located in the middle portion of the supersylvian convolution. By still more recent experiments, Nothnagel found that by a circumscribed chromic acid lesion on the surface of the cortex, which penetrated into its substance about one millimetre deep, in a limited locality, which corresponded exactly to the external end of the post-frontal convolution (Fritsch and Hitzig's centre for the muscles of the extremities), the animals lost the muscular sense in the anterior extremity on the opposite side to the cerebral lesion. In the same way Nothnagel produced the loss of the muscular sense in dogs, in which the effect is still more marked than in rabbits. The described phenomena can be called forth only by producing the lesion in the above-named limited locality, but in no other way. In this locality, therefore, must be situate a central station for the passage of the peripheric sensitive impressions which are produced by the different positions of the limbs. From the fact, however, that after a certain time the animals recover the lost muscular sense, Nothnagel concluded *that the terminal station, or the real centre for the muscular sense, must still exist elsewhere, and that in the above locality there was destroyed only an intermediate station in the tract of the muscular sense.* After a while, however, other ways become opened for the passage of the muscular sense." (W. B. Neftel, M.D., Brown-Sequard's *Archives*, 1873; *North American Journal*, November, 1873, p. 226 *et seq.*)

Thus it seems that even by these experiments, although they prove, contrary to the observations of former investigators, that the cortical substance of the cerebral hemispheres is in close relation to certain muscular groups, the real centres of

the muscular sense and muscular motion are still not found. Without doubt the reasons for this are, in the first place, that the points or stations from which certain groups of muscles may be acted upon are quite multifarious; and secondly, that these points are not at all end-points or laboratories in which sensation is converted into motion, but that they serve merely as necessary links for the conduction of certain stimuli to certain muscles. At these stations, indeed, new passengers may be taken in and carried on the common route, as in the case of the application of a weak galvanic current to these localities, which proves nothing more than that electricity finds a conducting medium from one particular point to another particular point (which, in consequence thereof, contracts), or that these two particular points stand in a more or less direct connection. When, on the other hand, a lesion of these parts interferes with the normal action of the muscular sense, it shows that afferent and efferent nerves terminate in close proximity; but how and where has not been discovered. But even if we take the statement of Gerlach in regard to the spinal cord as a positive fact, namely, that the ultimate termination of the nerves results in an exceedingly fine plexus, it would merely explain, in a certain manner, the connection between different afferent and efferent nerves, but would not bring us one iota nearer to an understanding of the organs in which sensation and volition originate. As these finest nerve-fibrils have to be considered as the bodily conducting means for the external as well as the internal stimuli, we would still have to look for something *beyond them*, in which sensation and motory stimulus could take their origin. These experiments prove nothing, therefore, regarding the real seat, or rather the real *prima causa* of sensation as well as volition. They merely show that certain connections exist between certain central and peripheral points, and that is all.

So far experiment has reached negative results only. The ground has been cleared, but no harvest reaped; and the recurring question finds no answer: Are there really any separate organs for the origination of sensation and volition within the nervous centres? The nerve-cells which formerly

were considered as such, have lost this prestige by the more recent investigations of Deiters and Schultze. If we, therefore, find nerve-cells connected with motory or efferent nerves, we can attribute to them a special motory principle just as little as we can consider the nerve-cells, on the other hand, as the receptacles and laboratories of sensorial perceptions. Thus, even from an anatomical and physiological point of view, we are driven to the acknowledgment of higher psychic forces as the real *prima causa* of sensation and volition.

What Maudsley has cleverly put together and called the *motorium commune* is, in fact, nothing more nor less than the vestiges and consequent mental modifications which have been acquired by means of the muscular sense in combination chiefly with the sense of touch. He speaks frequently of "a region of mental activity," of "motor intuition organized in the proper nervous centres," of "the region of motor intuitions," of "the region of actuation," but he very wisely abstains from pointing positively to where these regions may be found. "There can be no doubt," says he, "that such a *region* of mental activity exists, and that in it are contained, pre-determined and co-ordinated, the faculties of different groups and series of movements" (p. 169). This broad assertion would sound more correct (physiologically), if he had said, such *regions*, etc.; but whether he use the term *region* or *regions*, he has advanced not a whit in the psychology; he has but indicated a *terra incognita*. It appears as if Maudsley made himself guilty of packing certain concrete phenomena into one abstract "region of mental activity," etc., a fault no less in degree than that of the old-school psychologists, whom he justly charges with this illogical proceeding when they maintain a separate faculty of will, etc.

Neither physiologically nor anatomically is Maudsley's *motorium commune* tenable. Psychologically it resolves itself into the conative sphere of the mind, of which we have spoken. All primitive forces possess, as living psychic forces, a conative quality, that is, a quality ever tending toward action, the sensory nerves serving as "feelers," and the motory as "fangs." In other words, the primitive forces are con-

stantly striving toward and endeavoring to receive external stimuli, and propagate their excitation in all directions. Thus it happens that in the lower and especially in the vital senses, which do not possess retentive power in a degree sufficient for the development of clear consciousness, external stimuli pass in certain channels to corresponding muscular tissue and excite the muscle into involuntary motion, and in this way all the movements which are essential for the sustenance of life, the *functiones vitales*, go on without knowledge or will. It is an immediate transformation of external stimuli into motion, the transformation being effected through channels preformed for this purpose. Herein consist the lowest forms of reflex action. Those on a higher plane, where reflex actions take place in senses of greater retentive power, appear much more complex, and assume the character of conformability to a certain purpose, or as being done designedly. This is of necessity, for in their inmost nature they correspond entirely to those mental forms we comprise under the name of volitions and voluntary actions. A volition is by no means a simple process. It is a stage of development the child reaches only at the cost of considerable time. Not until single desires have been formed by many and repeated (especially pleasurable) excitations (26), not until single conative efforts have through many and repeated attempts been conjoined to particular movements of single groups of muscles as the means for the realization of the desire (42), do volitions and voluntary actions take place in the child. Now, as an act of desiring is at the same time an act of conceiving (28), it is plain that consciousness appertains also to volitions. We see, therefore, that in the child the development of volitions goes hand in hand with the development of consciousness. More than once it has been stated that consciousness varies in the degree the several primitive forces are endowed differently with retentive power. From this it follows that volitions of the higher senses must be characterized by a greater degree of consciousness than is attained by those that are measurably lower; that, therefore, all conative modifications of the latter, so long as the higher senses remain undeveloped, must lack more or less

this quality. We need not wonder, then, that the new-born child appears at first as a purely spinal being, or in other words, that its first actions, or rather movements, appear to be without consciousness. Its higher senses, those primitive forces which are endowed with sufficient retentive power for clear consciousness, have not been developed. But this lack of consciousness is only a lack in degree. Even the lowest or vital senses are capable of developing a certain amount of consciousness. This is an inherent quality of all psychic forces. Let the amount of consciousness be ever so faint, it nevertheless is consciousness, just as gold remains gold if it can be detected only by the microscope. The volitions of the lowest senses differ, therefore, from those of the higher in the degree of consciousness, but do not differ in kind. If we bear in mind that the degree of consciousness depends also upon the number of like vestiges and their excitation, we can easily understand why the so-called reflex actions and what has been termed automatic actions (a term which, indeed, explains nothing) may be classed with propriety in the conative sphere of the mind. All these movements and actions are going on in strict accordance with the law of diffusion of mobile elements. In the lowest reflex actions external stimuli are at once carried in definite channels to certain groups of muscles which they excite into motion, while higher reflex actions and conscious volitions, properly so called, originate in mobile elements which may have to traverse "an incalculable chain of interruptions along the conducting arches of the cerebrum" before they reach their destination. A large amount of mobile elements will, therefore, not only cause movements of a more violent character, but also, on a larger scale, the abundant elements spreading in all directions to different sets of muscles. This is proved not only by physiological experiments (which show that strong and continued external stimuli notably induce more violent and extended movements), but also by the psychological fact that strong mental emotions are no less capable of exciting the whole bodily frame, even to convulsions. It is everywhere the same psychical process, the diffusion of mobile elements. Shall we, then, look longer

for particular places or cells in the brain, spine, or ganglia, where volitions originate (using the word in its widest sense)? Anatomy and physiology have not been able to demonstrate them, and psychology does not need them, for we know that any act of desiring is more or less also an act of conceiving. According to the law of attraction of like to like, the single conative acts unite and form single volitions, which again, considered as a whole, constitute "the will." It is with pleasure that I can here refer to Maudsley's advanced views in regard to this subject. In those views, what is still left doubtful and obscure could easily be cleared up by a study of Beneke's psychological works.

91. THE FEELINGS.

The same praise cannot be bestowed upon what Maudsley treats under the title of "*the emotions*." The great confusion which prevails in the old psychology as regards these mental modifications has not improved under the influence of physiological considerations. Here, as there, the same indistinctness between emotion and passion, feelings and desires is obvious. Although, on page 142 in Maudsley's work, a very proper way as to how one might arrive at an adequate account of the emotions is described, this advice has not been followed out.

The sum and substance of Maudsley's physiological investigations culminate in this: "The recognition of this specialization and complexity in the function compels us to assume a corresponding development in the delicate organization of the nervous structure, although, by reason of the imperfection of our means of investigation, we are not yet able to prove a process of such delicacy in these inmost recesses to which our senses have not gained entrance" (p. 124). This appeal for leniency in judging the shortcomings of physiological researches because of the insufficiency of the present physiological means, can apply only to those minds who unreasonably expect what it is not possible to accomplish. For, taking it even for granted that the tracing of processes of such delicacy were possible, what could we expect to see? Molecular motion.

Would these molecular motions be the identical emotions? Who would dare to assert this? Who could prove it? We would, even then, be just where we started. Although further advanced in the knowledge of the concomitant changes in the bodily substratum during a psychical process, similar to the advancement of knowledge which we have gained in regard to the process of seeing and hearing by the discoveries of Helmholtz and Corti, we would still not have arrived at the origin and nature of our emotions (just as little as by these discoveries we have been made to understand the process of seeing and hearing in its character as *sensation*). It is the fundamental error that taints the entire materialistic persuasion, to consider as *cause* what in fact is but a *condition*. Nobody denies that "an increasing specialization and complexity in the function requires a corresponding development in the organization of the nervous structure," and we may even with tolerable propriety reverse this conclusion, and say that where we find a highly organized nervous structure we may naturally expect a corresponding specialization and complexity in the function. Still, this would not prove that the higher nervous development is the *cause* of the increasing specialization and complexity in the function. It would merely state that these two things—higher organization and complexity of function—usually go hand in hand. I say usually, for on the ground of the great difficulty of judging fairly the perfection or imperfection of so complex an organ as the brain, it is not always possible to arrive at a correct conclusion.

Usually, for instance, the presence of numerous and deep convolutions is considered as a sign of higher intelligence. If this be admitted to be a law deduced from a majority of cases, it certainly does not apply to all. If materialism bases upon it the correctness of its conclusions, we should demand nothing less than its application in each and every instance. A single glaring exception would render these conclusions more or less doubtful. Thus, for example, we find in Henle's *Nervenlehre*, p. 163, the drawings of two brains, one of a young nameless German, and the other of the celebrated Gauss; that of the latter appears so strikingly more simple and poor in its con-

volutions than that of the first, that Henle finds it necessary to remark: "There are collections of brains of unknown persons which present great richness in convolutions, all the possessors of which we surely have no right to consider as undeveloped geniuses; and, on the other hand, it would certainly be inadmissible to dispute the legitimacy of the rank which a meritorious man has held during his life, on account of the result of a post-mortem examination."

At most, then, we may say that usually an apparently higher nervous organization corresponds to a higher mental development. But to make this relation, even if it were unexceptional, a relation of *cause* and *effect*, evinces a marked defectiveness in logical reasoning. It certainly does not follow that of two things which usually or even invariably appear together or follow one another, the one is the *cause* of the other. This co-existence or succession may be a mere relation of time, place, or condition. Thus, for instance, it would be a faulty conclusion if we were to assert that the revolution of the earth around its axis and around the sun were the cause of day and night and of the change of seasons. Would these revolutions and all these changes be possible without a sun? Is, then, the *sun* not the cause of day and night and of the seasons? Still, without these revolutions there would be no such changes, because they are the *condition* necessary for their production; yet the sun is the *cause* of all. A similar relation exists between the bodily nervous organization and mental phenomena; the first are the necessary *condition* for the display of the latter; yet the *cause* lies deeper in those psychical forces which constitute the human soul.

The psychologist will always thankfully receive the diligent researches of physiology, as they undoubtedly tend to clear up the complex *conditions* under which mental phenomena manifest themselves, but he must earnestly protest against the hasty assertions which make conditions causes and pretend to possess in physiology the only and sufficient means for the explanation of mental life. Even the simplest mental phenomenon in its origin and nature cannot be satisfactorily explained by physiology. How utterly inadequate this science proves for

the explanation of higher mental processes! We have a glaring example of this inadequacy in the attempt of Maudsley to explain "the emotions" on this basis. It will not do to assert in a general way "that the condition of the nervous centres is of the greatest consequence in respect to the formation of the so-called mental faculties, and the manifestation of their functions" (p. 129); that "the greater the disturbance of nervous element, however produced, the more unstable is its state; and an instability of nervous element, implying, as it does, a susceptibility to rapid molecular or chemical retrograde metamorphosis, furnishes the most favorable conditions for the production of emotion, passion, or *commotion*, as the term was of old" (p. 136); that "the æsthetic feelings are without question the result of a good cultivation, conscious development having imperceptibly become a sort of instinctive endowment, a refinement to which vulgarity of any kind will be abhorrent; they are the bloom of a high culture, and, like cœnesthesis, represent a general tone of mind, which cannot be described as definite emotion, but in which certain ideas that arise will have pleasant emotional qualities. Reflect, again, on the powerful effects which the aspects of nature produce upon philosophic minds of the highest order. The vague mysterious feelings which such minds have as instinctive impressions of their fellowship with nature, traits of that harmonious sympathy with events whereby an indefinite feeling of joy transports them in view of certain of her glories, or a dim presentiment of evil oppresses them under different relations: these are vague psychical feelings that, in reality, connote the highest intellectual acquisition; they are the consummate inflorescence of the highest psychical development, the supreme harmonies of the most exalted psychical tone" (p. 138 and 139); that "the moral feeling betokens an improved quality or higher kind of nervous elements, which ensues in the course of a due development, and which may easily again be disturbed by a slight physical disturbance of the nervous element" (p. 144), etc.

I say it will not do for so-called exact science to flourish generalities, and pass them off as analytical explanations of psychical evolutions. Although they appear, if taken with

some allowance, tolerably correct in a general way, they do not in the least explain the origin, nor analyze the nature of these processes, and we must, in the name of science, dismiss this kind of physiological talk as entirely inadequate for solving psychological problems. The psychical processes in general, and the feelings (emotions) in particular, admit of a better explanation and of a thorough analysis, as any one may convince himself who studies the new psychology of Beneke, or even reads attentively what has been explained in the corresponding chapters of this work.

92. DR. L. S. BEALE'S PROTOPLASM.

I have only lately had the good fortune of becoming acquainted with the excellent writings of Dr. Lionel S. Beale, through Dr. Drysdale's valuable work on *The Theory of Protoplasm*. There is at this moment, when materialism and spiritualism struggle for the palm of victory, scarcely anything more important and to the point than Beale's investigations and Fletcher's theory, as represented by Dr. Drysdale. As Dr. Beale's microscopical investigations have a close bearing upon physiological psychology, I shall now state, in his own words, what concerns us here. The results of his long and patient investigations on the nature of protoplasm are as follows:

1. "The term 'protoplasm' has been applied to several different kinds of matter, to substances differing from one another in essential particulars. To sum up in a few words: The term protoplasm has been applied to the viscid substance within the primordial utricle of the vegetable cell of the threads and filaments formed in this matter; to the primordial utricle itself; to this and the substance which it incloses, and to all these things, together with the cellular wall; to the matter composing the sarcode of the foraminifera; to that which constitutes the amœba, white blood-corpuscle, and other naked masses of living matter; to the matter between the so-called nucleus and muscular tissue, and to the contractile matter itself; to everything which exhibits contractibility; to nerve-fibres, and to other structures possessing remarkable endowments; to the soft matter within an elementary part, as a cell of epithelium; to the hard external part of such a cell; to the entire epithelial cell; to slimy matter dredged from great depths under the sea; and, lastly, to matter existing only in the imagination.

"Inanimate albuminous matter, which is incapable of any movement whatever, or which does not develop into any living thing, which in all conditions is perfectly lifeless, has been looked upon as protoplasm. Living things have been spoken of as masses of protoplasm; the same things dead have been said to be protoplasm. If the matter of an animal be boiled or roasted it does not thereby lose its title to be called protoplasm; and there seems no reason why it should not be dissolved and yet retain its name protoplasm." (*Prot.*, p. 113.)

"In my lectures at the College of Physicians, 1861, I had drawn attention to the great distinction between 'living' and 'formed matter' of the elementary part or cell, and of all living organisms; and had shown that the 'living matter' of the cell corresponded to the material of which the *amœba*, white blood-corpuscle, pus-corpuscle, etc., were composed. These last I represented as naked masses of living matter, and objected to apply to them the term protoplasm, because so many textures, which were not living, were said to consist of that substance. My conclusions were summed up as follows: 'In all living beings the matter upon which *existence* depends is the germinal matter (bioplasm), and in all living structures the germinal matter possesses the *same general character*, although its *powers and the results of its life* are so very different.'" (*Prot.*, p. 92.)

"The characters of bioplasm may be studied in the lowest organisms in existence, and in plants as well as in man and the higher animals. Being so very transparent, and often imbedded in dark and more or less opaque tissue, bioplasm has often been overlooked, and has been mistaken for mere passive fluid occupying a *space* or *vacuole* in the tissue. Bioplasm, or living matter, is, as far as can be ascertained by examination with the highest powers, perfectly structureless. It exhibits the same character at every period of existence, and in every living organism." (*Biopl.*, p. 47.)

"There is not one portion of a living growing tissue $\frac{1}{500}$ of an inch in extent in which living matter cannot be demonstrated." (*Prot.*, p. 42)

"At every period of life, in every part of the body, separated from one another by a distance little more than the $\frac{1}{1000}$ part of an inch, are little masses of living matter." (*Prot.*, p. 304.)

"Man and animals, all their tissues and organs, their forms and structures, result from series of changes, which commence in a portion of matter too minute to be weighed, which is invariably perfectly colorless, and which appears perfectly structureless." (*Prot.*, p. 301.)

"The smallest masses of living matter are spherical, and the largest mass always assumes the spherical form when free to move in a fluid or semifluid medium." (*Microscope*, p. 312.)

"The particles of living matter consist of structureless, colorless, transparent semifluid matter." (*Biopl.*, p. 7.)

"In order to distinguish the invariably transparent living matter or bioplasm from the frequently transparent formed material, it is necessary to pursue a particular method of investigation, which I have fully described in my *How to Work with the Microscope*. The value of this process depends upon the fact that *all bioplasm is colored red by an ammoniacal solution of carmine, while all formed material, notwithstanding it has been traversed by the alkaline colored fluid, remains perfectly colorless*. The fluid which I use in the preparation of my specimens has the following composition: Carmine, 10 grains; strong liquor ammonia, $\frac{1}{2}$ drachm; rectified spirits, $\frac{1}{2}$ ounce; Price's glycerin, 2 ounces; distilled water, 2 ounces. *Every kind of living or germinal matter or bioplasm receives and fixes the color of this fluid, while no kind of formed material known is stained under the same circumstances.*" (*Biopl.* p. 44.)

2. "There is a period in the development of every tissue, and every living thing known to us, when there are actually no *structural* peculiarities whatever, when the whole organism consists of transparent, structureless, semifluid, living bioplasm, when it would not be possible to distinguish the growing moving matter which was to evolve the oak from that which was the germ of a vertebrate animal. Nor can any difference be discerned between the bioplasm matter of the lowest, simplest, epithelial scale of man's organism, and that from which the nerve-cells of his brain are to be evolved. Neither by studying bioplasm under the microscope, nor by any kind of physical or chemical investigation known, can we form any notion of the substance which is to be formed by the bioplasm, or what will be the ordinary results of its living." (*Biopl.*, p. 17.)

"One form of living matter is indistinguishable from another. Neither the most careful microscopical observation, nor the most skilful chemical analysis would enable us to distinguish the living matter obtained from the body of an ape from that taken from a man, dog, fish, or human form of life. But who will affirm that, therefore, all these different forms of living matter are one, identical? Although there may be no physical or chemical differences, we know that the life-history of these several forms is very different, while the results of their living are sufficient to prove that they must have been diverse from the very first." (*Prot.*, p. 284)

"Two forms of living matter may be indistinguishable by observation or experiment, and yet they may be as widely removed from one another as are the poles. The remarkable differences, however, are not of a kind to be expressed in any terms known to physics or chemistry. They must be referred to powers that have been handed down by preceding bioplasm. Such differences are of the *vital* kind, and although not recognizable by the balance or the microscope, their existence must be admitted, unless all the subsequent structural differences resulting from changes in the living matter can be otherwise adequately accounted for." (*Prot.*, p. 286.)

3. "The colorless structureless matter, characteristic of and peculiar to all life on earth, and in air, and in water, is capable of moving in every part and in every direction. The movements are not such as are produced by vibrations communicated to the fluid or semifluid substance from matter in vibration in its neighborhood, but the impulse proceeds from within the matter itself." (*Biopl.*, p. 7.)

"Bioplasm always *tends to move* toward the pabulum it is about to take up and to transform. This *tendency* to move is one of the essential attributes of living matter. The movement is quite *per se*, but it is characteristic of every form of living matter. The idea that any form of non-living matter might move in this way or possess capacity for initiating such movements, is opposed to observation and experiment, and cannot be entertained at this time." (*Prot.*, p. 271.)

"Living matter may, by its *vital* movement, transport itself long distances, and extend itself so as to get through pores, holes, and canals, too minute to be even seen with the aid of very high powers. There are creatures of exquisite tenuity which are capable of climbing through fluids, and probably the air itself; creatures which climb without muscles, nerves or limbs; creatures with no mechanism, having no structure, capable, when suspended in the medium in which they live, of extending any one part of the pulpy matter of which they consist beyond another part, and of causing the next to follow, as if each part *willed* to move and did so." (*Prot.*, p. 276.)

4. "The character of living matter can be studied very readily in the amœba. These low forms of living beings are generally found in great numbers in water containing a little decomposing vegetable matter. If carefully examined under the one-twelfth of an inch object-glass, the amœba will be observed to alter in form. At various parts of the circumference protrusions will be observed. The protrusions consist of the material which forms the basis-substance of the amœba.

It will be observed that this moving material is perfectly transparent, and in it no appearance of structure can be discovered. It is true that granules and foreign particles may be seen imbedded in it, but the matter in which the motor power resides is perfectly clear and transparent. Motion is communicated to the solid particles by the movements of the transparent living matter. Under certain circumstances the movements cease, and a change is observed to take place upon the surface. The outer part of the amoeba becomes condensed, and thus *formed material* results which protects the remains of the living within. The external surface of a mass or particle of living matter in contact with air or fluid becomes altered. In plain language the living matter upon the surface dies, and according to the conditions under which death occurs, different substances may result. These may be solid, fluid, or gaseous. They may be soluble or insoluble in water. They may be soft or hard, colored or colorless. They are *formed*, and their *formation* is, in great part, due to the relation which the elements of the living matter were made to assume toward each other during the living state. This relation is definite, so that from the same kind of living matter under similar conditions the same formed substances result." (*Microscope*, p. 313.)

"The formed material may be regarded as a product resulting from the collision of internal *vital*, and external *physical* forces. It therefore owes its properties partly to the changes occurring in the matter when in the living state, partly to the external conditions present when the matter was undergoing change—that is, at the moment of its death." (*Microscope*, p. 323.)

5. "Nothing that lives is alive in every part." (*Prot.*, p. 187.)

"Of the matter which constitutes the bodies of man and animals in the fully formed condition, probably more than four-fifths are in the *formed* and non-living state." (*Prot.*, p. 187.)

"Even in the smallest organisms which exhibit the simplest characters, as well as in every texture of the most highly complex beings, we can demonstrate two kinds of matter, differing in very important particulars from one another; or, perhaps, it would be more correct to say, matter in two *different states*, *manifesting different properties*, and exhibiting differences in appearance, chemical composition, etc., and physical characters." (*Prot.*, p. 182.)

"Not even the smallest living particle seen under the one-fiftieth of an inch objective consists of matter in the same state in every part, for it is composed of 1, living matter; 2, matter

formed from this; and 3, pabulum which it takes up. The matter in the first state is alone concerned in *development*, and the production of those materials which ultimately take the form of tissue, secretion, deposit, as the case may be. It alone possesses the power of growth, and of producing matter like itself out of materials differing from it materially in composition, properties and powers. I have, therefore, called it *germinal* or *living matter* or *bioplasm*, to distinguish it from the *formed material*, which is in all cases destitute of these properties." (*Prot.*, pp. 184, 185.)

"The difference between *germinal* or *living matter*, or *bioplasm* and the *pabulum* which nourishes it on the one hand, is, I believe, *absolute*. The pabulum does not shade by imperceptible gradations into living matter, and this latter into the formed material, but the passage from one state into the other is sudden and abrupt, although there may be much living matter mixed with little lifeless matter, or *vice versa*. The *ultimate particles of matter pass from lifeless into the living state, and from the latter into the dead state suddenly*. Matter cannot be said to *half live* or *half die*. It is either *dead* or *living, animate* or *inanimate*; and formed matter has ceased to live." (*Prot.*, p. 185.)

"The terms *living* and *dead* have for me a meaning somewhat different from that commonly accepted. If my arguments are sound, the greater part of the body of an adult man or animal at any moment consists of matter, to all intents and purposes, as dead as it would be if the individual itself were deprived of life. The formed material of the living cell is dead. The only part of the living cell and the living organism which is alive is the germinal matter. Nothing can be regarded as alive or living but germinal matter in which vital changes alone take place. The phenomena of imbibition, osmose, etc., in cells, even the contraction of muscles and the action of nerves, are probably in themselves physical actions, although they were immediately preceded by, and are probably the direct consequence of, actions purely vital. But for these vital phenomena those physical actions could never have occurred in the precise way in which they did occur, nor effect the purpose they did effect. Were it not for the vital actions, osmose, muscular contraction, nerve action, etc., would, of course, soon cease, and could not be resumed unless the conditions were all re-arranged as they were before. The formed material in which all these changes occur could not have been formed without the previous manifestation of vital phenomena. We may go backward as far as we can, but we shall always find vital actions concerned in bringing about the condition

of things necessary for the peculiar physical and chemical changes which occur subsequently." (*Microscope*, p. 329).

These extracts, which are taken *verbatim* from Dr. Lionel S. Beale's works (*How to Work with the Microscope*, fourth edition, London, 1868; *Bioplasm, an Introduction to the Study of Physiology and Medicine*, London, 1872; and *Protoplasm, or Matter and Life*, London, 1874), demonstrate:

1. What he understands by protoplasm, and what not;
2. That there are different kinds of protoplasm or living matter, although indistinguishable from one another by observation or experiment;
3. That one of the essential attributes of living matter is its tendency to move;
4. That living matter, under certain conditions, is converted into formed material; and,
5. That the difference between *bioplasm* and *formed material* is absolute, the first being *alive* or *living*, the latter *dead*.

93. THE RESULTS OF MICROSCOPICAL AND PSYCHOLOGICAL INVESTIGATIONS COMPARED.—LIVING AND DEAD.

These results, which Dr. Beale has achieved by long and patient investigations, are entitled to a most careful consideration. In the first place he has divested the term "protoplasm" of the ambiguity with which it has heretofore been used even by the most advanced histologists. By confining its meaning to that wonderful stuff which is without color and structure and of a semifluid consistence, which exists everywhere where there is anything manifesting life, and without which the lowest form of animal or vegetable nature has no existence, from which, in fact, man, animals and vegetables, all their tissues and organs, their forms and structures, result through series of changes; he has demonstrated a fact which is of the most fruitful application in physiology—that stuff, always derived from a preceding one of the same kind, is, in all living forms, the last and farthest point to which the microscope can penetrate; or, considering it in an opposite direction, the first or starting-point, the *punctum saliens*, demonstrable by the micro-

scope, and from which the development of any living organism springs. Dr. Beale has, therefore, called it *germinal matter*; and we might well define it as the stuff which comprises within itself the *primitive forces* of all *bodily* development. What, indeed, the primitive forces of the soul are for all and every kind of psychical development, this germinal matter is for all and every kind of bodily growth. To this point, as said before, the microscope reaches; but neither by the microscope, nor by the most subtle chemical means, are we capable of discerning any difference between the germinal matter of the lowest and of the highest forms of organisms. Still differences, and even vast differences, must exist between them from the beginning, as the life-history of the various forms which result therefrom clearly demonstrates. "Such differences," Dr. Beale says, "are of the *vital* kind, not recognizable either by the balance or microscope." If it were not that we knew already different kinds of primitive forces which are likewise beyond the reach of balance and microscope, we might well ask what was meant by differences of "a vital kind." With those who do not see further than the microscope permits, and do not weigh more than the balance is capable of marking, this *vital* kind of difference has, indeed, been a great stumbling-block. It is, however, useless to refute again the materialistic preconceptions which confound the knowable with the visible. The protoplasm, indeed, contains primitive forces which lie absolutely out of the range of the microscope and chemical reagents, just as the primitive forces of the soul lie beyond chemical analysis; and they resemble each other not only in this, but in still other particulars.

It is an essential attribute of living matter (protoplasm) that it has a *tendency to move*, that any part of this pulpy matter is capable of extending itself beyond another part, and of causing the rest to follow, as if each part *willed* to move and did so. We are well acquainted with this peculiarity as an innate quality, also, of all psychical primitive forces, and we have called them, for this reason, *conative* in their nature (24). They strive toward and are acted upon by external stimuli, and thereby become converted, changed, or modified, under

certain conditions, into perceptions, concepts, desires, etc., as the case may be. Just so the protoplasm moves toward and receives pabulum. Under certain circumstances its movements cease, and a change is observed to take place upon its surface. This change may result in the formation of different substances, which may be soft or hard, colored or colorless. They are *formed*, and this formed material may be regarded as a product resulting from the collision of internal *vital* and external physical forces. In short, the same fundamental process described in 4 we see repeated here, namely, the transformation of primitive forces by external stimuli. As in the human soul sensations and perceptions (mental modifications) originate in consequence of impressions from the external world, so in any kind of living being the protoplasm, which comprises within itself the primitive forces of all bodily development, is converted under certain conditions into formed material. The relation between the protoplasm and this formed material is definite; so that from the same kind of matter, under similar conditions, the same formed substances result, just exactly as from psychical primitive forces the same mental modifications result when they are influenced under similar conditions, as is shown by the different but definite products arising from a deficient, full, pleasurable, satiating or painful stimulation. To sum up briefly: Soul and body consist, from the beginning, of primitive forces which, although unrecognizable by balance or chemical means, are, nevertheless, essential to any psychical or bodily development. They are mobile elements, conative in their nature, and are converted by the action of suitable external stimuli ("under certain conditions," Beale), either on the one hand into mental modifications, or on the other hand into formed material.

Beale has described the conversion of living matter into formed material as taking place suddenly, without any transitory state, and considers the difference between germinal matter and the formed material absolute. Having called the germinal matter *living* matter, he considers the formed material to all intents and purposes *dead*. This antithesis, although seemingly correct in the sense in which Beale uses

it, might nevertheless be better expressed by "*formative* and *formed*," terms likewise used by Dr. Beale. For "living" and "dead" are concepts not generally accepted in a uniform sense. If we consider that formed matter, so long as it remains in union with and under the influence of "living" matter, which is the actual state of all living things, is not quite so "dead" as when this connection is entirely broken (in order to express this still "deader" condition, we speak of decay and dissolution), we cannot help thinking that the word "dead" applied to formed material is not altogether a fortunate choice. It is true when living matter is converted into formed material it loses the power of spontaneous movement, and of assimilating pabulum, and changing pabulum into matter like itself; but, on the other hand, it gains by acquiring a definite form upon which it imprints indelibly its own innermost nature, and which is quite essential to the "life" of the individual.

Is it well to compare this formative or organizing process with the process of "dying," a process which is always associated in the mind with the idea of disorganization and decay, especially when we see that the formed material remains continually under the governing influence of living matter so long as there exists any connection between the two?

If, according to Dr. Beale, "some directing agency of a kind peculiar to the living world exists in association with every particle of living matter, which, in some hitherto unexplained manner, affects temporarily its elements, and determines the precise changes which shall take place when the living matter again comes under the influence of certain external conditions" (*Prot.*, p. 314), it appears that this "living" matter, so far as it is demonstrable, is *itself* dependent on something entirely different from itself; that not *it*, but the "peculiar kind of agency" with which it is associated is the "living" force. Thus we have two different things to distinguish in every particle of "living" matter. First, what composes its invisible directing agency, and secondly, that visible, jelly-like substance with which the first is associated. By what right now is this stuff called "living" in preference to formed material? The one as the other is alike animated by some invisible force.

Why should formed material be called "dead," even if it is one remove further off from the "directing agency" than protoplasmic matter, so long as it remains likewise under the influence of the power that animates the protoplasm?

But beside this there are other considerations which make one hesitate in the adoption of this sharply-defined antithesis of living and dead, when applied to protoplasm and formed material. The questions might be raised: Is there anything at all in God's world which could be called absolutely "dead"—that is, entirely destitute of force, entirely inactive? Is not everything that exists capable of action and reaction whenever brought under certain conditions? We shall, however, have to recur to this subject at some future occasion.

94. BEALE ON THE STRUCTURE AND ACTION OF THE NERVOUS APPARATUS.

1. "It was supposed that in many cases nerves pursued an almost direct course to their ultimate distribution, where they terminated in free extremities, in cells, or by becoming continuous with the texture they influenced. More careful observation has, however, demonstrated that all nerves, before they reach their finest ramifications, form microscopic networks or plexuses, are arranged upon the same plan as the coarser networks; and I have been able to demonstrate that the *finest ramifications* themselves constitute a *plexus or network*, in which the compound ultimate fibres are arranged in much the same manner as the dark-bordered fibres entering in the formation of one of the ordinary plexuses." (*Microscope*, p. 331.)

"I am of opinion, therefore, that there is not such a thing as a true *end* of any nerve-fibre." (*Microscope*, p. 332.)

"I consider that numerous specimens I have made fully justify me in maintaining the general proposition that in all cases the terminal distribution of nerves is a plexus, network, or a loop, and hence that in connection with every terminal nervous apparatus there must be at least two fibres, and *that in all cases there exist complete circuits, into the formation of which central nerve-cells, peripheral nerve-cells, and nerve-fibres enter.* All these elements are in structural connection with each other." (*Microscope*, p. 333.)

2. "My observations have led me to conclude, not only that nerves *never terminate in ends in voluntary muscle, but that there*

are no terminal extremities or ends in any nerve-organ whatever." (*Biopl.*, p. 249.)

"Nerve-tufts (*Nervenhügel*) are not terminal organs, but networks. The nerve-tufts consist of a complex network of fibres, the meshes of which are very small. Connected with the fine nerve-fibres are numerous masses of bioplasm or nuclei. The plexus or network constituting the nerve-tuft is not terminal, nor does it result from the branching of a single fibre, as has been represented. *Many fibres* enter into its formation, and from various parts of it long fine fibres pass off to be distributed upon the surface of the sarcolemma." (*Biopl.*, p. 267.)

"It seems to me most probable that these nerve-tufts are exceptional and not present in all muscles, nor essential to voluntary muscle generally. As in other tissues, the peripheral arrangement of the nerves in voluntary muscle is a continuous network, in which the nearest approach to an 'end' or 'termination' is a loop." (*Biopl.*, p. 268.)

"The remarks which I make with reference to the ultimate nerve-fibres distributed to voluntary muscle, will apply to the ultimate nerve-fibres distributed to other organs." (*Biopl.*, p. 274.)

3. "I will now refer very briefly to the arrangement of the nerve-tissue in that particular part of the gray matter of the convolutions which I believe to be the seat of the operation of the mental influence. At the surface of the gray matter of the convolutions a most intricate interlacement of the finest nerve-fibres is observed. I have traced fibres to the surface, a short distance beneath the pia mater, and have seen them turn back again into the gray substance. In many instances the long fibre that passes from the caudate cells may be followed to a point about the $\frac{1}{20}$ of an inch below the surface, where it divides into numerous branches, many of which again divide and subdivide. In short, the ultimate ramifications of the long fibre running perpendicularly toward the surface, branch off at a right angle, or almost at a right angle, and radiate horizontally in every direction. They very soon, however, turn inward again, and it is not possible to follow the individual fibres. Now, the surface of the gray matter of the convolutions immediately under the pia mater is almost destitute of bioplasts; but a little beneath this point, that is, in the situation exactly where the fine ramifications of the nerve-fibres are in greatest number, and are pursuing the most varied courses, are collections of roundish, very transparent, minute bioplasts, which are probably connected with one another by exceedingly delicate branches. These are in immense

numbers, but form groups, though in the intervals between the groups the bioplasts are still numerous. The appearances and arrangement of the bioplasts, which are for the most part less than a white blood-corpuscle, are not unlike those observed in the so-called granules constituting the granular layer of the retina, and in the cortical substance of the cerebellum. These minute bioplasts have been termed 'granules,' but such a name seems to me particularly inappropriate. These so-called 'granules' are all composed of bioplasm, and are examples of highly endowed living matter. In all the organs in which they are found, they constitute an essential portion, and perform a very important office." (*Prot.*, p. 319.)

"I believe that the bioplasts referred to are directly concerned in mental action." (*Prot.*, p. 321.)

"The number of the nerve-fibres, like that of the bioplasts, is altogether beyond calculation. A portion of gray matter upon the surface of a convolution, not larger than the head of a very small pin, will contain portions of many thousands of nerve-fibres, the distal ramifications of which may be in very distant and different parts of the body. These nerves may, however, only indirectly influence distant parts through the intervention of other nerve-fibres, and some of them may be concerned in directing the associated movements of certain fibres of several different muscles."

4. "I believe the caudate nerve-cells, which form such prominent objects, and which are very numerous in the gray matter of the brain of man and mammalian animals, ought not to be regarded as the sources of mental nervous influence, although doubtless they are very intimately connected with, and, indeed, may be absolutely necessary to the act of thinking. These remarkable bodies constitute an essential part of the apparatus which is influenced by the mental bioplasts." (*Prot.*, p. 321.)

5. "In the highest bioplasm the vital power determines movements, which, by reacting upon a previously formed mechanism, may give rise to the most complex phenomena. In the mental apparatus, the 'will' is the 'power' which determines the movements of the matter of the bioplasts taking part in the phenomena of the mind. This is a *vital* action, the highest *vital* action with which we are acquainted; but clearly to be included in the same category as the *vital* actions which determine the active movement of the matter of the simplest forms of bioplasm, as that of an amœba, or a white blood-corpuscle, or other bioplast. The movement of this, the highest form of bioplasm, reacts upon a wonderfully elaborate apparatus, parts of which are in close relationship with the mental

bioplasts. Changes excited in the apparatus are the immediate consequence of the vital movements. These last only are truly mental, while the expression of thought is but a result of the influence of the mental vital action upon the mechanism concerned in expression, without which thought could not be rendered evident to another person. A great distinction must, indeed, be drawn between the *thought* and the expression of the thought." (*Biopl.*, p. 208.)

"Perhaps the relation borne by the little bioplasts to the nerve mechanism may be roughly, but not inaptly, compared with that which subsists between the intelligent workman and the highly complex machinery which he directs and controls, stops and sets going. He would be useless without the machinery, but the latter could not work to any advantage except under the superintendence of an intelligent director." (*Prot.*, p. 322.)

6. "From the foregoing observations the reader will be led to conclude that I regard a nervous apparatus as consisting essentially of fine fibres and masses of bioplasm, which form uninterrupted circuits. The fibres are continuous with the bioplasts, of which some are central, some peripheral, and grow from them. By chemical changes in the matter formed by the bioplasts, electrical currents may be produced, and these traverse the fibres. The currents, varying in intensity according to the changes in the nerve-cells, would be affected by pressure upon the nerve-cords which transmit them. Currents emanating from bioplasts at one part of the circuit would influence the changes in the bioplasts in another part, and the last react upon the first." (*Biopl.*, p. 209.)

"Such investigations cannot fail to impress us with the wonderful character of the mechanism concerned in nervous phenomena, and lead us to conclude that the effects produced are to be attributed rather to the mechanism through which force works than to any mysterious or peculiar properties of the force itself. Let no one, therefore, conclude that anything is gained by regarding nerve-force as electricity, or some mysterious, unknown correlative of ordinary force, of the nature of which we know nothing. If we admit it to be ordinary electricity, the problem is not solved; for it is obvious that its manifestations are due entirely to the peculiar arrangement of the nerve-cells and fibres which constitute the mechanism for setting free and conducting the currents. It is not possible to conceive nerve phenomena without a special nervous apparatus, and it would be absurd to ignore this apparatus in considering the nature of nervous action. The action of the machine cannot

be disassociated from its construction. But the construction of the apparatus and its maintenance in a state fit for action are due to vital power. The lowest, simplest, and least varied kinds of nervous action, like all other actions known in connection with the living elementary parts of living beings, are intimately connected with *vital* changes, and cannot be accounted for by physical and chemical laws only. When we assent to the consideration of the higher and more complex nervous actions, we find reasons for concluding that the vital actions perform a still more important part. In the brain of man we have probably the only example of a mechanism possessing within itself, not only the means of repair, but the capacity for improvement, and the power of increasing the perfection of its mechanism, not only up to the time when the body arrives at maturity, but long after this, and even in advanced life, when many of the lower tissues have undergone serious deterioration, and have long passed the period of their highest functional activity." (*Microscope*, p. 338.)

These few excerpts may be considered the result of Dr. Beale's researches, elaborately laid down in his exceedingly instructive works, regarding the action and structure of the nervous apparatus. Briefly stated they are as follows:

1. That in no case do the nerves terminate in free extremities, but in all cases form plexuses or networks; that they thus form circuits, into the formation of which enter nerve-cells, peripheral nerve-cells and nerve-fibres; that in fact the nervous apparatus consists essentially of fine fibres and masses of bioplasm, which form uninterrupted circuits. The fibres are continuous with the bioplasts, of which some are central, and some peripheral, and the fibres grow from the bioplasts.

2. That this applies to the nerves of the voluntary muscles as well as to those of all other organs, and that, therefore, the nerve-tufts are not terminal organs, but networks; so that in the peripheral arrangement of the nerves in the voluntary muscles, as well as in all other tissues, the nearest approach to an end or "termination" is a loop.

3. That in the gray matter of the brain the so-called "granules" are composed of bioplasm, and are examples of highly endowed living matter, which is directly concerned in mental action.

4. That the caudate nerve-cells ought not to be considered

as the sources of mental influence, although they constitute an essential part of the apparatus which is influenced by the mental bioplasts.

5. That will and thought are truly vital mental actions, while the expression of thought is a result of the influence of this vital mental action upon the mechanism concerned in its expression. There is a great difference between *thought* and the *expression* of thought.

6. That by chemical changes in the matter formed by the highest bioplasts, electrical currents may be produced and made to traverse the nerve-fibres; but that there is nothing gained by regarding nerve-force as electricity, or some mysterious unknown correlative of ordinary force, as the construction of the apparatus and its maintenance in a state fit for action are due to vital power.

95. PSYCHOLOGICAL APPLICATION.

These results are the fruit of the most careful investigations, instituted and pursued by Dr. Beale for more than fifteen years. They throw more light upon the structure and action of the nervous apparatus than the most diligent and minute physiological researches had thus far been able to do. In the brain, it was supposed, the nerves somewhere had their origin; and yet, on closer examination, they were found to split and split until their finest ramifications escaped further tracing, while at the periphery the single fibres were thought to terminate in some way or other—here and there divisions *ad infinitum*—an unintelligible wherefrom and whither. The fine “granules” at either end, although noticed and described, were looked upon as strange objects completely unexplainable as to their nature and functions. By Dr. Beale’s discoveries these obscure and intricate points have been cleared up. He has demonstrated that the “granules” contain the very fountain of life, inasmuch as they comprise within themselves that “directing agency of a kind peculiar to the living world;” that they consist of microscopic bioplasts with which the nerve-fibres are continuous and from which they grow; that

the nerves do not terminate at the periphery, but form plexuses; and that thus the entire nervous apparatus must be considered as consisting essentially of fine fibres and masses of bioplasm which form uninterrupted circuits. He further places the caudate nerve-cells in their proper rank as stations of different nerve-fibres, and disowns them as sources of mental influence. He considers that the only matter in the gray substance of the brain which is directly concerned in mental action are the "granules," all of which are composed of bioplasm, and which are examples of highly endowed living matter; but thought and will are truly vital mental actions, while the expression of thought is but a result of the influence of this vital mental action upon the mechanism concerned in its expression.

In these results we find all that psychology as a natural science can ask from physiology. It is the same final conclusion at which we have arrived in the preceding chapters, that the brain is not the cause but only the condition of mental activities. Bioplasm comprises within itself that "directing agency of a kind peculiar to the living world;" and the "granules," as highly endowed living matter, are associated with this agency which is directly concerned in mental action.

This is the boundary where all physiological and microscopic-anatomical researches must necessarily come to an end. They have demonstrated the beautiful apparatus, the mechanism concerned in the *expression* of thought and will; but the agency which causes mental action escapes their grasp.

At this point we must either give up unravelling mental phenomena altogether, or enter upon their investigation by the only means which mental phenomena afford—consciousness in general and self-observation in particular. In the first three parts of this work we have shown what results we can attain by the method of investigation indicated—the study of consciousness and self-observation. In the following parts we shall still more enlarge our psychological knowledge upon the same basis of investigation.

In concluding this physiological part of our work, it yet

remains to state what we, from our psychological standpoint, understand by "that directing agency of a kind peculiar to the living world," with which all bioplasm is associated, and which in the "granules," as highly endowed living matter, is directly concerned in mental action. We state that this agency, which is associated with the protoplasm of the human body, and which lies beyond any demonstration of chemistry or microscopy, consists of the several *primitive forces of the human soul* (1); or, as we as well might put it, the human soul consists of the several primitive forces which, being associated with corresponding protoplasm, are the cause either of the production of mental modifications in consequence of the action of external stimuli (by the higher and lower senses), or of the production of bodily formations in consequence of the absorption of pabulum (by the vital senses). All this will be made still more apparent as we proceed in our investigations.

PART V.

COMPLEMENTARY INQUIRIES.

96. ON THE METHOD OF THE STUDY OF PSYCHOLOGY.

Having thus far unfolded the results of psychological, as well as physiological, investigations in regard to mental evolution, it seems well to insert in this place part of a chapter from Beneke's work, "*Die Neue Psychologie*" (Berlin, 1845), concerning the treatment of psychology as a natural science:

"The human life represents itself in all its evolutions as one entire whole. We find exaltations, depressions, changes of dispositions with the greatest rapidity transferred from the body to the mind, and *vice versa* from the mind to the body; perhaps not the least disturbance takes place in either of them without affecting the other. Furthermore, up to our time all attempts have been futile to draw even a boundary line between the two with an appropriate precision. Is it the *soul*, or is it the *tongue* or the *stomach* that tastes, that has the sensation of hunger or satiety? If I have toothache, this *bodily* pain, as it is usually termed, is also part of my *soul*, holding a like relation as my sensorial perceptions or my thoughts, which it disturbs in various ways, or which, on the other hand, may suppress it even more successfully than the best specificum.

"Under these circumstances it was but a natural conclusion to treat body and mind as one whole, and *try to explain psychic evolutions out of the bodily organization*. For thus ran the reasoning process: Inasmuch as the psychic evolutions are the product of the greater perfection of man's bodily organization, compared with other animal organizations, so must also the

results and laws of psychic development be explainable by the results and laws of bodily organization, and *psychology must needs expect its solution from anatomy and physiology.*

“This doctrine was largely accepted in France. There originated the ‘*système de la nature*,’ the writings of Lamettrie (*L’homme plante, L’homme machine*, etc.) in the past, while in our century it is advocated by Cabanis and Brissais, and the entire materialistic school. But all attempts in this direction have failed thus far to bring about a satisfactory solution, and will fail in the future. They have talked of brain fibres, which were believed to produce conceptions and thoughts by their vibrations; of a nerve-spirit, which was supposed to flow from the extremities of the nerves to the centre of the brain and *vice versa*. All these assertions are hypotheses that merely float in the air—hypotheses, to prove the truth of which no anatomical knife or microscope has yet brought forth a single confirmatory fact. Still, let us suppose that in the future this might be done, what gain would it prove to be for such a materialistic construction? What could be found would be nothing but peculiar kinds of changes—*extension, color, density, motion*, etc. We will allow the fullest freedom to the adherents of this doctrine, to devise and to combine, to their hearts’ content, such qualities. With such combinations will they ever be able to produce anything like a thought, or any other psychic development of even a most distant similarity?

“In this respect physiognomy and phrenology stand higher. What physiognomy and phrenology, in conformity to their fundamental ideas, endeavor to realize, is not an explanation of the mind through the body, but only *a determination of certain parallels between them*; and, although what has thus far been elucidated by them may not have yet come up to scientific requirements, still, what they attempt is a practicable proposition, and, if achieved, might bring us many valuable hints and confirmations, useful for the classification and construction of psychic developments. An interpretation and deduction of mental processes, however, from these bodily parallels would still remain far away from the true explanation of the cause, even if they were carried and perfected with the utmost acumen to the highest certainty.

"The *incommensurability* of mind and body had led others to a diametrical opposition to these attempts, and it seemed to be wise to try to construe *psychology out of general ideas*. The latter method could not succeed, although in philosophy this method of psychological inquiry was for a long time the spirit dominating inquiries. As its advocates attempted to derive all truth *a priori*, from experience, and existing facts were considered as of secondary importance only, it could not well be otherwise than that the doctrine of the psychical powers or faculties found almost as many different explanations and determinations as there were different investigators. What the one believed to be innate, another called acquired, and so on. In short, speculative psychology, however ingeniously it was compounded and construed, offered nothing but guesswork and opinions toward the solution of the question. Under these circumstances it was a natural consequence that a third way of handling the subject of mental science should have been inaugurated, namely, a method which, for more than two hundred years, has been followed with such marked and striking results in the upbuilding of physical science. It is the method by which investigation places itself entirely upon the solid ground of positive experience and facts, which facts are again, by means of induction and hypotheses, elaborated to higher views and general laws.

"It has been doubted whether this method could be practically applied to the study of psychology, inasmuch as *our apperception of mental processes is quite imperfect*. The experiences with which psychology has to deal are those of other people or ourselves. Experiments made on other persons must, it is asserted, necessarily be of quite an imperfect nature, because we can never observe immediately what takes place in the minds of others, but can only guess at it from the external signs which they display by action or pantomime—surely a very unsatisfactory means to discern actual processes. The interpretation, too, of these signs is made solely upon the basis of our own mental development. We explain according to *our* views. Our own individuality is the barrier which will often prevent a correct interpretation of another's individuality.

Thus, instead of gaining *objective signs*, the indispensable condition for scientific truth, we rise only to *subjective opinions* through the observation of others.

"These objections, however, can be easily removed. They touch, indeed, only subordinate by-work. Though, on the whole, the ambiguity in the observations of others cannot be denied, we do not even need science to overcome this kind of obstacle. It is obviously true that the most varied interests of life are constantly at work finding out what another is thinking, feeling or intending. From this constant observation a knowledge of the meaning of these external signs has been developed, is constantly increasing by the collaboration of millions, and is acquired from childhood and propagated from mouth to mouth. Beside, science is capable of perfecting this knowledge constantly, and has done so already with great success. Really, in this respect little is left to be desired for human knowledge.

"Of a graver nature is the objection that in interpreting external signs we necessarily underlie them with our own individuality. The mistakes which have been made in this respect are innumerable. Take as instances the (frequently in their greatest part) monstrous tales about savage tribes, or the still widespread incapability of understanding people of a different rank or a different education or temperament. There is no doubt that the capability of knowing and understanding another does not reach farther than our own development has advanced. On the other hand, however, it is undoubtedly just as true that every man carries in himself, at least to a certain degree, the elements of all that can be developed by human nature. It all depends upon whether we separate accurately enough and combine again with sufficient skill what we perceive in ourselves, in order to become capable of comprehending even the apparent strangest combinations in others. In this respect the talents for observation have continually enlarged during the progress of the human race. Consider, for instance, the extent, the versatility, and at the same time the truthfulness to nature which present themselves in the works of Shakespeare or Sir Walter Scott. With such facts before us we need

hardly complain of the incompetency and subjectivity of psychological observation.

"But in order to be perfectly clear in this matter we have yet to consider the *second*, and indeed the *main*, source of psychological knowledge, namely, *the observation of that which takes place within ourselves*. This source has been objected to because, it is said, *we may perceive but cannot observe ourselves*, an objection which, indeed, could proceed only from those who have never made a persistent habit of observing themselves. Observation is a process of the mind which does not, like sensation and perception, take place *of or by itself alone*. We find thousands who never make observations, even of the phenomena of the external world. *Observation requires more than the senses*. Take as an instance a *physician*, who is called to the bedside of a patient, and compare what *he* sees with that which the *attendants* of the patient see. The physician at once associates the symptoms before him with all similar perceptions and notions of former experiences, and through them his present perceptions rise to an *observation*; he sees what is the matter in this particular case, while the attendants, although constantly about the patient, come to no higher mental operation than that of perceiving that the patient has such and such a pain, but the cause and connection of the symptoms they never understand. This is true of all cases of external perception, and the same is true of our internal perception. The latter, like the former, is attainable in any degree of clearness, definiteness, accuracy and energy which makes one capable of observing the most fleeting and faintest, as well as the strongest and most overwhelming psychic processes with all necessary precision. But this capability must first be *acquired*, and acquired by a long train of special exercises in the direction of inner perception. Who neglects this training may attain to self-perception, but will never acquire a talent for *self-observation*.

"Inner perception, it is further objected, cannot be armed and sharpened by *instruments* as external perception can. *For the inner senses there exist no magnifying glasses*.

"Supposing for a moment that this were true in its fullest ex-

tent, that is, that self-perception were in want of all advantages which external perception enjoys by means of certain instruments, the objection would still apply only to a defect of secondary importance, touching merely the perfection of knowledge which thereby in single cases might be desirable, but it would in no way, as a whole, be of great weight in the present controversy. However, the assertion that the inner senses cannot be armed and sharpened, is not wholly true. There are a number of measures for psychological observation through which the same advantages may be received as through the application of magnifying glasses in making outward observations.

“Observe the psychical results of certain influences which have recurred for centuries in the same manner, or their effects upon whole nations, classes, ranks, etc., or even upon single mental acts, when they are very numerous. To illustrate the last instance, let us explain the effect which the subject and the predicate exercise upon each other in an act of judging. How can we find this effect out? We answer, let us look through a magnifying process. Remember, for instance, the impression which was produced in you by the hearing of a masterpiece of music or poetry. The impression was, perhaps, at the first hearing overwhelming, exciting, confusing. You could not ‘make up your mind’ as to its real merits. By and by you heard it again, and later again. Gradually you gained an in and oversight of the whole. You had time to add corresponding concepts to the single perceptions, and the different emotions, the varying tone of your feelings, gradually crystallized in a series of judgments. That which at first by its superabundance acted confusingly and indistinctly, by repetition has now become clear and distinct. Is this, as regards its *contents*, anything different from the first hearing of the same? By no means; it is exactly the same piece of art still; but you have had time to add from your store of previous acquirement the corresponding concepts which enlighten or bring into fuller light the single concrete impressions you now receive. Just exactly what occurred in this instance takes place, *on a large scale*, in every act of judging, however insignificant

it may be; namely: The subject is rendered *clearer* by the addition of its corresponding predicate, which contains the same elements, but also a greater multitude of vestiges. On the other hand, let us suppose a man strongly inclined to live, as it were, in the realm of abstract ideas, which unfits him almost for the duties of common life, and let this man be thrown in contact with nature or into society, where he is constantly exposed to new and fresh impressions—then, although, on the whole, he will remain the same man, inclined to abstract thinking, he will nevertheless find his notions remarkably freshened up and even corrected by the unavoidable impressions which he receives from his actual surroundings. What we see consummated in this case is exactly, on a large scale, the same process that takes place in any act of judging; namely: The predicate or concept is freshened up again by the addition of a corresponding subject, which contains the same elements, but the elements are *in concreto*. We may say, therefore, that in this and similar ways there are indeed interior means by which psychological observation may be aided in a somewhat similar manner as external observation is by auxiliary instruments.

“A third objection has been urged. Psychological investigation must necessarily lack in precision compared with the investigations of external nature, because the *sphere of the mind allows of no experiments*.

“If this were so, the same objection might be raised against many investigations of external nature, which likewise do not allow of experimentation. Think of the starry heavens. Even here observation is possible, because nature herself makes experiments before our eyes in continuous succession, even if some phenomena should happen only twice in a century, as the transit of Venus. Quite the same is applicable to psychical evolutions. But self-observation may be practiced much more continuously and in combination with the observations we may make on others, or which we may scan from the experience of others, and from literary works of all kinds. We indeed gain material abundant enough in regard to the development of the human soul, and in such perfection that

we, perhaps, might find no question which could not satisfactorily be answered thereby alone. But the assertion that we cannot make experiments in our psychological investigations is entirely false. We are able, for instance, to meditate on a subject of thought immediately after we have done the same on a similar subject, or on something more or less different, with more or less intensity, for a shorter or longer time. We can do it after a temporary state of sheer vegetative existence, or in changing intervals with passive recollections and dreamy phantasies. We may meditate during various moods of the mind, under exciting invitations, prospects, expectations, or under the ban of opposite depressing influences, either connected with the subject of our thoughts or relating to entirely different spheres. Thus countless possible variations might be enumerated. Think, for instance, of emotions. We are able to keep them to ourselves or to communicate them to others of whom we expect either sympathy or the reverse. We may try to suppress them by putting ourselves to hard work, by reading serious literature or works of fancy of various kinds, by which similar or more or less heterogenous feelings are produced, and so on *ad infinitum*.

"This proves clearly that the assertion, 'our self-observation could not be aided by experiments,' is utterly false. On the contrary, we may say, experimental aid is here applicable in a much greater variety than in any other sphere of external nature, because the measures necessary for the same lie generally much more immediately in our power; and any one who has properly posted himself as to the fundamental relations and conditions of the problem to be solved—a condition quite as necessary also for any successful experimentation in external nature—will be capable of executing these experiments with all degrees of accuracy and strictness.

"It is scarcely necessary to add that we can experiment on others in a like manner. Such experiments offer themselves even unsought and unconsciously under many circumstances. Those who ever have observed children will know that their teasings and contentions among themselves seem often to have no other object than experimentation with each other, for

they usually cease when their efforts fail to produce any more interesting effects. Although this sort of experimentation is defined by moral laws, the field of the allowable and practicable is so large, we will scarcely have occasion to complain of a need in this respect.

“But then, it is further asserted, that our knowledge of the mind will ever be incomplete, as in no way is it possible *to observe the first psychical developments which take place in the child*, and, as upon these all further psychical development is based, we must ever remain in want of a positive foundation for our knowledge.

“This fact is no doubt correct. What takes place in the first days, weeks and months of a child’s life is never recorded by self-observation or recollection; and what is observed by adults will ever be indeterminate and uncertain, not only in regard to the signs which the child itself exhibits, but also in regard to the interpretation of these signs on our part. With some it is still a question of doubt whether the distortions of the face, which we frequently observe in infants and which resemble a smile, are the result of a psychic process, which has some analogy to a conception of the ridiculous, or a feeling of something agreeable, or whether it is merely a spasmodic action of the muscles.

“It is quite probable that most of the educational mistakes we make at this period, are due to a misinterpretation of such signs which the parents underlie (often incorrectly) with their own notions and feelings.

“But, notwithstanding all this, it is nevertheless true that we are capable of acquiring the *most positive and accurate knowledge* of even the *earliest* processes in the infant’s soul, if we have first acquired a knowledge of the processes in the *developed* mind. Let us exemplify this interesting and important fact by a simile drawn from another branch of natural science. The astronomer is enabled to predict the positions of the different planets in respect to the sun, not only for any given time in the *future*, but he can calculate also what that position was at any given time in the *past*. How is this possible? Because the laws of evolution of the solar system are

valid in both directions, and permit, therefore, of a retrogressive as well as a progressive construction. This is exactly the case as regards the evolution of our souls. So soon as these laws are known with the requisite universality, precision and strictness, we have a perfect right to apply them backward as well as forward. The development in *nature*, as it actually occurs, is that from cause to effect; but the natural development of *science* may, when circumstances otherwise permit, progress by the same means from effects to causes; and therefore, although the elementary psychical processes are excluded from immediate observation, they are, nevertheless, accessible to our *cognition* if we trace mental developments backward; and, as we may add, provisionally, with such perfection of intellectual insight as is scarcely possible of attainment in any other department of nature.

"Still another point has been raised, which, if admitted, is believed to prove the impossibility of gaining positive knowledge by self-observation. '*All self-observation*,' it is said, '*is essentially attached to consciousness*.' Only *conscious* development of the mind can be observed, and never the *unconscious forces* and *faculties*; and thus not only *one-half* of psychological knowledge, but even its more important portion, is lost; for indeed, all conscious developments are products of those inner forces and faculties which can be understood and explained only by a knowledge of the latter.

"This objection we answer by the question: *Does there exist any sphere in the external world in which things stand differently?* We will not speak here of the *medicatrix naturæ* and other like obscure powers and forces, but will mention only such as lie, in their *effects*, perfectly clear before our eyes, *e. g.*, gravitation, attraction, impenetrability, electricity, magnetism. Who, we ask, has ever perceived what they are, by means of his senses? We perceive nothing but *results*, which we complementarily underlay with what we call *forces*. The gap, the defect, therefore, which has been objected to in regard to the material for psychological knowledge exists also in all other natural sciences.

"In summing up our investigations we come to the conclu-

sion that the objections advanced by the opponents of this method of treating psychology do not, by any means, prove that the science of psychology is incapable of an equal advancement compared with any of the other physical sciences."

I must here cease detailing further Beneke's views in regard to the method of treating psychology as a natural science. His further explanations would involve us in difficulties which, at this stage of our investigations, could not satisfactorily be understood.

97. CONSCIOUSNESS AS THE OPPOSITE OF CONSCIOUSNESS NOT YET EXISTING.

One of the greatest obstacles in controversies of this nature is the ambiguous use of the word *consciousness*. Indeed, neither the speculative nor the materialistic method have arrived at a distinct understanding of what the term consciousness really implies, in its various forms, in the study of mental development. We shall try to gain, in the following sections, a deeper knowledge of the versatile nature of consciousness.

In the first place we speak of that form of consciousness which is the most general quality of *all* mental modifications so far as they have *developed* in the mind. *Before* them consciousness does not exist in *any* sense, only *with* them light gradually begins to dawn, until by the accumulation of similar elements it reaches by degrees all possible shades of clearness and distinctness. It is, as we have said before, the *general quality of all mental modifications*. To relegate the term consciousness to the one form of mental modifications representing the intellectual sphere of the mind only, the "*Vorstellungen*," notions, concepts, etc., is to narrow the existence of consciousness within boundaries which do not exist. There is consciousness as well in all conative modifications and in all feelings; but there is no consciousness so long as neither one or the other of these types of mental development has come into existence. Thus consciousness, in the sense we speak of, is not the opposite of *unconsciousness*, but of conscious-

ness not yet *in existence*. It is even not existing to any perceptible degree in the first elementary acts which form the nuclei of these various modifications. It is only by the frequent repetition of similar acts and by the blending of the effects of these acts into one aggregate of sufficient strength that the quality of consciousness gradually and appreciably develops in them (10).

The origin of consciousness, therefore, in our sense, as the general quality of mental modifications, requires an accumulation of similar sensory acts (which is brought about by the attraction of like to like), and the endurance of the several single similar acts as vestiges. As nothing else enters into the composition, it follows that the gradual rise of consciousness does not consist in any particular metamorphosis of the original acts; but, on the contrary, what originally conditions the rise of consciousness must be given already in those first elementary acts. If they do not show it in a perceptible manner, it is because they are yet too simple and too elementary; they are consciousness yet in a state of incipency.

As furthermore these elementary acts consist of a specific development or modification of the primitive forces by external stimuli (external stimuli alone nowhere else produce consciousness), it follows that the main cause of the generation of consciousness must lie in the primitive forces of the human soul. This view is further corroborated by the fact that in the different classes of the primitive forces consciousness is produced in different degrees, depending upon the greater or less degree of energy, or enduring power, with which the varied systems of primitive forces are severally endowed (8); and that the consciousness in animals never reaches the degree of clearness it attains in the higher senses of man, because the primitive forces of animals lack the peculiar energy which secures to the human soul its special spiritual character and nature.

But the degree of consciousness varies, not only in the different systems of the primitive forces, but it is also developed in different degrees in the three types of mental modifications. Perceptions, concepts (intellectual modifica-

tions) attain to a much higher degree of clearness than conations and feelings, because they are products of more perfect vestiges, conditioned on the one hand by the greater retentive power of the higher senses, and on the other by the adequate quantitative relation of the stimuli to the primitive forces. The quantum of stimulus, being exactly adapted to the capacity of the primitive forces, produces a development of the latter in the most perfect manner, and results in clear perceptions (24 and others).

As by the law of attraction of like to like all similar perceptions again coalesce (15, 16), the notions or concepts which thereby originate must, therefore, be characterized by a still greater clearness of consciousness. Thus the mind attains to *intellectual development*, the highest degree of consciousness, which has its sole cause in the greater energy of the higher human primitive forces and the multiplication of similar vestiges into one whole by the law of attraction of like to like. Nevertheless, we must not overlook the fact that the development of consciousness is common to *all* classes of primitive forces, from the highest down to the lowest in energy—the *vital forces*—which have their bodily substratum in the ganglionic system of the abdomen, represented by and concentrated in the solar plexus, which plexus stands in close connection with the spinal cord through the rami communicantes, and thereby also with the brain (72). These lowest senses, called thus on account of their lower degree of retentive power, are developed in just the same types of psychical modifications as the higher are, in the same forms of perception, conation and feelings, which at times, by a strong and lively excitation, may even overshadow and subdue the products of the higher senses. Instances of this kind are all sorts of acute (so-called) *bodily* pains, hunger, thirst, hypochondriacal feelings, sleepiness and the like. It is very important that this fact should be borne in mind, because there are states and conditions in human life which can alone be explained by a knowledge of these psychical modifications (developed in the lowest senses), and their far-spread influence over the entire activity of the human soul. This will be shown more fully when we shall

speak of sleep, dreams, somnambulism, instinct and similar phenomena.

Consciousness develops in *all* classes of primitive soul-forces. It is, in fact, the innate property or quality of *all mental modifications*; and we may well call the development of the primitive forces into conscious modifications *statical mind*, an expression which Dr. Maudsley uses in a materialistic sense, and by which we understand the sum and substance of all modifications whereof the *developed mind* consists and is made of.

98. CONSCIOUSNESS AS THE OPPOSITE OF UNCONSCIOUS MENTAL MODIFICATIONS.—REPRODUCTION.

The mental modifications which develop day and night, and year by year, necessarily and continuously in every human soul, which carry in themselves the quality of consciousness in the sense of which we have spoken, although in different degrees of clearness, must gradually increase to untold numbers, even in ordinary minds. On closer inspection, however, we find that we are *conscious* of but comparatively few modifications during any given time of our waking life. Of the rest of the immense number we know nothing, and the modifications just now conscious may, in the next moment, be swept away by the rise of others. Our waking state, indeed, consists of a continual coming and going of mental modifications, and many appear to lie buried so deeply that they never rise into consciousness unless some peculiarly exciting causes stir them out of their seeming lethargy. Instances of this kind I have mentioned already in 6, and illustrations might be greatly multiplied if it were necessary for my present purpose. It is clear, without enlarging further on this subject, that the sum of our *conscious activity* during waking life at no time exhausts the hidden treasures of the latent agencies we possess, or of mental modifications acquired. This shows at once the vast *difference* between what we *here* call consciousness and the consciousness of which we have spoken in the last chapter. There we considered consciousness in its *nascency*, in its *becom-*

ing, here it signifies the rising into consciousness of modifications already possessed of this quality, but at the time unconscious; it means, not a *generation* of consciousness, but merely a *reproduction into conscious activity*. It is, therefore, not consciousness as the opposite of consciousness not yet existing, but is the reproduction, the resuscitation, of mental modifications already acquired, which before their revival were *unconscious*, or in a state of latency.

We have already explained, in 12 and 13, how these states of excitation and quiescence are brought about. In order that a mental modification may be excited into consciousness, it is necessary that certain elements should be added to it, and in order that a mental modification thus excited should again sink into delitescence, it is necessary that it should lose some of these mobile elements. All this takes place according to the general law of *diffusion* or *equalization* of mobile elements, by which the latter, in all mental acts and processes, move from one modification to another until equilibrium is established. In the case of excitation certain elements join statical modifications which are thereby set vibrating, *i. e.*, made conscious, while in the case of forgetting, a part of the exciting elements is transferred to other modifications, thus causing what originally was excited to settle down into quiescence, *i. e.*, to become unconscious.

This perpetual alternation between excitation and delitescence takes place in children no less than in grown persons, even at a stage where consciousness, in the first sense, is still wanting in a perceptible degree. We see it clearly pronounced in the child's first unconscious actions or even reflex movements (89). But still both forms (the aggregate of similar vestiges, as well as the excitation of the same) must necessarily combine in order to produce consciousness in any sense, and this is the reason why for both forms the same appellation, "*consciousness*," is employed and so frequently used indiscriminately. A psychical modification, if ever so multiple in its vestiges, nevertheless remains unconscious if it is not brought into a state of excitation or vibration; and, on the other hand, in the earlier stage of life, the most excited psychical develop-

ments remain unconscious (that is, *unknown*) until they have attained the necessary strength by a fusion of a sufficient number of similar vestiges. Adding to this that the elementary vestiges (which, in fact, condition the development of consciousness in the first sense) are also the actual basis of any excitation, the intimate relation of both forms of consciousness becomes still more obvious, and it is no wonder that superficial observation has constantly confounded the two. From these remarks it will readily appear that acts of thinking must necessarily be of a slower process than mere recollections, imaginations and the like. We read, for instance, a tale of fiction much more rapidly than a scientific essay, because concepts, the essential constituents of thoughts and judgments, consist of a far greater number of elementary vestiges, all of which have to be excited if they are to attain to a full and clear consciousness. Naturally this requires a longer time. It also explains, on the other hand, the greater clearness of consciousness which excitation produces, if the psychological modifications thus excited consist of a large amount of elementary vestiges; as we may readily experience if we compare, for instance, the effect of a lecture upon us, to which we bring the requisite preliminary knowledge, with the effect of another, the fundamental concepts for which we have not acquired or are not yet in a sufficient degree of perfection. The first we understand clearly, the latter will cause in us the impression of obscurity.

As, furthermore, excitation is caused not only by an addition of *external stimuli*, but also by the action of *primitive forces* (compare 13), it follows that there must be a difference in the *character* of these excitations. Compare, for instance, the excitation an immediate view of a fine scene has upon us, with a recollection of that scene afterward by an effort of the will. The first is abundant in external stimuli, and will therefore be fresh, vivid, stimulating, while the latter, although it may be clear, will nevertheless lack in this freshness and bear more the character of tension and steadiness.

But why is it that some mental modifications seem doomed to apparent oblivion? The next chapter may bring us some insight into this matter.

99. DIRECTION IN WHICH THE CURRENT OF EXCITATION
(REPRODUCTION) PROCEEDS.

This is another important point we shall have to consider in connection with consciousness in the sense of *excitation*. I shall resort here in part to the language of my translator (*Elements of Psychology*, p. 196):

I am convinced that when I excite the notion of "hunter" in any one's consciousness, he will also think of "gun." A wild Indian, removed from all contact with civilized nations, would think of bow and arrow.

If I mention the name of "Joseph" to any one acquainted with Bible history, he will think of the father Jacob, of Benjamin, of Egypt; while one ignorant of the Biblical story might, perhaps, think of his own relative "Joseph," or of somebody living in his neighborhood having that name.

If I mention the capital of Bavaria, "Munich," to a man of taste, he will certainly be reminded of the treasures of art existing there; but the word will most likely only call up the notion "good beer" in one who is fond of that beverage. The word "Elbe" leads Bohemians to think of its surroundings in Bohemia, the Saxons of its surroundings in Saxony, the Prussians of its surroundings in Prussia, while the natives of Hamburg most probably think directly of the harbor, the sea, etc.

"Hamburg!" In the year 1842, when this word was mentioned, everybody certainly thought of "great fire." At present, perhaps, it might suggest "many ships," at least it does in my case, and a merchant who has commercial relations with it will infallibly think of his house of business, etc., etc.

Hence we see that in becoming conscious, different people, starting from the same ideas or notions, proceed in completely different directions. What, it may be asked, is the rule by which this apparently undetermined direction is governed? Let us examine the preceding examples a little more attentively.

Why do we directly think of "gun" when the notion "hunter" is called up? Because we originally perceived hunter and gun together, and have constantly thought of them together. Why does the Indian think of bow and arrow? Because they

always attained to consciousness together in his soul. This is equally true in other instances. Now we know from 38 *that groups and series of the most varied psychical modifications (notions, desires and feelings) are excited into consciousness either together or in immediate succession by mobile elements, and they are not only permeated by the latter, but also connected into a whole; for a part of these mobile elements become firmly attached to these modifications, and, as it were, cement them to one another; this (quasi net-like) union becomes more firm and intimate the oftener these different mental modifications are excited into consciousness in the same grouping or in the same consecution, so that we may be sure that the whole group or series will become conscious the moment any member of it does so.*

All depends, therefore, on this one circumstance, how often different mental modifications have been simultaneously conscious; that is, *how intimate the connection between them has been rendered by the fixing of mobile elements.* Hence, the reason why, in the year 1842, the thought of "Hamburg" was certain to suggest "great conflagration," was because, at that time, both notions were often thought of together, and hence their union became very intimate. A good many years, however, have passed since then. Even before the fire, as well as after it, we had very often thought of Hamburg in connection with "many ships, harbor," so that the latter association is, on the whole, a firmer and more constant one than the former, which was swiftly and strongly made, and it has consequently become again the usual one. I can very well remember how, even in 1842, the notion of Hamburg used constantly to call up the idea of "ships" in me; but it lost a good deal of its old force, because the notion of "awful conflagration" was at that time thrust so forcibly upon me. In the mind of a merchant connected with Hamburg, it is certain that at that time the notions "fire," "house of business," "loss," etc, contended for the mastery with all kinds of feeling until, at last more trustworthy and assuring intelligence from that place caused "fire, loss," etc., to be forgotten, and left only the notions "Hamburg" and "house of business" to remain in intimate and enduring connection.

Hence we arrive at this very simple law: *The excitement proceeds from a conscious psychical modification immediately to that other which now is most intimately connected with the former, or is one (united) with it.*

Hence, in the native of Dresden, the notion "country" immediately suggests the environs of Dresden, and not those of the Breslau district. Hence a soap-boiler, when he thinks of "soap," is put in mind at once of tallow, ashes, boiler, etc., whereas a washerwoman thinks of dirty linen, and so on.

Those modifications are most immediately connected (united) in our soul which have not merely frequently co-existed in consciousness at an earlier period, but which, beside that, are constructed out of the same elements; *e. g.*, the concepts "tree," "house," etc., consist of the same elements as the individual trees and houses that we have seen, to the exclusion of merely dissimilar elements of the single perceptions. The same holds good in speaking of higher concepts in relation to lower ones. (See 15 to 17.) This explains why, along with a perception, the homogeneous concept corresponding to it starts involuntarily into consciousness; and along with a lower concept the higher concept of like kind starts with it, and in consequence we are, so to say, everlastingly forming judgments (18). The number of judgments which we express in words is very small, but the process of judging is constantly going on in the soul in proportion as similarities have been intimately connected by mobile elements, and are now usually excited together. (Compare 38.)

One other remark may be added. I said above, that in 1842 the notion of "Hamburg," though it suggested "fire," was yet constantly associated with that of "many ships," but the latter was at that time *less strongly* suggested; and in the merchant there can be no doubt that the notions of "house of business," "loss," etc., rose into consciousness in *different degrees* of force along with those of "conflagration," "ships."

If I remind anyone acquainted with history of the Seven Years' War, the notion of "Frederick II" will, to a certainty, be in a moment associated with a number of others, as *Ziethen*, *Keith*, the *Surprise at Hochkirch*, *Dawn*, etc.; but it is also cer-

tain that all these conceptions are not *equally vivid*. Some are more, some less fully present in consciousness, while others are barely excited at all, forming by their semi-obscurity the extreme horizon, as it were, the limit between consciousness and its total absence.

Hence the mobile elements, as it seems, are not transferred in *their whole fulness* to the individual psychical modification which is most intimately connected with (or one with) that modification from which the transference is made. No! *The mobile elements rather diffuse themselves over all the psychical modifications connected with it* (the waking notion), *but in a higher or lower degree proportionate to the closer or looser connection subsisting between them.* (Compare 33.)

Thus may be explained the fact that some psychical modifications excite a good many others into consciousness, while others only excite a few. It all depends on whether they were formerly connected with many or few psychical modifications. Hence it is comprehensible that the intensity of their consciousness is very diverse, varying according as the mobile elements are transferred to them in a greater or less quantity, which transmission of mobile elements itself depends on the closer or looser connection existing between them, and thus a *larger or smaller number of vestiges* in the notions affected are excited.

When the mobile elements are concentrated on a few modifications, the latter are naturally excited and rendered conscious with extraordinary strength, whereas we find ourselves in a condition of *distraction* or *confusion* when those elements are diffused over too many mental modifications.

Furthermore, we frequently meet with people who ride a "hobby." You can scarcely approach them on any subject but their hobby will be ridden. Their favorite idea has gained such a strong hold in their minds, and such an extension over all their mental activities by its numerous vestiges and its numerous attachments with other mental modifications, that it everywhere lies open to excitation through almost any conversation, or springs into consciousness by its own force or *nearness to consciousness*, where it attracts almost any kind of

mobile elements. It lies, so to say, constantly on the *verge* or *edge* of consciousness (*"an der Schwelle des Bewusstseins"*), as it has been termed figuratively by Beneke and others. This shows itself especially strongly developed in persons suffering with *monomania* or *fixed ideas*. They may appear in all other respects perfectly rational, but almost any thought may excite into consciousness their *one idea*, which predominates over all by its strength and nearness to consciousness. On the other hand, it may and does happen that the connection with other mental modifications is broken by disease and the formation of new combinations. Former acquisitions may thereby become disconnected with the usual run of thought in after life; they appear extinguished from the mind to such a degree, that no effort of the will can resuscitate them into consciousness. This explains especially those cases where whole systems of languages, spoken in childhood, were completely forgotten until some extraordinary excitement would touch the old strings. (Compare 6.)

There are still other seemingly puzzling facts that need explanation. For instance, the complete incapability, in some cases, of recalling what has been thought, spoken and acted during intoxication, fears, dreams, somnambulism, narcosis, insane paroxysms, etc., after these states have given way to normal consciousness. It appears almost as if in such cases two altogether different persons had been acting in the same organism. The recurrence of the same state again recalls clearly the thoughts and doings transacted in the first state. But even here the same law of reproduction governs all recollection: *Only what has been closely connected by mobile elements into one whole during immediate presence or succession is capable of being reproduced at any other time.* Now the cases referred to are all enacted on such a different basis from the natural state, and the transition of some of them into the normal waking state is so abrupt, that there exists either no connection at all between the two states, or the connection between the conscious activity in the two states is severed, and, consequently, a recalling of what has happened in such a state is impossible. Only where the transition state is gradual can the chain of con-

necting elements carry recollection out of a dream, or out of a state of somnambulism, etc., into the waking state of life.

I have yet to speak of the different directions in which excitation proceeds during *voluntary* and *involuntary reproductions*.

I want to have my room lighted. This wish will excite in me the means by which it can be done—either to open the shutters, or to light the gas, or to call a servant to do either the one or the other for me. These means, however, have previously always *preceded* the lighting of the room; that is, before this effect was produced, the one or the other of these means had to be applied. My consciousness, then, is excited *backward*, from the notion of an end to the means to secure this end. Why is this? *Voluntary* action is always produced by the transmission of *primitive forces*. In our case it is my *wish* or *desire* to have the room lighted. It is the primitive forces that strive for that end, because they were formerly modified by the stimuli now wanted, and therefore made predominantly one with them; and this secures the excitation of those modifications which originally *preceded* the exciting wish.

If, on the contrary, in learning a foreign language I excite with the foreign word the meaning in my own language, I gradually establish a connection between these two languages where the foreign word excites into consciousness the corresponding word in my native tongue. My consciousness is thus excited in the direction of what was excited always *after* the foreign word. By numerous excitations I gradually progress to such a degree that I am capable of reading understandingly a book written in that language; that is to say, the connection between the expressions of the two languages becomes so intimate that the foreign always causes an *involuntary* reproduction of my own, which in *learning succeeded* the foreign word. This connection remains, but it does not make me fit to speak or translate from my native language a single sentence correctly into the foreign language, as this would again require new connections between the two languages.

Thus we see that *voluntary* reproductions proceed *backward* to that which originally was combined most intimately with the primitive forces in the form of desires, while *involuntary*

reproductions proceed *forward* to that which originally was combined most intimately as following. All of which proves that even here it is the same law that governs reproduction; namely, that what is most intimately combined, or is *one* in existence, will always be first aroused by the exciting elements.

100. ATTENTION.—TACT.—PRODUCTIVE ACTIVITY.

This leads us next to a consideration of the term *attention*, which the old as well as the new physiological school of psychology use as if it needed no explanation. On the basis of what has been explained, we shall find no difficulty in giving a full analytical account of the mental process usually designated by the term "*attention*."

In the first place we must remember that even the most *passive* sensation requires *active* (conative) primitive forces to receive corresponding stimuli (4, 14). This is true even of the lowest sensations. Suppose one suffering with toothache be surprised by the arrival of a dear old friend whom he has not seen for many years. Where is the toothache? As if by magic, it is forgotten. Although the irritation may still remain, the new impression upon other percipient forces has suddenly called into consciousness another group of mental modifications, which group, by its powerful composition, attracts all the mobile elements for its own benefit; that is to say, for its own excitation, thus withdrawing them from the former group connected with the irritation of the tooth, which is thereby set at rest. Even if single primitive forces should continue to be acted upon by the existing irritation of the tooth, the sensation of it will only be an elementary one, similar to the first sensations of a child's life. It will, in the presence of the thousand-fold stronger modifications excited by the return of the friend, as regards its force of consciousness, sink down to comparative unconsciousness. We now properly say, he has forgotten his toothache and his attention is drawn in another direction.

The same takes place when we are deeply engaged in a certain train of thought, and still more so when fixed ideas pre-

dominate in the mind. Usual impressions then pass by unnoticed. We pay no attention to them, we say. Although elementary sensations may be produced by these impressions, we do not become conscious of them.

Thus excitation may produce consciousness in all degrees of strength and in an uninterrupted chain of gradation, from the faintest consciousness of an *elementary* sensation we do not notice, up to the highest clearness and strength of a perception or concept in which our whole energy centres upon a single sensory impression. We cannot make at any point or stage a distinct line of demarcation which would demonstrate a *specific difference* between the one or the other degree of excitation. It is a more or a less only. All depends on *how many vestiges previously acquired become excited with the present impression*.

What we, therefore, style *the degree of attention* we pay to what occurs around us, is nothing more or less than the amount or number of vestiges previously acquired joining the excitation of the present impression. The greater the number drawn into the excitement, the more intense will be our attention; the less that become involved in it, the more superficial will it be. Hence, in order to secure the attention of an unscientific crowd, the popular lecturer must present his ideas in a language familiar to his hearers; that is, he must try to excite such mental modifications as really exist in the minds of his hearers, and only so far as he is capable of thoroughly rousing these vestiges into consciousness will he succeed in securing attention.

“For we are more attentive when, along with a present impression, the vestiges previously acquired and of a like kind with it are excited in large numbers. We are less attentive when less of them are so aroused. To objects of which we do not possess any vestiges we can naturally show no attention, *e. g.*, for a language unknown to us. In such a case the impressions are apprehended by mere unmodified primitive forces, along with which, of course, similar sounds in our mother tongue may be excited, but they are incapable of giving us any comprehension of the foreign language, because the sounds

of the latter are not yet associated with the objects they represent. In like manner, if we have sufficient vestiges within for comprehending an object, but the vestiges are not excited because too many other modifications are aroused (so that the exciting elements are used before they reach them), we shall be completely unable to attend to the stimuli from that object. Consequently, attention is only intense when the mind is free from excitation of a different kind, and when the vestiges on which attention depends do not take up the impressions in a mere passive way, but actively (in an already excited condition) meet them, and are, therefore, *on the look-out* for them." (*Elements of Psychology*, remark on p. 191.) This is what actually occurs in any process of the mind styled *attention*. *Attention is the arousing of vestiges previously acquired to assimilate a present impression.* +

In some relation to this process stands what we call "*tact*." For consciousness in the sense of which we have spoken last (as the excitation of vestiges already acquired), bears a mighty influence also upon the improvement and further development of our interior being. From *conscious* modifications also can an excitation be transferred to the generation of action, of utterances, etc.; and only *conscious* modifications can combine themselves in higher forms of intellectual development. It, hence, becomes clear that the effect, to a certain degree, must be the stronger and the more perfect, the *clearer* consciousness develops itself. I comprehend a philosophical problem only so far as I am in possession of the notions, concepts, etc., necessary thereto, and am able to reproduce them; and I show favor or benevolence to a person only so far as the benevolent feelings I bear toward him are roused into consciousness. Yet, on the other hand, we notice also results which do not in a like manner depend upon the highest degree of excitation, but for which a less degree of consciousness is obviously more serviceable than a higher one. Anyone who is learning to play a musical instrument has to bring into consciousness every single act necessary thereto; that is, he has to acquire special knowledge of every single note and its meaning in regard to sound, of every single key or string to be touched, etc.

For the expert player this would be an incumbrance decidedly marring the effect he wants to produce; because the excitation, if *full* for each single act, would require so many mobile elements, that it would be impossible for him to excite the many different modifications in so short a time as is necessary for his present execution. For him, therefore, it is more serviceable, even necessary, that of the acquired modifications only few of their vestiges be excited; that they, so to say, be merely *touched*, in order to pass quickly through the necessary excitement and to leave room for others to be excited.

It is similar to what we call "*tact*" (as fine tact of judgment, practical tact). The new psychology proves that this is not at all the result of a special innate talent, but that it is the product of the reproduction and activity of the series of mental modifications, which by former experiences have been acquired, and which now act as the basis upon which the present judgment is executed in full and clear consciousness.

But these series of modifications are so numerous and follow each other so rapidly that they do not rise into full consciousness, because neither the quantum of mobile elements nor the time given would suffice to allow their full excitation. They are merely touched passingly, and this slight touching makes it possible to accomplish more in the same space of time than would be possible if every single modification had to be excited in all its numerous vestiges to its highest degree of consciousness.

This takes place in a still higher degree during *the process of productive* (creative) *mental activity*, and it is the reason why all higher mental productions are effected more or less *unconsciously*. The many thousands of psychical acts required to perfect mental work do not and cannot be all developed in a like degree of consciousness. Nevertheless they must be *excited* sufficiently to be capable of forming the chain of reasoning from the first to the last link of the productive activity.

In regard to what is called *practical tact* we have similar relations. Several series of means for the accomplishment of a certain end, with the possible effects of each single one, roll off in such rapid succession that we do not at all become fully conscious of the single links and relations of these series; per-

haps only one or the other link appears more marked, or we gain only a general impression of the whole. Of our reflection, of the reasons for our action in such a case, we cannot give a sufficient account. Yet, if these series are the products of correct perceptions and observations, if they have been retained in perfect integrity, this rapid and, to a certain degree, unconscious mental operation will have the same effect as if each single link of the same series had been excited in slow succession and to full consciousness. It is under these circumstances the different series of ends and means measure themselves, during their excitation, in regard to the strength of their combination (which depends upon a more or less multiplied observation), through which a more or less sure result is secured, and also in regard to the intensity of the interest combined with the different results. The strongest series will here, as anywhere, attract most of the mobile elements, and thereby be lifted into the foreground; while that which is combined with the intensest interest will attract most of the conative elements, and thus our action will be the same at last as if we had been prompted to it by the slowest and ripest conscious deliberation. (Compare Beneke, "*Die neue Psychologie*," p. 189, and his *Psychologische Skizzen*, Vol. II, p. 274.)

101. THE LAWS OF ASSOCIATION.

We come now to consider the laws of association the old school of psychologists deemed necessary to construct, in order to find an explanation for the apparently wonderful freaks which the course of excitation frequently takes. They state that the different modifications are aroused:

1. According to the law of *simultaneity*: for what we have seen, heard, etc., together, that we remember again together. Quite right! but—*why?*

2. According to the law of *succession*: for what we have perceived as immediately consecutive, we produce in consciousness in a like order. True! but—*why?*

3. According to the law of *similarity*: for very often mental modifications arouse others *resembling* them. True again! but—*why?*

4. According to the law of *contrast*: for black frequently suggests white. Right again! but—*why*?

5. According to the law of *locality*: for when we think of the church, we usually think of the church-yard also. Correct! but—*why*?

6. According to the law of *the relation between thing and quality*: for when I think of a sphere the concept "round" is simultaneously suggested. Very true! but—*why*?

7. According to the law of *causal connection*: for when I think of "fire" I frequently become conscious of the notions of its effects, "light and heat," or conversely. But—*why*?

All these "*whys*," to which we find no reply in the old theory, admit of a simple and easy answer, in accordance with the laws of the new psychology explained in §9. We proceed to prove this.

1. *Those things of which we are simultaneously conscious* are always permeated by mobile elements, and, since a portion of the latter remain attached to them, they are closely bound together (38).

This connection is less perfect:

2. *In the case of succession*, when, by the appropriation of mobile elements, only the *end* of the first grows on to the *beginning* of the second, and the end of that to the beginning of the third, mental modification, etc. Consequently, succession is only a *partial* co-existence in time, though, when often repeated, it leads to a close connection. Sign and thing signified, which belong here, are usually very closely associated (38).

3. The *similar* is a mixture of like and unlike parts. So far, however, as psychical forms resemble one another, they always fuse into one whole (9). Consequently, owing to the similarity of their parts, like in the soul must be awakened by like. Naturally the dissimilar parts in such modifications are also brought into consciousness, and, as a consequence, these modifications, otherwise alike, are now recognized as only similar. But while thus simultaneously co-existing, they are cemented to each other by the appropriation of mobile elements, so that afterward the similar is able to attain to consciousness

from this fact of connection as well. Hence the excitation of the similar rests on the law of simultaneity in time.

4. Nor is the case different as regards *contrast*. When am I able to say that two objects are contrasted? When I have thought of them both together, and have impressed on my consciousness their greater or lesser differences. Consequently, the *fact of their being simultaneously present to consciousness* is the reason why mental modifications the most heterogeneous are interconnected by the retention of mobile elements. Afterward, if no other or stronger associations prevent it, they are restored to consciousness united.

5. *That which is connected in space* is always perceived as something simultaneously or successively existing, and as such its parts must be connected with more or less firmness by the mobile elements. Exactly the same holds true of

6. *The relation between a thing and its quality*, and also of

7. *The causal relation*, and depends solely on a constant and unceasing succession of different effects as processes in the soul, and also for the most part in the external world (39).

Hence all these so-called "laws of association" may be reduced to the one law—a *complete simultaneity in time and a repeated sequence*; that is, an entire or partial simultaneity in consciousness; and they *must* be so reduced, because experience shows that that which comes into consciousness at *separate* points of time is never associated. That alone which is excited at the same time can appropriate to itself a portion of the mobile elements and thus grow into a whole.

Still, this would not explain why, when a number of mental modifications once conscious together are reproduced, the current of excitation should set from this particular modification toward that one, and not in some other direction (compare the examples in 99), if we did not know that *the mobile elements are always immediately transferred from one mental modification to that other which, at that time, is most intimately connected with it, or is one with it*.

The intensity of this connection depends, however, partly on the fact that mental modifications simultaneously in consciousness are *repeatedly permeated* by the mobile elements, and

partly on *the greater or lesser fulness* with which these elements are, as it were, shed over the modifications to be awakened. Experience, too, proves that the visible more easily excites the visible, the audible the audible, etc., than the visible does the audible, and conversely (all else being the same), which manner of action evidently depends on the *greater original similarity* and *consequent closer connection* subsisting between the primitive forces.

Whether, then, in this or that case the law of similarity, or of contrast, or any other prevails, depends simply on *the intensity of the connection subsisting between the different mental modifications*. If we were accurately acquainted with the intensity of this connection in all cases, we should be able to invariably predict what mental modification would be aroused into consciousness by any other under any given combination of circumstances. In our own case, and in that of others with whom we are well acquainted, we already, as a fact, know beforehand what the course of excitation will be. (*Elements of Psychology*, p. 202, etc.)

102. MEMORY, RECOLLECTION, IMAGINATION ("EINBILDUNGS- VORSTELLUNGEN").

We have already spoken about memory in 7, and shown that memory is not a special faculty aside and apart from the primitive forces, but that it consists simply and solely in the quality possessed by the primitive forces of remaining more or less permanently in the definite change which the external stimuli have wrought in them. This memory is the foundation of all that is further developed as concepts, judgments, etc., groups, series, feelings of pleasure and pain, desires, repugnancies, etc., and in it the mobile elements play a chief part as *connecting* elements.

Most of the modifications which continue to exist in the mind are groups and series which have grown up out of connections established between the fundamental modifications, *i. e.*, such as *first* came into existence (as, for instance, the concept "tree" consists of several different perceptions, roots,

trunk, branches, etc.), which would not, it is true, vanish from the soul if that connection were broken, but would merely cease to exist as this particular *concept*. The case is just the same with the concept "house, man, garden, apple, table," etc. (See 38.) But of all fundamental, as well as of all derivative modifications, the law holds true that *what has been once produced in the soul with any degree of perfection continues to exist, even when it has ceased to be excited*, and has, consequently, lost consciousness. That which was conscious merely becomes unconscious, or continues to exist in the substance of the soul as a "vestige" (6.) It has become "*statical mind*." *This unconscious continuance of what has once come into existence in the soul is MEMORY*. It cannot, therefore, be limited only to notions and concepts. Desires, volitions, feelings, etc., have their memories as well. It is natural that every modification should continue to exist *more perfectly*, in proportion to the vigor with which it was at first generated, and the *oftener* it has been *recalled into consciousness* and strengthened by repetition. Hence, the perfection of memory depends on two circumstances :

1st. *On the perfection with which the psychical modifications were originally produced*. The fundamental modifications (sensations and perceptions) will be less liable to be lost in proportion as the primitive forces are *more vigorous* (7), and in proportion as the external stimuli act with *greater strength and fulness* (11), (but this fulness must not be inordinate) (24); and the derivative forms will be more permanent in proportion as the elements combined are *similar* (38), and the more intimate the *connection* between them is rendered by the mobile elements (38).

2d. *On the strength infused by repetition into what already exists within*. Here again two cases are to be distinguished. A modification frequently repeated is either strengthened by fresh and homogeneous vestiges which are added to it (9), or the number of vestiges is not increased, but, on being repeatedly excited, they attract mobile elements and so become more perfect, which is also true of all other *associations* produced by the diffusion of mobile elements.

The latter mode by which mental modifications are strengthened is particularly conspicuous in the process of learning anything by heart. Not only do the connecting vestiges increase, but the modifications so repeated themselves appropriate a portion of the exciting elements, and, by so doing, grow, if the expression is allowable, in bulk, in space. The same occurs when we are in a state of expectancy, or anxiety, or in love, etc. We are then much teased by such matters, and, indeed, when any other state or act is reproduced (even where that act or state is attended by disgust). Furthermore, what people call favorite inclinations, hobbies, whims, etc., are modifications of a similar kind which have been strengthened by mobile elements. They are not merely very permanent in an unconscious form (in memory), but they are ready to spring into consciousness at the least provocation. From continually appropriating exciting elements they have acquired an *extraordinary facility of becoming conscious*—a great “*nearness to consciousness*.”

Repetition, therefore, does two things, and these ought not to be confounded: Increase in the number of vestiges by external elements strengthen the modification and increase its *clearness*; the appropriation of mere mobile elements strengthens and increases the readiness with which the modification becomes conscious. An obscure notion, though repeated internally many hundred times, does not become any clearer, it only gains in nearness to consciousness, and is more ready to start into consciousness. In the former case, the “*increscive space*” of the modification is increased by the addition of the same external stimuli from which it originally grew. In the latter, the “*accrescive space*,” by the addition of internal mobile elements, which merely excited it into consciousness. We must always bear in mind that new vestiges can never be acquired by merely reproducing internally (re-exciting) mental modifications which have been engendered by external objects. Connecting vestiges alone can be increased in this way. But, more than this: Acts of reproduction, suggested by something external, yet not by the *object itself*, leave the original vestiges exactly where the new external excitant found them

—unaugmented. You may, for instance, remind me by words ever so often of a melody, but I shall not know it at all until I hear its notes. In like manner the number of vestiges in a concept, as “bird of prey,” can be increased only if I actually perceive more birds of prey, so that the combination of similar elements previously obtained is enriched by actually new elements. This is true in all cases. Without another similar or analogous act there is no increase in the number of vestiges. But there would be no harm in regarding this strengthening of a psychical modification by means of the mobile elements as being, in a way, an increase in its *vestiges*, provided this *particular* species of vestiges were never confounded with those properly so called. On the contrary, since we do and must speak of connecting vestiges, there are many cases, especially in the act of learning by heart, etc., in which it would not be improper to call these secondary vestiges, *vestiges of reproduction*, and so mark them off from the *original* vestiges which are the products of the direct action of external stimuli upon primitive forces.

These vestiges of reproduction are obviously of great importance in strengthening our desires and repugnancies.

From all this it follows that memory is not a *special* and *innate* faculty of the soul—able to exhibit a *general* and higher activity when *generally* exercised. On the contrary, every single mental modification has its own memory, and in a more perfect degree the more perfectly it was originally formed, and the more it has been strengthened by repetition.

When, therefore, we ascribe to a man a greater or less perfect memory, this must be understood as being true on an *average* of his primitive forces; for in every soul, however perfect the soul may be, there are always modifications more or less imperfectly developed (resulting only from a few vestiges), and these vestiges are, consequently, deficient in the property of a “good and perfect memory.”

But is it not true that a man who knows German and Latin can very easily learn English? If it were true it would seem that increased vigor of memory may be produced by the process of learning a number of words. Let us look more closely into the matter.

Consider the words, "*der Vater, pater, the father; der Bruder, the brother, frater; Ich habe, I have, habeo; ein, one, unus; drei, three, tres; sechs, six, sex; zwölf, twelve, etc.*" There is obviously a remarkable similarity between these words and the resemblances are very extensive, because, as is well known, the English language is a product of German, Latin and French.

Now, if any one is well acquainted with the latter languages, it must follow that, in learning English, the similar words already existent in his mind must be called up into consciousness along with the new English words. It is thus that the *new* finds a firm foundation in the old. Old acquaintances meet, and the vocabulary of the English language has not to be learned completely apart and from the beginning. The *pronunciation* and other *peculiarities* are the only points for which a new and special consciousness has to be founded upon an assemblage of fresh vestiges. Hence we may certainly affirm that: *Memory may be so exercised and improved as to be able with greater ease to apprehend and retain new impressions; that is, so far as that which is already rooted in the soul is able to coalesce with the new apprehensions and be homogeneous with them, and is therefore capable of forming a constituent part of them. But only to that extent.*

Hence we may explain how it is possible for the botanist to apprehend and retain, with such marvelous accuracy, all that relates to his pet subject, and yet not be anything like so successful in other matters. Take the case of the so-called "living chronicle," the village or town-gossip, who carries about in his head and on the tip of his tongue every petty detail he has ever heard relating to every house, every family. Another man, endowed with far more vigorous primitive forces, would possibly find it difficult to bear all these things in mind. The gossip finds no such difficulty, for the last piece of news meets with such a multitude of similar vestiges and modifications, that it becomes fixed without any exertion. Of course, the "interest" which such people have in such matters plays a part; but that interest is, after all, nothing more than the larger number of vestiges which certain kinds of mental

modifications have attained in them. This case is, therefore, identical with the others mentioned above.

But of what use are the strongest and clearest mental modifications if they remain permanently in a latent state, and cannot be called into consciousness, or, as we are accustomed to say, we cannot remember or recollect them? Since there is a difference between rising into consciousness (being reproduced) and *recollecting*, we must say a word or two concerning the latter.

"I was a boy of eight or nine years of age when Napoleon led his soldiers to Russia. A division of his army passed through the little town N——. The Guards formed part of it. I can see the bearded, bold fellows now. How self-confident they were! In what upright, soldiery trim they marched along! In ranks of six men each they passed through. Regiment succeeded regiment. The houses trembled, the earth groaned under the mighty, strong tread. It was, indeed, an inspiring sight, and I think I shall never forget it, nor will my sister either. She and I peeped down into the street from a top window," etc., etc.

Thus talks an eye-witness, and this much is clear from what he says: While telling his tale, a crowd of psychical modifications became successively conscious in his mind, and those modifications all belong to one another, because at a former period they were all excited at one and the same time; or, more precisely, to the leading notion, "Passage of the Guard," are attached those modifications engendered by the circumstances, the time, the place, etc., under which the main notion was formerly engendered.

When repeating this narrative, not only the same series of modifications which were excited when I heard the story became successively conscious, but I also think of the person who told the story to me, and of the time, the place, manner, when, where and how he told me.

When anything of this kind takes place in the soul, viz.: *When the process of becoming conscious starts from some main or leading notion, and proceeds so far that the notions of circumstances, time, place, etc., under which we formed that mental modification,*

also become conscious with it (so that it is brought again into connection with our former life), we say we have a RECOLLECTION.

Recollection, then, is nothing but a *continued process of becoming conscious*; and as those modifications alone can attain to consciousness which have been fixed in the soul with sufficient strength, and by a sufficient number of vestiges, it is clear that perfect recollection

Firstly, *depends on the perfection of the memory.* (See above.)

It is useless to have the strongest mental modifications, composed of many vestiges, unless they are or can be excited into consciousness. This excitation into consciousness takes place by means of the mobile elements, and it takes place the more completely in proportion as the latter are abundant (98). Hence perfect recollection depends also

Secondly, *on the fulness of the mobile elements.*

It often happens that mobile elements are present in sufficient numbers, and also the mental modifications which might become conscious are in no wise deficient in the number of vestiges, yet the restoration to consciousness which we desire does not occur, or, at least, only with such slowness that when it does occur it is too late. (Compare 14.) Perfect restoration to consciousness, and consequently perfect recollection, requires

Thirdly, *in particular, a high degree of vivacity on the part of the primitive forces.*

What, then, is the faculty of recollection ?

It is certainly not a special innate power. On the contrary, the phenomena of recollection are completely explained by the fact that mental modifications are permanent, and that they are rendered conscious by the mobile elements, according to a definite law (99). Man consequently does not possess a *single faculty of recollection*, but he has as many recollections as he has mental modifications capable of reproducing themselves as leading notions in company with those which are subsidiary to and allied to them.

All those mental modifications which are excited or reproduced purely from *within*, and not at any present moment from without, are called *reproductions of the imagination*, using

the term imagination in its widest sense. As produced from within, they become *conscious* afresh in the manner described in 99. They are not at all actually produced or formed for the first time. The expression, imagination (*Einbildung—Innenbildung*), dates from a time when psychology was in a very backward state, and the so-called “power of imagination” is generally synonymous with reproduction, or *becoming conscious*.

Only in a very few cases do we know at what time and by what definite impressions these internally excited modifications were originally formed or produced (as perceptions), and we are consequently unable to say which of the objects represented by them were the *first* to produce an impression upon us, as when, for instance, we began to form the concept, house, tree, bush, water, beer, wine, etc. Innumerable objects of a like kind helped us to gain these perceptions, and the similarities in them soon coalesced into concepts; the consequence of which is that for the most part we reproduce these modifications in the concept-form, and especially so where the reproduction follows rapidly. It is at the same time true that all these reproductions of the imagination, supposing them not to have been elaborated into *recollections* (see above), bear, when they return unabbreviated and unchanged to consciousness, a stamp of generality, *i. e.*, they are applicable indifferently to many objects of a similar kind, and hence are fitted to form constituent parts in distinct and new modifications we are prompted to form by external or internal stimuli. The consequence of this is that the new product is, in the main, formed out of old material. Hence the development of the soul depends, in a special manner, on the way in which these reproductions of the imagination are applied.

When reproduced by the object which first caused them, or by one exactly like it, they give rise to *perceptions*; when recalled to consciousness by something other than such an object, by a mere word (a word is, of course, never the thing or the object, except in the case of learning a language), or by mobile elements, they remain mere concepts of the imagination or reproduction. By merely connecting them with each other

afresh we obtain all those new combinations (groups and series) which are produced in us when listening to a narrative, when reading a book, when being informed about some absent object, when reflecting on past events, etc.

Imaginations, in the widest sense of the word, mean, therefore, all mental modifications reproduced in consciousness by something else than what has first produced them, and differ completely from *fancies* ("Einbildungen"), by which, in common parlance, are understood only such imaginary notions, feelings, judgments etc., as are false, *i. e.*, contrary to facts. That it should be extremely difficult to figure to ourselves, with perfect correctness, objects which we have never beheld, from a mere description of them, is natural, since nothing but actual perception can give the exact correlative and reality corresponding to a description. Hence every one, when he at length gains sight of an object which he has frequently imagined to himself, says: "After all, I did not think it was exactly what I now behold." This is the reason why there neither are, nor can be, two men who represent God to themselves in exactly the same manner.

If we consider these reproductions of the imagination more closely, we find an important difference between them. Some return to consciousness in a *dull, indifferent* way, others with such *freshness* and vividness as if they had just been formed as perceptions. The latter class only, remarkable for their *vivacity and freshness*, are usually called *reproductions of the imagination*, in the narrow sense of the term.

What is the cause of this freshness? To a certain degree it depends, in the first place, *on their original formation*. The more lively the external stimuli acted when they were produced, the more lively naturally will be their return to consciousness, provided they retain the fulness of their stimulation. Now, the appropriation of a higher degree of stimulation depends *on the higher sensitivity of the primitive forces*. Hence, a more than ordinary degree of sensitivity on their part is one condition upon which the formation of the imagination depends, in the narrower sense of the word.

In cheerful company, when in the midst of fresh and

charming scenery, in joy and anger, etc., we feel that the reproductions in the imagination of modifications which even at other times are dull and sluggish (briefly, our ordinary ones), start forward with particular vivacity. Why? Because in such cases a considerable amount of mobile elements, especially of the external kind, are transferred to the old, sluggish modifications which the mobile elements receive from the fresh and lively perceptions then produced, or from violent emotions and inclinations (31). Accordingly, the reproductions of the imagination (in its narrower sense) depend also on the *greater abundance of mobile stimuli* (by which they are more fully excited).

When such vivified modifications of the imagination, which are already to a greater or less degree connected with others, are led to enter into new groups and series, because the strongest and most lively of them attract what is similar to them and bring them simultaneously into consciousness, the consequence is that the remainder lose their mobile elements, and, with the loss of mobile elements, the imaginative modifications lose consciousness, and there arises what is called "*fantasy*" or the *creative* (productive) *power of imagination*.

Every poem proves this. Can it be said that a new poem represents new mental modifications? Not in the least. They are rather interconnected in subordination to one leading idea, the liveliest of them all, *e. g.*, the idea of wine, love, harvest, etc., and in such a novel *form* that they assume a special relation to it, and so constitute a drinking-song, a love or harvest song, etc. Such a poem we call "original" and "clever," when the conceptions so connected represent a whole which has never existed in that precise shape, and which elevates and enlivens every reader capable of comprehending it. On the contrary, when this original element does not exist, we call it "flat," "insipid," "commonplace," etc.

The epithet "creative" applies to "fantasy," not as regards the object (matter) which it represents, but only as respects the mode in which it combines mental modifications, *i. e.*, only as respects the *form*. Fantasy, again, is not a *special innate* faculty of the soul. It can have no existence at all until lively

modifications are obtained, and fantasy is itself different, accordingly as these modifications are different. That is the reason why a fantasy capable of great things in poetry may be quite powerless in music, in form and color, in architecture, etc. The exercise of the fantasy is impossible, unless the special mental modifications which it postulates have been produced in us by their appropriate objects. Every species of fantasy extends as far as there are modifications forth-coming to be combined in a novel manner, and it extends no further. The higher and more unusual activity of the imagination implies no other *innate* capacity on the part of the soul to which it belongs than *a more than ordinary degree of receptivity on the part of its primitive forces*. Given this unusual degree of receptivity, all manifestations of fantasy may be perfectly explained by the law of the attraction of similars and by the laws regulating the genesis of consciousness. (*Elements of Psychology*, p. 215, etc.)

103. COMPLETE OR PARTIAL QUIESCENCE IN THE SOUL— SLEEP, DREAMS.

Since every sensation or perception, etc., formed by the soul requires, in order to appropriate its stimulant, a primitive force (which is thereby rendered incapable of forming a second sensation, etc., 30); since, moreover, in the constant alternation of consciousness, the mobile elements become more and more closely attached to mental modifications, and are so rendered incapable of producing farther excitation, it follows that every day a time must come when both kinds of elements are reduced to a minimum.

The body is equally subjected to a continuous loss of its powers; for its protoplasm and tissues are constantly undergoing change by the ceaseless activity of its various parts as an organized entity. Every voluntary or involuntary motion of the muscles, the action of the different glands, the working of the entire nervous system, is attended by a continuous retrograde metamorphosis, which inevitably and at certain periods must result in exhaustion and, consequently, in the necessity

for reparation, if the entire body shall be preserved from destruction.

Now we know that all primitive forces, as living forces, strive for compensation whenever they have sustained a loss, producing in this way those conative modifications which we call desires. (See 25, 26.) This same truth applies to the corporeal forces. Their waste, too, calls for repair, and the necessity manifests itself in that *active assimilation* of new material from the pabulum which has been prepared for their use by digestion. In quite the same way as the primitive forces, by loss of a certain amount of acquired external stimuli, turn into desires for the same or a similar excitation (25, 26), the corporeal forces strive after compensation whenever they have sustained the loss of bodily elements incident to the continuous retrograde metamorphosis of corporeal forces, during active life—and then we fall asleep. *Sleep, then, consists of the predominating process of the assimilating activity of the corporeal forces, which is periodically necessitated whenever the primitive forces, mental or corporeal, have become exhausted by the performance of a certain amount of work.* This is the essential nature of sleep.

We find, therefore, as Durham has shown (*The Physiology of Sleep*, by Arthur Durham; George Hospital Reports, 3d series, Vol. VI., 1860, p. 149), a physiological correspondence of accumulation of blood in the stomach and other abdominal viscera, proving a greater activity of the *assimilating system*; for wherever there is increased activity there is a greater afflux of blood. This predominating activity of the assimilating process subdues all other activities. *Mentally, we become unconscious*, partly from actual want of exciting elements which have been used up during the waking state, and partly from the withdrawal of mobile elements by the predominating influence of the assimilating activity. We find, therefore (physiologically corresponding), *less blood* in the brain, as has been demonstrated by Hammond, Durham and others. *Bodily*, our voluntary muscles subside into inactivity, and the work done by the excretory organs is lessened in amount. We find, therefore (physiologically corresponding), respiration as well as circulation decidedly slower during healthy sleep than during waking life.

All this is the necessary consequence of the heightened activity within the assimilating system. All our activities can never be excited at the same time and to the same extent. We see this portrayed in the action of our mental life. Even during our waking hours, consciousness (excitation) belongs only to a very small number of our mental modifications at the same time, and never covers the entire amount of our mental possessions. While modifications of one kind are roused, others are dormant, and when the dormant ones are re-excited, the former active ones sink into delitescence. This is so throughout our entire organization. So long as our mental activities are predominantly active, the bodily assimilating system is at comparative rest; but when the supply of forces which it had accumulated has been reduced by constant use, its original conative tendency for assimilation is roused again in such strength as to preponderate over all other activities, and subdues *them* to comparative rest. How great the strength of the desire for sleep is, we have all experienced. Even with the greatest effort we cannot keep awake when our forces are thoroughly exhausted. Soldiers have been found asleep on horseback during night marches, and it is said that on the retreat to Corunna whole battalions of infantry slept while in rapid march. (Hammond on Sleep, p. 14, etc.) The restoration of vital forces *must* be accomplished, and during the process of restoration other activities *must* partially or totally cease. It is, therefore, erroneous to say that "the state of comparative repose which attends upon this condition (sleep) *allows* the balance to be restored" (Hammond). In fact, this restoration, or more definitely expressed, this assimilating process, does not *permit* the accustomed activity of the mind, brain and other organs.

Unconsciousness, therefore, is only a *concomitant* of sleep, and not sleep's essential nature, just as the comparative rest in the voluntary muscles and excretory organs is the natural consequence of the heightened activity of the assimilating system. Where there is less activity there will always be a less amount of blood and a less active circulation. To say now that the loss of consciousness, total or partial, during sleep is due to

the lessened circulation of blood, which actually has been observed during sleep, is to confound *cause and effect*, and is another sample of the incorrect way of reasoning so frequently indulged in when preconceived ideas are allowed to "tyrannize over the understanding." On the contrary, the truth is, that the comparative inactivity of the mind (in consequence of the inactivity of the brain conditioning the mind's activity) causes a less amount of circulation, and this lessened circulation occurs not only within the brain, but in all organs where there is less activity, while the greater activity of the assimilating process summons a larger amount of blood toward the corresponding active organs. It will not do to oppose this truth by reminding us of the fact that an artificial interruption or suppression of the circulation within the cranium, by a compression of the carotids, will cause unconsciousness. We have not stated that the circulation of blood is not required for the healthy functional operations of the brain, nor that a healthy brain is not a necessary condition for the operations of the mind. A certain amount of healthy blood within the brain *is a necessary condition* for its successful operation. But is *condition* a *cause*? Still, if a certain amount of *opium, chloral, carbonic oxide*, etc., *causes* stupor (unconsciousness), why shall we not likewise consider the lessened circulation of blood in the brain during sleep as the cause of unconsciousness? Because we would not thereby explain at all the lessened afflux of blood to the brain. It would be an effect without a cause. We would still have to ask: "What lessens the circulation in the brain during sleep?" We have stated the cause. It is the reduced activity of the brain, in consequence of the heightened activity of the assimilating system. The unconsciousness (stupor), following the use of the remedial agents mentioned above, is the consequence of a vitiated state of the blood, the vitiation that fluid has undergone rendering it unfit to sustain the necessary conditions requisite for successful operations of the mind (robs the mind of the conditions necessary for healthy action), and therefore we may consider these poisonous agents as a cause of unconsciousness.

Corroborating the above statement, there is still another

observation concerning the predominating activity of the assimilating system during sleep, given by Baron von Reichenbach in his "*Untersuchungen über die Dynamite des Magnetismus*, etc." (Braunschweig, 2d. ed., 1850, Vol. I, p. 199). He found by numerous experiments that the emanation of "Od" from the *sinciput* commenced to augment in force with the early dawn of the day almost evenly until 10 or 11 o'clock at night, when it gradually took a backward course and continued steadily to decrease in energy until, at about 4 or 5 o'clock next morning, it had arrived at its minimum, at which time it again commenced rising as on the morning before. The emanation of "Od," however, from the *occiput* kept its lowest degree evenly on through the whole day until 6 o'clock in the evening, when it commenced to augment in force, and continued to increase until 3 or 4 o'clock next morning, from which time again it sank down gradually until it reached its minimum about 7 or 8 o'clock A. M.

This shows clearly the alternating predominance between mental working (day's activity) and corporeal assimilation (night's activity)—sleep. It might be well for physiologists to ascertain whether an increase of blood in the cerebellum at that time would confirm these observations of Reichenbach.

The approach of sleep is favored by everything which either depresses mental life (cuts off the supply of exciting elements, especially fatiguing mental toil, and also listless reverie, want of external excitement), or which gives increased impetus to the bodily act of *assimilation*, such as superabundance of food, hot drinks, great bodily exhaustion, loss of blood, etc., etc. Excessive *cold* does not produce sleep, but causes *stupor*, like excessive *heat*. In both the cited cases the effect produced is congestion of the brain, which renders that organ unfit to successfully carry on mental operations.

If, on the contrary, by excessive *mental strain* (as we find it frequently with business men, eager students, or after great trials, sorrow, anxiety, night-watching, etc.) the assimilating process has been unduly restricted for a great length of time, *sleeplessness* is the natural result. Mental, and consequently cerebral activities, so overbalance the process of appropriation,

that the assimilating system at last becomes weakened and, losing its conative force, leaves the work undone it is destined to do. Necessarily such a state must prove destructive to the entire organism, and cause an overwrought condition of the brain (relaxed and enlarged bloodvessels), while the *mental* activities gradually confine themselves to fixed ideas or uncontrollable combinations, until at last only an insane wreck of a once well-balanced constitution remains. But there are also a number of *bodily* causes which induce sleeplessness. They may all be summarized under one general head: *Anything that interferes with the process of assimilation*. The number of disorders interfering with the process of assimilation is large, and it is not my purpose to give a pathological specification of them. Most fevers do it. Coffee and tea, among the daily used beverages, can cause sleeplessness. Both have been physiologically proved to retard the process of waste and repair (*Stoffwechsel*).

During sleep, however, perfect quietude does not always prevail in the soul, as is proved by the occurrence of the phenomena of *dreaming*.

As a rule the mobile elements which cause excitation are not entirely consumed when sleep overtakes us, as is clear from the fact that we remain awake for a longer period when any subject particularly interests or worries us; while, on the other hand, we easily fall asleep (*e. g.*, in reading) when the subject of the book is not very entertaining, or when our primitive forces are but slightly excited by external objects in a dark and quiet room.

Among the mental modifications which have been excited during the day, there are some which were oftener present to consciousness and for considerably longer periods than others, because they related to objects important to us. Hence, when sleep overtakes us they maintain a greater *nearness* to consciousness than others, and stand, so to say, on the verge of consciousness, and only require a slight impulse to make them again start up, so far as that is possible, in sleep, while all the rest of our mental modifications remain unexcited. The mobile elements, even in their diminished numbers, are suffi-

cient to excite them, and thus we may explain why we so often continue in our dreams the occupations of the day.

As at other times, the exciting elements may, by some existing link of connection of earlier date, light upon and excite modifications of which we have not thought for a long time during our waking state. It is not at all wonderful that we then dream of things which were furthest from our waking thoughts.

On the whole, most dreams remain obscure and indistinct processes, because our mental modifications, owing to the paucity of exciting elements, only have *some* of their vestiges aroused. Hence, the consciousness of the *ego* is frequently absent in dreams. We do not become conscious that we are a totally different person from that which the cunning jugglery of dreams represents us to be. "In earlier days," says Dressler, "I have dreamt many a time, with anguish, that because of my ignorance I had been obliged to leave the University, return to school and begin anew. And yet it ought to have been very easy to scare this trouble away, if I had only said: 'You are the director of a teachers' college, and your real concrete self is totally different from that of a senior boy at a school.' This judgment, however, did not present itself to my consciousness, because the full and true notion of myself remained unexcited; and it was necessarily unexcited, because the concept 'I' continued to sleep."

There is nothing astonishing in the *checkered confusion* and *extravagance* which so often prevails in our dreams. Our mental modifications are connected in groups and series so comprehensive and so extensive, that even in a waking condition they cannot be perfectly reproduced in their entirety. What must be the effect then, when, as is the case in sleep, the mobile elements are reduced in number, and the objective influence of external exciting stimuli, furnished by sight and hearing, is broken off? A group will be only partially excited, a series will be broken off when only half excited—it may be aroused by mobile elements at its beginning, presently at its end. How is it possible that the orderliness of waking consciousness—and only the clearly conscious can direct—should be pre-

served? It is possible also that such fragments may arise now in that series or group and then in another, and then there is no limit to the most extravagant confusion and combination of dreams.

More order and more clearness is observable in dreams, when sleep, toward morning, has already produced such an abundance of fresh primitive forces, that external stimuli again find an easy reception; or when, shortly after falling asleep, there are still so many unexpended forces at hand, that the same effect may be produced without actually causing us to awake. At such times it is possible to suggest dreams to a sleeper. He may hear the sounds of an Æolian harp placed near the window, and be excited by it to visions of wondrous beauty; or may, as in the case mentioned in Du Prel's *Philosophie der Mystik*, p. 34, where, by allowing a few drops of water to fall upon the sleeper's lips, he would dream of swimming and execute actual swimming motions, and so on. For the production of such effects, of course, a peculiar sensitivity to external stimuli is a necessity.

The receptivity of the higher senses falls to a minimum in the middle of the night. Sleep then is really sleep, *id est*, predominating activity of the assimilating system. Dreams then bear frequently the character of the *lower, animal senses*, as the higher and more abstract modifications are generally but imperfectly, or not at all, conscious in dreams, and therefore not able to correct or drive away false and immoral ideas, a fact expressed in the saying, "Conscience is asleep during dreams." Plato observed long ago that "good men permit themselves to do in dreams, and in dreams only, what bad men do when awake." Here also belongs the common expression, "I never even dreamt of such a thing." Consequently, dreams prove nothing for or against a man's moral character.

If we fall asleep with a heart oppressed by care and anxiety, we need not wonder that we are visited by perturbed and painful dreams, for that which is out of tune can produce no pleasurable emotions. If we go to bed with an overloaded stomach, or if we lie in a position which prevents the free circulation of the blood in any part of the body, if we expe-

rience any pressure or pain anywhere, these unpleasant sensations will awaken what is allied to them in the soul, and disgusting or painful dreams will be the consequence. Even in sleep the law prevails that the similar attracts and excites the similar.

That so long as the dream lasts we take our *fancies* for *realities*, is quite natural. The realities which surround us are, in fact, blocked out, because the senses are closed, and as they no longer operate on external objects, any comparison between the external and the internal is impossible; and if, when awake, we even fancy falsely, as every one knows we do, without perceiving our error, we need not wonder that our dreaming fancies are not recognized as erroneous. That which is only obscurely conscious cannot possibly be corrected and brought into true light by the unconscious. It is only when fundamental modifications of our soul, sensorial perceptions, are brought into activity, that excitations can be compared with real objects, and thus be corrected if they should run astray in wild flight. *Rational* mental activity is always characterized by its strict correspondence to the real objects; it is *objectively* true. Mere fancies are excluded by the exercise of the senses. During sleep the senses are closed, and fancies may reign supremely without the possibility of correction.

There is still an important question to be answered: *Why do we recollect some dreams and not others?*

Recollection, as we have seen in 102, is a continued process of becoming conscious. It starts from some main or leading mental modification and proceeds so far that the modifications of the circumstances, time, place, etc., under which we have formed that modification also become conscious with it, and is brought again into connection with a part of our former life. Recollection presupposes, therefore, a state of the mind thoroughly similar to that in which the original modification (or group or series of modifications) was formed. It is, in fact, the renewal in consciousness of a part of our actual past life. Now, dreaming takes place during sleep, and sleep consists essentially in the predominant activity of the assimilating process. All mental evolutions, therefore, which take place

during sleep are closely interwoven with this state of the body. In fact, they develop upon it as their very basis. It is the means by which the different mental modifications arise, are held together and are made one whole—a dream. Take away this basis, and you withdraw at once the connecting medium which binds the single items of the dream together; without it they fall asunder, they lose their excitation, and all vanish like a dissolving view. A restoration of the same would be possible only if the self-same conditions under which the dream existed could be restored. With this restoration we would then dream the same dream over again, as often happens.

Now, this change of state actually takes place when we suddenly wake, because the predominant activity of the assimilating process is interrupted by the aroused activity of the higher senses. What during sleep has been the exciting and connecting means, no longer retains its excitation, and, consequently, what we have dreamt we have forgotten. Somewhat similar instances of forgetting we frequently meet in cases of fever, mania, melancholy, somnambulism, magnetic sleep, drunkenness, etc. The same law governs the several conditions, and that law is: What has been excited into consciousness during, and by means of, a certain state of mind and body, loses its excitation, “falls to pieces,” “cannot be recollected,” when this particular complex of mental and bodily conditions gives way to an entirely different state of mind and body.

But, then, how is it that we can recollect some dreams quite accurately? If we observe closely, we will find that dreams we remember take place, usually, either at the commencement of sleep, or toward morning, when we gradually emerge from sound sleep into wakefulness. In both cases the opposite state is not entered completely at once. There is a continuous chain from the one to the other (by slight and gradual differences in the activity of the assimilating process and the activity of the senses), by means of which a connection is preserved between both opposite states, so that that which takes place in the one is carried over into the other. The awakening, in such a case, is not an abrupt change of the basis upon which the dream has been

enacted. It is merely a gradual transition of one state into the other, and thus the dream (that is, those modifications which were aroused during sleep) is continued through this chain of imperceptible changes into the state of waking consciousness—we *recollect the dream*. But where the change of base is abrupt and absolute, there is no recollection of the dream. These points I may lay down as applicable to all usual dreams. There are on record, however, some remarkable and strange dreams, the truthful narration of which cannot be doubted, unless we also flippantly deny any other record that does not suit our present fancies.

These particular dreams deserve closer attention than a mere denial and assertion that they are “humbugs,” “superstitions.” While such things do not fit in commonplace skulls, in the thinking man they incite the suspicion that there may be something in special dreams transcending the capacity of the know-alls. We first meet dreams undoubtedly excited by some sudden external stimuli, which dreams, nevertheless, tell a long and strange tale, although the external cause of the dream and the awakening occur almost at the same moment. Examples may explain. I take from Du Prel’s *Philosophie der Mystik*, p. 83, the following: “Garnier, in his *Traité des Facultés de l’Ame*, tells of Napoleon the First, who was asleep in his carriage when an infernal machine exploded under it. This sudden report excited in him a long dream, as if he were with his army on a transit over the Tagliamento, where he was received by the cannon of the Austrians, so that in suddenly jumping up and awaking, he cried out: “We are undermined!”

Richers cites the dream of a man who was suddenly awakened by the report of a gun near by. He dreamt, in that moment, that he had become a soldier, had gone through untold miseries, had deserted, had been caught again, tried, condemned and shot.

Steffens relates the following: I slept with my brother in one bed. In dreaming, I found myself in a narrow street, chased by a wild and strange beast. I could not call for help, and ran along the street. The animal came nearer and nearer.

At last I reached a pair of stairs, and, exhausted from anguish and exertion, could not run any further. The beast got hold of me and bit me painfully in the side. This awakened me. It was my brother who had pinched me in the side."

There are many more dreams on record, characterized by this same remarkable feature: The exciting cause, the dream, and the awakening occur nearly simultaneously. In such dreams a long series of events appear to transpire, which events correspond to, and finally culminate in, a catastrophe that turns out to be the cause of the dream, and also the cause of the awakening. Surely this is a peculiar combination; an exciting cause bringing forth an apparently preceding series of events, which culminates in an effect which, in reality, is the cause of it; and all in an instant, because the exciting cause is also the cause of the awakening. How is this phenomenon to be explained? In the first place, the supposition that the soul is capable of having but one thing in consciousness at a time is a falsity. We have spoken of this point in 98 and 99. We found that one single impression may cause, in an instant, the excitation of hundreds of mental modifications, even to such an extent that a great part of our life may turn in an eye-twinkling into consciousness, and pass in review before us. If we experience this in the midst of our waking life, why should it not occur in our sleep, and even in more fanciful ways, as the higher and controlling senses are shut off from the external realities of our environment? The exciting cause will surely propel such modifications into consciousness which are most similar and most intimately connected with it; therefore the same exciting cause would effect in different persons quite different dreams. The explosion of a bomb caused in Napoleon the instantaneous excitation into consciousness of a battle-field, and the thought of the springing of a mine. In the other man the report of a gun excited the modifications of a soldier's life, which, perhaps, never had been a pleasurable contemplation to him. The pinching in the side, by his brother, excited in the third case the modifications of being chased and bitten by an animal; while in another the same cause might have provoked the

dream of a duel. The complications are unfathomable, because the combinations between man's mental modifications reach not only the accountable, but also the unaccountable. The preceding of the dream is merely apparent because it is *instantaneous* with the exciting cause, and its clearness, composition and apparent length depend entirely upon the pre-existing strength, combination and number of mental modifications which, according to their similarity and connection, can, just by such an external excitation (cause), be roused into consciousness. The effect (dream) is, therefore, in each kind of dream, not *before* the exciting cause, but follows instantaneously. Neither need there be a teleological contrivance in the nature of dreams, which manages to harmonize its contents with the exciting cause at the moment of awakening; nor need there be a clairvoyance of the soul, which, in its transcendental state, forsees the exciting cause and arranges the contents of the dream according to the following cause; nor is it a mere chance that exists between the harmony of the exciting cause and the contents of the dream (compare Du Prel's *Philosophie der Mystik*, p. 91); but it is the natural excitation of mental modifications into consciousness, grounded upon unalterable laws, of which we have spoken above.

There is another kind of dreams which *announce a coming disease*. Again I refer to Du Prel's *Philosophie der Mystik*; p. 164:

"Galen tells us of a man who dreamt that one of his legs had become a stone, and a few days afterward the leg became paralyzed.

"Macario dreamt of having a severe sore throat, of which, on getting awake, he felt nothing; but a few hours afterward a severe tonsillitis developed itself.

"Teste, minister under Louis Philippe, dreamt that he was struck with apoplexy, which, indeed, a few days afterward took place.

"Arnold de Villanova dreamt that a black cat bit him on the foot. On the following day a cancerous ulcer made its appearance in the same spot.

"Konrad Gessner dreamt that he had been bitten by a viper,

and a few days afterward a plague-boil developed on his chest, of which he died.

“Krauss several times made the observation that dreams of operations on his teeth were the forerunners of violent tooth-ache; and that dreams of bites of tigers or snakes foretold him the place on his body where, soon after, sores would break out.

“The French physician, Virey, made the observation that dreams of red colors frequently preceded active hemorrhages, or dreams of inundations were the forerunners of succeeding lymphatic exudations, or dreams of conflagrations pronounced coming internal inflammations.

“Carus refers to a man with a disposition to sudden fits of spasm of the chest, who regularly dreamt, before these attacks, that he was chased and bitten by cats; while another dreamt of bulls coming toward him before severe spells of headache.”

Hahnemann, the founder of Homœopathy, was aware of the importance of dreams in relation to disease, nearly a hundred years ago; and in proving remedies on the healthy he laid as much stress on dreams, when they occurred during a proving, as on any other symptom caused by the drug; and his real followers take notice of these “small voices of nature” up to this very day, in the treatment of diseased states of the body.

Dreams, indeed, frequently announce a coming disorder, when for our ordinary perception it is yet imperceptible. We must not forget that even during sleep our entire being is not at rest. The assimilating, reconstructing process is then in its ascendancy and most vigorous activity. Where this process is not going on normally the hitch is felt, and arouses corresponding dream-visions, which, during the usual state of waking are rendered insensible and drowned in the predominating activity of the higher senses. These gentle admonitions, these first symptoms of a threatening disorder, never announce themselves in the concept-form of waking life, but are only capable of arousing into consciousness mental modifications similar to their nature—*dream-visions*; they express themselves figuratively.

Such prophetic dreams of coming disease are, therefore, not more wonderful than other dreams. Their origin is conditioned

by the slight irritation an abnormal or mal-assimilation produces in the human organism, and thus causes an excitation of similar modifications, *i. e.*, *dream-visions*, during the stillness of the night and the quietude of stronger mental forms.

This process goes still further *when the dream reveals to us the remedy that will cure the disorder.*

Again I shall cite cases I find in the very interesting work of Du Prel, "*Die Philosophie der Mystik*," p. 229:

"Bourdois, of the Medical Academy in Paris, narrates the following case: A man, during an attack of cholera, commenced to talk deliriously, and Bourdois thought he heard the patient pronounce the word 'peach.' Regarding this as an instinctive desire of the patient, he at once ordered that such fruit be given to him. The patient ate it with great eagerness and wanted more. He ate some thirty peaches that night, and was well the next day.

"Melanchthon was affected with a very painful inflammation of the eyes, which would not yield to any remedy. Then he dreamt that his physician prescribed for him euphrasia, by the application of which remedy he recovered.

"An English colonel was stricken down with fever. During a sleepless night he had the vision of a venerable man, who told him to go to the yard toward the dawn of day and wash in cold water, to dry himself well and go to bed again. The colonel followed this advice and recovered."

It is especially the arousing of conations, developed into consciousness by the want of certain stimuli, such as we daily find manifesting themselves in the form of hunger and thirst when the stomach needs a fresh supply of food, or in disease in the form of cravings for particular things. We must not forget that even the lowest senses, which have their substratum in the sympathetic nervous system (compare 72), develop into consciousness in the three different forms as the modifications of the higher senses do; namely, as sensations (perceptions), conations and feelings. If, now, in disease a particular stimulus be wanting, and the desire for it be roused into consciousness, it is roused even more easily in a dreaming state, when other and stronger mental modifications are silent

and the excitations of the higher senses are shut off. A more complicated subject are dreams in which *the dreamer prescribes for others, and also those in which future things have been revealed*. We must, however, defer the consideration of this subject until we come to speak of somnambulism and similar states of the human soul.

104. CONSCIOUSNESS OF PSYCHOLOGICAL PROCESSES WHICH DEPENDS ON SPECIAL CONCEPTS.—INTERNAL SENSES, INNER PERCEPTION, SELF-CONSCIOUSNESS.

Experience teaches universally that children do not know at first their own psychical acts, though nothing is nearer to them. Indeed, there are grown-up people enough, of whom the same may be asserted to a great extent. Their knowledge of what exists and goes on in the outer world is clear enough, but their own inner life and processes remain obscure to them and, in a great measure, totally unknown.

There is, however, nothing in this fact of experience which ought to astonish us. All perceptions consist of modified primitive forces by corresponding external stimuli, that is, of *subjective* and *objective* elements, and one might suppose that the soul would at first perceive the *subjective* as a part of its own; but it will be proved presently that such a perception requires concepts which can only arise at a later period.

All souls, without exception, begin to develop by receiving external impressions, and thus form sensations and perceptions of the objects of the external world. These perceptions give birth to *concepts*, and the production of concepts presupposes (as was explained in 15) that the internal mobile elements awaken, along with the present sensation, the similar vestiges already acquired. Now, if sensations are sensations only because the objective—the stimuli—occupy the larger share of consciousness, what must happen? The mobile elements are more abundantly shed over the objective element; it attracts them with overwhelming force, and consequently the *stimulant* side in these psychical modifications is, and must be, more vividly conscious than the side of the *primitive forces*.

From this it follows that *subjective concepts*, those which spring purely from the peculiar nature of the primitive forces, cannot at first come into existence at all. It is only when, as development proceeds, we become, as it were, sated with stimuli, that these forms can be excited more strongly on the side of the primitive forces than on the other, and then only can that side be separately presented in consciousness.

Notwithstanding, as objective concepts begin to be formed, consciousness is partially diverted toward the subjective side. Consider the following:

The concept "stone," for example, contains less objectivity than the perception of an individual stone, for the former merely contains the *similar* constituent parts of the perceptions of stones from which it was formed. The like is true of the concepts man, mountain, house, field, forest, etc., as contrasted with the perceptions of particular men, mountains, etc. In order to produce such concepts the soul necessarily exhibits greater independence and activity than is required to merely form perceptions, and by producing them it gets continually nearer to a concept of the subject. That the difference between such concepts and perceptions is, at first, but little noticed, is natural, since they are, as it were, concealed by the vivid consciousness of the words by which they are designated, and also because we are obliged to give the same names to perceptions and to their corresponding concepts (see 16). The effect of these two circumstances is that concepts ripen into clearness slowly, and therefore we only arrive very gradually at a consciousness of the parts contained in our perceptions.

We rise most effectually above mere sensory perceptions and, therefore, above the purely objective, by means of *simple* concepts which we gain gradually, *i. e.*, by those which involve only one mark or attribute, *e. g.*, round, smooth, pointed, long, thin, little, etc.

The perceptions from which these are gathered could never give rise to them at all if they were all present to consciousness in their totality, only a fraction of them must be present. Take, for instance, the concept *pointed*. The objects from the preception of which this concept was abstracted, were and are

much more than "pointed," they had and have a length, thickness, weight, color; the material of which they consist is hard, or soft, etc. All these qualities contained in the things themselves are also contained in our perceptions of them, and yet, in order to yield us the concept "pointed," all the qualities except the "point" must disappear from view. The mobile elements which render the concept conscious must be concentrated solely on one, viz., "pointed," otherwise that simple concept could never be formed.

Hence we find that *in order to form concepts, our perceptions are not always reproduced side by side in their ENTIRETY, but mere fragments and fractions of them are presented to consciousness.*

The concept "perception" springs from a number of perceptions reproduced together and almost undivided, and the concepts "man, house, tree," etc., likewise; but the concepts "over, there, out of, from, to, by," etc., since they are strictly simple concepts, can be produced by single *fragments* and *fractions* of perceptions. That this may and does happen is natural, because the mobile elements ebb away from points just now excited in the same quantity in which they are diffused over other points, or, it may be, over some single one. In such cases the perceptions are excited as regards a minimum of their contents (their primitive forces and stimulants), and the question arises whether the *whole* stimulant may not remain unconscious, so that the relative primitive forces, from having the whole of the mobile elements concentrated on them, would alone be conscious, to the total exclusion, from consciousness, of the object. This process actually occurs in the formation of many concepts.

Take the concept "*to see.*" It lies entirely in the sphere of the sensory forces; but *what* it is that is seen, *what* the stimulants are, it does not indicate; it presents a mere elementary *act of the soul*. Nor is the case different with the concepts "to hear, touch, taste, smell and feel." Under such circumstances we find the perceptions of the visible, audible, etc., brought before consciousness only on the subjective side, the side of the primitive forces. The stimuli are at best faintly indicated, and, as a rule, are completely excluded from conscious-

ness. Since seeing, hearing, etc., are the first acts of a child's soul, it is not to be wondered at that the concepts of the same arise very early, although at first they are somewhat obscure, being produced by perceptions as yet poor in vestiges. Moreover, seeing, hearing, etc., are acts which cannot be confounded so easily, and hence the psychical facts lying at the bottom of them cannot be well confounded either. Each primitive force always proclaims its specific character. In a similar manner all concepts of the subjective are produced, and they may gradually rise to a clearness as great as that possessed by perceptions of external objects, indeed, to greater clearness, for the spring and source of consciousness lies in the primitive forces rather than in external stimuli.

To instance one or two more examples: Take the concept "*to desire or repel*." It is not the stimuli, but the primitive forces directed to the stimuli, that desire and repel. This subjective community of quality coalesces when such concepts are formed, as soon as different desires and repulsions are reproduced together, and the objective side becomes unconscious. The same takes place in the formation of the concepts "*to feel* (feeling), *to judge* (judgment), *to infer* (inference), *to think* (thought), *to will* (will)," etc. On a still higher level stand those concepts of the subjective which we call the clearness, vivacity, tenacity, obscurity, etc., of the soul's acts; for the production of these concepts requires that the primitive forces therein contained should only partially come into consciousness as a single distinguishing characteristic.

Observe that there are actually in the soul vestiges which, to a certain extent, are again divested of their stimuli; for concepts representing the subjective are composed of such vestiges. Moreover, these concepts are formed precisely as those of external objects (15), and their gradation is exactly similar (16). For instance, so soon as the concepts "perception, concept, feeling," etc., are produced, the points common to them all may coalesce and form the higher concept, "mental modification." The only thing peculiar to these concepts is that they are harder to form than the others, because, at first, the objective presses too strongly forward, and because our mental processes

are not so permanent and fixed as are external objects affecting us. They, therefore, presuppose a careful attention to what passes within us, and what occurs there is of itself more or less conscious; they presuppose that we take the trouble *to bring simultaneously before consciousness what is allied*. These general conditions for the formation of all concepts cannot be rigidly fulfilled in the present case, and that is the main reason why they are so difficult. But if we once succeed in our attempt, future success will be assured and easier, and then concepts of the subjective arise as surely and certainly as those derived from external objects.

We know, from 17, the fact that (as well as the reason why) concepts are decidedly clearer notions than the perceptions which lie at the base of them, or than lower concepts. That which, *ipse facto*, involves consciousness (let us call such consciousness attributive or adjective) is strengthened and enlightened by the homogeneous concept added to it, exactly in proportion to the quantity of light possessed by that concept. Thus, for example, I have the concept "recollection." It will enable me clearly to recognize my particular acts of recollection (which, by their own consciousness, I should distinguish from each other, or from similar acts, imperfectly or not at all), the moment I excite that concept into consciousness along with those acts (which excitation, for the most part, occurs spontaneously in accordance with the law of mutual attraction of similars). It is thus that the judgments arise: "this mental process is a recollection," "this a feeling," "this a desire," "this an act of the will," etc. Although we do not enunciate these judgments, we make them, and generally with such rapidity that there is no time to express them. In such cases, then, we have what may be called substantive (independently produced) consciousness (*i. e.*, the concept) besides the adjectival consciousness (the concrete act). The latter kind is apprehended or apperceived by the former. It is, as it were, perceived through a magnifying glass. Hence it follows that it becomes an *object* as regards the concept apprehending it. The latter is like an internal eye apprehending this *psychical* ob-

ject; it is the percipient power of it, and hence we call such concepts *internal senses*.

We thus prove that

1. *The internal senses (powers percipient of the mental and spiritual) are nothing more than those concepts which relate to the qualities, forms and relationships of the psychical act, and by which we first properly apprehend and perceive the interior of our soul.*

2. *It cannot be said that we have only one internal sense. On the contrary, the senses are as numerous as the concepts we have acquired, in which the peculiarities of the psychical have been elaborated into any special form of consciousness. The old assumption that the internal sense is one and innate, is false.*

Hence, what we call internal perception, or inner sense, is the result of a special kind of consciousness formed in relation to our psychical acts, and out of them. If after this special consciousness has been formed, it remains unexcited because too much of the concrete is excited, then the activities of our soul proceed unperceived by us. This is especially the case when they are performed with great rapidity.

The above-mentioned concepts are called the consciousness of the acts of the soul, in order to distinguish them from the proper or adjectival consciousness implied *by*, or rather contained *in*, our concrete psychical acts; and inasmuch as these mental acts constitute our very *self*, we may properly call the consciousness of the same *self-consciousness*. Its acquisition, no doubt, causes some trouble at first, but that trouble is abundantly repaid. The concepts by which we apprehend our psychical actions lead to a kind of knowledge which extends far beyond the truth and certainty of knowledge acquired through the senses. The senses merely perceive external things as they *seem* to be, that is, as our senses are capable of being affected by them, and if we had other senses, we should apprehend those things as possessing different qualities than we now apprehend in them. What things are in *themselves*, no sense can reveal to us; for every sense stamps its own character on its stimuli, and it is natural that the products of external objects are, for the most part, totally different from their factors. (Compare 40.) In the case of inner perception, however,

what perceives (the concept) and what is perceived (the individual act or process) are completely alike so far as their subjective constituents go; it is *the same* psychical modification, but *multiplied*, which, in the form of a concept, sheds its concentrated consciousness upon the present single act. Notion and being are here absolutely coincident. The concrete act—the being—is not in any way altered or changed by the addition of its corresponding concept or notion. It receives nothing (except a greater amount of clearness of consciousness) but that which is already within it. Hence, in all psychical products, the factors producing them are preserved *unchanged*, for even the impresses of the external stimuli continue to exist in the concepts, judgments, acts of will, etc., in exactly the same manner in which they originally molded the primitive forces. Consequently, inner perception, or self-consciousness, furnishes us with a knowledge *adequate* to its objects, or which is *fully* and *absolutely* true—the highest knowledge to which man can attain. (Compare Beneke's work, "*Die neue Psychologie*," pp. 54 and 99.) (From the *Elements of Psychology*, p. 221 and following.)

105. ON THE EGO.

The treasures of a carefully developed soul are prodigious. The soul not only possesses innumerable single modifications, but the acts and processes which take place within it are also infinitely numerous. Take the case of a man who is thoroughly acquainted with three, or even more, civilized languages, and who is, besides, a mathematician, a natural philosopher, a botanist, etc. He must know many thousands of words, which words imply the knowledge of thousands of notions constituting the meaning of the terms. Yet there is not a sign of confusion in all this marvelous complexity, a complexity existing without any local separation, without any local limitations. What is it that mainly creates and preserves this order? *The law of the attraction of like to like.* Without this law there would be chaos. Now, of all that originates and takes place in the soul, this one

feature is common to all: *The moment it arises it belongs to this soul, whether it take its origin in the faculties of seeing, hearing, touch, taste, smell or feeling (vital senses); for all sensory faculties, together with the products springing from them, form one intimately connected whole or being. They are the soul.*

Consequently, the fact that they all belong to one and the same soul, or subject, will gradually shape itself into a special consciousness, *i. e.*, a concept will arise, having for its content this one peculiarity: *The belonging of all mental modifications and processes to one and the same soul.*

What is this concept called?

Before answering the question we must say a word or two more about what is called *self-perception*.

In perceiving and representing ourselves, *four* kinds of things may be concerned, which ought not to be confounded. We think either:

1. Of the whole man, consisting of soul and body, as when one says, I live, I dwell, at Leipzig; or, we think:

2. Exclusively of the soul; as when we say, I increase in knowledge, I am immortal; or, we think:

3. Mainly of acquired permanent qualities, by which we are distinguished both from others and from that which changes in ourselves, as when a man says, I am a musician, I am an astronomer; or, we mean:

4. Merely those activities of the soul which are, *for the moment, the strongest in consciousness*, as when we say, I am glad, I am angry.

In all these cases it is not a *concept* that is directly concerned, but a *perceptions*; for when self is expressed, as it is in the above examples, it is not as a something universal and general, but as a something particular and concrete. Now, it would sound odd if a man were always to use his own name when speaking of himself. Civilized speech requires the pronoun "I" in such cases, and not Mr. So and So. It is a substitute for the *name* when speaking of the speaker. It, therefore, marks a definite person, either completely or partially. Children at first always use their own name, although they have heard the pronoun "I" a thousand times from the

mouths of their parents. How is this fact to be explained? Why do they always say: Charlie wants his dinner, Mary wants to play, and not I want my dinner, I want to play? It cannot possibly have arisen from a defective vocabulary; it must have a deeper cause. In early childhood the *concept* "I" is obviously not present. Children's *perception* of self must be imperfect, for they do not yet know that they have a soul, and it is only the most obtrusive internal processes that are presented to their consciousness. Being as yet completely the slaves of sensation, the only clear notion they have of themselves is that of their bodies. Their inner selves are too unsteady as yet to become conscious, and that inner self exists, for the most part, in an obscure condition. In general, children regard themselves to-day as quite different from what they were yesterday, because to-day different groups of mental modifications are excited, and hence their emotions are different. It can hardly have struck them yet, that everything in them belongs to one subject, to one and the same person; but at length, toward the beginning of their third year, this unity begins to be presented clearly to consciousness, and then they cease to talk about Charlie, Mary, etc., and use the term "I." They have at length discovered in themselves the unity (not the identity) of that which perceives and of that which is perceived—that is to say, the connection of these two is one thing, and this fact they express by the concept "I," which results from their discovery. The concept "I" grows, therefore, out of many acts of self-perception. Perception of self must precede this concept, and the quicker the latter is produced, the quicker does the concept "I" come into existence.

Moreover (as is equally clear), this concept remains constantly the same as to its contents, while the perception of self necessarily changes as the soul unfolds. We must, therefore, distinguish carefully between self-perception, which consists of many concrete perceptions of ourselves, and the *ego* or I, which is a strictly *simple concept*, and, being one of the highest we possess, regularly attends the acts of self-perception.

Accordingly, the concept of the *ego*, or I, is characterized as *the union of all the perceptions which we make of ourselves*. They

all (those which perceive as well as those which are perceived) agree in this one particular: they all belong to one and the same being, constitute one and the same person—a unification which equally attaches to all other mental modifications, and which, therefore, is gradually raised into consciousness, so that the belonging of all conscious modifications and processes to one and the same soul is stamped and expressed in the concept “I.”

It now hardly requires explanation why this concept obtains such *strength* and such a *readiness to start into consciousness* (in these respects it transcends all other mental modifications). At every step in the development of the soul it is increased by one vestige, since whatever passes in that soul proclaims itself as belonging to it.

Moreover, it is clear that this particular concept never can attain to any sufficient completeness in the *souls of brutes*, because their primitive forces lack in retentive power, and consequently animals are not even capable of forming a clear perception of self. Experience shows that complete idiots are unable to develop this extremely derivative and complex kind of consciousness, nor does the word “I” ever supply the missing concept. It also shows how little the healthy human soul is destined to the sphere of animal propensities, since a child of two years old is able to abstract out of its as yet imperfect perceptions of self a concept which belongs to the highest sphere of mental development.

Notwithstanding the great strength and the great nearness to consciousness which this concept in the course of mental development gradually attains, it nevertheless remains unexcited on some occasions. For instance, when we are deeply absorbed in contemplating an object, and the exciting elements concentrate entirely upon those mental modifications which are the object of our thoughts, we are apt to forget ourselves entirely, to forget that it is *we* who are thinking and calculating. Likewise the consciousness of the *ego* is notably absent in some dreams, where lively modifications are excited into consciousness by the law of similars, without a full excitation of the concept of the *ego*, so that we then are represented as somebody else, or only in part as ourselves. The same

happens frequently in somnambulism, of which we shall have to speak more fully in a later part of this work. (From the *Elements of Psychology*, p. 228, etc.)

106. REASON AND RATIONALITY, OR CAPACITY FOR REASON.

The external world contains nothing but *objects* and their *activities*. These two produce effects upon us so soon as we are born, and continue to do so as long as we live. Now, if we had in our souls nothing but modifications exactly corresponding to the things and effects thus produced, there would be nothing to astonish us in the phenomena of our psychical life. But we find within ourselves modifications of which the external world offers only faint counterparts, and others to which the external world offers no counterpart whatever. To instance only a few: The external world (with the exception of man and brutes) has no perceptions, no concepts, no judgments, no inferences, no efforts like those of men, therefore no desires, no repugnancies, no will, no estimation of good and evil, no conscience, no morality, no religion. In short, the external world has none of those higher objects which rest upon man's transcendental ideas. That which the external world does not possess, it can never give. If it be objected that, at any rate, there are teachers capable of infusing all this into us, it may be answered that such a statement is worthless; for teachers, when all is said and done, can give us nothing but words (which differ in every language) and sense impressions like those produced by lifeless objects, and all these words and sense impressions are far from being the modifications which we possess, and, what is more, *consciously* possess. Are the words or other effects produced by a man, so soon as they have left him, *self-conscious* elements, by which he transmits consciousness to us? If so, a forest must have consciousness when it re-echoes to me my name, and the snail must forthwith know what I mean when I tell it to get out of the way. No! Self-consciousness lies only in the souls of men, and cannot travel out of them. The external world excites us, it is true, but excites us by elements in themselves spiritually

and mentally dead. It is impossible by these external elements to vivify the dead. That these elements create life, *mental* life in us, is a consequence solely of the primitive forces and laws innate in us, which primitive forces, however, at our birth, are widely different from the products afterward developed from them. How are these products brought into existence? The present treatise has striven to thoroughly and systematically answer this question, and, we hope, not without success. If any one, after mature consideration, does not find our explanations satisfactory, we must leave him to his own devices.

Suffice it to say that the primitive forces are originally *sentient* only; but by excitation and education they become *consciously perceptive, attentive, understanding, judging, desiderative, averse, willing, feeling*, etc. They thus attain to forms of development which are *purely their own work*, and rise above all that merely affects the senses or is material. They win an independence and freedom of the external world. The external world is compelled to submit to the dictates of the mind so far as it is possible for human power to control nature. Everything thus developed *normally* in us, we call collectively by the title *reason*; that which deviates from it we call *unreasonable* or *contrary to reason*. It is, however, the higher products of our souls only that lie far removed from the region of the senses, and that we dignify by the name of rational. Hence, reason is and consists of *the sum total of our highest FAULTLESSLY developed psychical modifications in all forms*—in the form of concepts, conation, feeling, remembrance, attention, fancy, æsthetic creations, moral and religious feelings and actions, etc.

Take the superstitious man, for example. He is justly stigmatized as “irrational,” because he denies the truth of the higher concepts of cause and effect rigidly deduced from carefully observed connections and reciprocal actions of things. In like manner he flies in the face of reason, who renders himself a slave to excess, especially to the baser pleasures. Those desires and aversions alone which *harmonize* with the *true* gradation of good and evil (in other words, with their real

value), deserve to be called *rational*. "Morally good" is another name for the same thing.

Now it is self-evident that reason, thus understood, cannot be a single, *innate* power. So long as our original, simple sensations have not been worked up into higher and more complex forms, have not been elaborated in accordance with the laws of the soul, so long must reason be totally absent. Even supposing such higher forms have been acquired in certain relations, a man must, nevertheless, be wanting in reason in all others where such have not yet been obtained. For instance, a person may be very rational in mathematics and destitute of reason in music, and he who has a good deal of reason in matters of chemistry does not, on that account, have it also in philosophy, etc.

Hence it logically follows, further, that reason is certainly not *equal* in all men. Reason must differ in men accordingly as a favorable education has produced the higher modifications in one with more perfection than it has in another. Compare, in this respect, an educated man, from any civilized nation, with an Esquimaux or Hottentot chief who is reckoned among his countrymen as a man of superior knowledge. The difference between the two in the comparison is certainly obvious.

This difference may be produced by two totally different causes. It may be that the *innate tenacity or energy* of the primitive forces is greater in the one than in the other, or it may be because the one lives under circumstances *more favorable to development* than the other. Of course, the spontaneous activity of the soul must in itself produce higher forms out of lower ones, and yet the influences exercised by good teaching, by a suitable form of polity, by trade and intercourse, etc., must greatly assist in producing these results. All civilized nations are proud of their educational institutions because they are the means of promoting the development of the mind. Education enables us to stand on the shoulders of past ages. The Esquimaux, etc., if destitute of sufficient retentive power in his primitive forces, would not, even in the best schools, attain to a high degree of rational development. For the

same reason we see scholars in one and the same class, and of the same age, attain to very different grades of mental development.

In considering this subject in its various aspects we arrive perpetually at the same solution, and that solution is, that it is the innate energy of the primitive forces upon which alone depends the development not merely of the higher and highest mental modifications (the reason), but it also determines the *degree* to which that development can be carried. In the soul, as elsewhere, nothing valuable can be made out of that which is weak. Since, however, all healthy human souls, as compared with the souls of brutes, are endowed with *greater energy*, we may call this quality of the primitive forces *potential reason*, or a *capacity* for reason. Hence is it that reason is *innate* so far as that energy exists. We must, therefore, carefully distinguish the developed reason—reason *proper*—from innate reason. The latter is only the germ—the ability to become rational. It is identical with what we in a former passage called the *mental* or *spiritual* part of man's soul, and may be called its *natural rationality*.

This property, however, of the primitive forces of man, is found mainly in the higher senses, in those of *sight*, *hearing* and *touch*, these being the chief sources of the human reason (8). If one or the other of these senses be wanting from birth, the absence of that sense necessarily makes a great difference in the development of the mind. It is a fact of experience, however, that persons born *blind* are not so backward, in point of intellectual development, as those who are born *deaf*. The reason is that the man born deaf cannot participate in the great advantages offered by verbal speech. He who can hear another speak is able to acquire the whole sum of mental treasures which thousands before and contemporaneously with him have gained. In like manner he is able—a matter of no less importance—to retain, with far greater perfection, groups and series of psychical modifications, by connecting them with words and sentences, than if the modifications were left to themselves, in which case they would soon fall asunder. If the latter happens, it becomes impossible to sublimate the

lower modifications into higher ones. Such, as a rule, is the case with those born deaf. The person born blind, moreover, can supply a good deal which the want of sight deprives him of, by reason of the sense of touch, as well as by other senses; for, although the peculiarity of what is colored is unknown, the real and objective part of things is not unknown. Those unfortunates who are born both blind and deaf can only by the sense of touch acquire some mental development, and that development, of course, must necessarily be very limited.

Rationality or reason, therefore, does not reside in a special power, as it were, in a corner of the human soul, from which it forces its way and gradually ennobles the remaining faculties. The very faculties we call senses are primitive forces capable of being molded by external impressions (5), and are at the same time spiritual and rational. There are in the human soul no primitive forces destitute of all rationality. Hence an infant's very first acts of sight, hearing, etc., are totally different from those of a brute, and (be it well observed) even such acts of sensation are very early manifested in children in a manner quite differently from that observed in the case of the lower animals. The mentality of these acts peeps through at a very early period.

Therefore, the mind and rationality of man is not a thing apart from his soul. It is the property of his primitive forces, leading to consciousness and to products unlike any evolved in a brute. These products, taken together, constitute the mind, in the narrow sense of that word, and hence the developed reason, or *reason proper*. (From *Elements of Psychology*, p. 232, etc.).

This subject, which is merely sketched in this paragraph, will be found thoroughly discussed in an essay by Dressler, "*Das Wesen und die Bildung der menschlichen Vernunft*," in Diesterweg's "*Pädagogischen Jahrbuche auf 1864*."

107. INSTINCT.

The consideration of the highest forms of intellectual and moral soul-development naturally leads to a consideration

of the other end of the sentient plane, where reason is entirely absent, and yet work of intelligence is done even more perfectly in some instances than the highest understanding could devise. For this intelligent work, done without instruction or practice, we use the word *instinct*. Instinct is derived from the Latin word *instinguere*, to instigate, to incite, meaning that there is an impulse of some kind which excites action for a certain purpose, of which purpose the individual, however, knows nothing. It is, according to Whately, "a blind tendency to some mode of action," or according to Sir Wm. Hamilton, "an agent which performs blindly and ignorantly a work of intelligence and knowledge." Do such statements tell us what that agent is, or from whence that "blind tendency" is derived? Even Charles Darwin avoids an answer by saying: "Every one understands what is meant when it is said that instinct impels the cuckoo to migrate and to lay her eggs in other birds' nests." (*Origin of Species*, 6th edit., p. 205.) The word instinct, then, is merely used as a convenient expression for a general idea of something which is remarkable, but cannot be further explained.

From the standpoint of psychological research we cannot acquiesce in mere word-definitions. We must try to find out the nature, the essence, of this mysterious "agent" and "blind tendency." It lies not in the way of Darwin's researches to hunt after psychical causes. He wanted to demonstrate the *physical* or rather *mechanical* causes of the changes and evolutions in the physical world. However, physical (material) agents are not the only agencies that move the world. We shall speak of this fact more explicitly in 110. At present we will confine ourselves to the explanation of a "blind tendency."

We have already shown in 89, by many examples, that there are *unconscious sensations* in man, as well as in animals. A sensation *must* be devoid of consciousness so long as it is deficient in a necessary number of vestiges, and will ever remain more or less so, if the primitive forces lack by nature a sufficient degree of energy (compare 9, 10); but this latter fact does not prevent the sensation from being set in motion by correspond-

ing external stimuli. This is seen clearly in the manifestations known as (so-called) reflex actions. An external stimulus causes sometimes a whole series of movements, all conformable to a certain purpose (89). This is a hint toward the direction in which we must search further for a solution of the question. The lowest senses (vital senses), which have their substratum in the sympathetic nervous system, develop consciousness in the lowest degree; but sensations of this nervous system may, nevertheless, at times attain to an intensity which gives them actual preponderance over higher mental modifications (72). In the case of animals, in which the cerebro-spinal system only by slow degrees in the scale of creation attains to a comparative preponderance over the sympathetic system, the latter system must necessarily exercise a still greater influence upon the life-action of the animal. In such as have no cerebro-spinal system this life-action must be determined entirely by the ganglionic system, and, naturally, in a self-unconscious way. If we add to this a greater sensitivity of these lower senses toward the influence of surrounding nature, the impressions from which are forthwith converted into action, we may say that we are coming nearer and nearer to the solution of the question: Whence is this "blind tendency" derived? We must, however, bear in mind, that the lowest, the faintest degree of psychical development, is nevertheless ruled by the same psychical laws in both man and animal. External stimuli acting upon sentient forces will always produce sensations and conations, and in all shades of consciousness, from the yet unconscious to the clearest mental modifications, according to the greater or less degree of perfection with which the corresponding organism is endowed. Reason, rationality, is attainable only by man through a long series of experiences, while the "blind tendency" is the ruling agent of animal life. *"The animal is, indeed, only an organ of external nature."*

This is the more so the lower the animal is in the scale of creation, where the ganglionic system is not only the predominating, but the only recipient and reactive means between its organism and the external world. Rising higher and higher in the animal scale, we find that a kind of conscious reflection

intermingles with this "blind tendency," by which meagre conscious reflection, however, the animal is oftener misled in its undertakings than when alone led by its "blind tendency" or instinct.

"It is instinct," says Dr. Joh. Mich. Leupoldt, in an excellent article in the *Archiv für den thierischen Magnetismus* (1820, v. Eschenmayer, Kieser, and Nees v. Esenbeck, Vol., VII, 2d part, p. 72), "when some kind of shell-muscle, *e. g.*, the *mytilus edal.*, fastens itself by an artificial web to other objects; when the spider prepares a net as its artful hunting-ground; when the bee builds her cells, and the ants construct their dwellings at the right time, in the most suitable place and in the most expedient manner; when the mole, the musk-rat, the beaver, and other animals, fit out their habitations in a manner which suggests ripe calculation as to the choice of location, construction, building material and the warding off of danger. It is instinct when the weather-fish, the spider, the tree-frog, and some birds, give notice by some unmistakable signs of a coming change in the weather, often a day before it occurs, or forbode in summer the character of the coming winter, or *vice versa*, or sense, weeks before its coming, an impending earthquake or volcanic eruption. It is instinct when the sick animal in the wilderness finds and chooses the curative remedy; when the migratory bird chooses the right time to leave his home for another region, and again returns at the proper time.

"All these performances are the same everywhere and at all times. The hive-bee makes her cells in the same way to-day as she did thousands of years ago. The young insect, scarcely escaped from the shell, senses changes of the weather. Born in summer, the animal provides for the coming winter, which it never experienced before. All this proves that what we ascribe to instinct cannot possibly be traced back to a point where they were produced by previous experiences, nor to a conscious application of ends and means for certain actions. The nature of the more perfect classes of animals become the more prone to mistakes in their undertakings, the more they acquire, by training or otherwise, a kind of capability to compare and to choose; while the lower animals, devoid of such psychic development, take an immediate part in the rhythmical processes of external nature which stand in the most intimate relation to their existence. This necessitates on the side of the animal creation a specific receptive and a specific reactive capacity toward the stimuli of the external world; and that such capacities exist is proved by the fact that

light affects the eyes, sound the ears; that one animal seeks one kind of food and another another kind, and under different conditions of its organic states prefers this or that kind. There is no reaction without a reception of stimuli, and again there stand, so long as life runs on normally, stimulus and reaction, both in quantity and in quality, in direct proportion to each other; the latter, however, only in such animal organizations which are incapable of any free self-determination; and only of such can we speak where we want to find out the nature of instinct.

"We must, however, consider yet the greater and lesser receptivity (sensitivity) and its greater or lesser extensity. Herein lies the main point: First, we remark that in the sphere of organic beings to whom instinct is attributed, the cosmic influences are the most potent of all. What we understand commonly by cosmic influences are products of the reciprocal action between earth, moon and sun; and again, many facts show that influences directly from the sun correspond especially to the cerebral influences, from the moon to the spinal, and terrestrial influences to the abdominal nervous system. As now in those animals in which instinct only is found the abdominal nervous system is well developed (and in many even that not fully), while the spinal and cerebral are yet in an imperfect state or entirely wanting, it is clear that the greatest power over them must be exercised by terrestrial influences. These influences relate, in the main, to the habitation, self-sustenance in general, and nutrition of the individual in particular, and the propagation of the species.

"Now, as regards the greater or less receptivity, it is undoubtedly true that the higher a being is individualized, the less does its whole life take immediate part in cosmic processes; the more it is connected with the same only by special organs, the more predominant is its relation only to higher influences. Man has at best only in a large cicatrix, or otherwise depotentized part of his body, a weather-prophet. Woman has naturally more intuitive power, and her menstrual periods show her subjection to the immediate control of nature. The clearer the self-consciousness, the stronger the self-determination in a healthy man, the more independent is his life against all physical influences; while, on the contrary, a decrease in this oneness of his being in consciousness makes him more susceptible to these cosmic influences.

"The same is true as regards the descending scale of animal organization. The reason is here still more evident. For the lower the individualization of a being, the greater is the homo-

geneity of its body (even as regards its material) with the earth as a whole; the more similar the beings, the more intimate is their reciprocal relation, *i. e.*, the more delicate is the receptivity of the one for the influences of the other. As more perfect organisms have special organs (sense-organs) for varied influences necessary to their life, and as they bring the perceptions of these influences in relation to the totality of their lives, so do, in lower organizations, the different influences concentrate in one common or radical sense, and act there with immediate determination upon that organization; *i. e.*, they produce there a necessary reaction, or coerce it to certain actions.

"As, furthermore, every process in living nature runs its course steadily and uninterruptedly, beginning slowly and faintly until it reaches its height, and then passes off again as slowly, it is clear that an organization with a delicate receptivity for such changes will perceive this change already in its first stages, while another organization, less receptive, will not notice it until it is at its height. What does this mean? It means that some organizations sense early changes in nature, which changes, to others under the same conditions, still lie in the *future*. For instance, a weak and delicate person may feel the approach of a thunderstorm early in the morning, when the sky is still clear and serene, while a stronger frame would not feel anything of its coming until it is nearly at hand, late in the afternoon or evening.

"What, in the case cited, is a seeming anticipation of time, is also applicable to space. The finer ear hears not only a sound in near proximity clearer and more perfectly than a duller ear, but perceives a sound from a distance, which for the latter does not exist at all. There is, then, for a finer receptive organization, a sensing of actual processes at a distance, in time as well as in space, which a duller receptivity perceives only at the moment of their greatest influence, and *in loco* where they take place. If, now, cosmic, and especially terrestrial, influences are sensed by organic beings to whom we cannot properly attribute consciousness, and who are used by external nature as mere organs, it follows that the relations of space and time measure themselves on and through the same, and that their actions may appear to man *divinatory*."

To this exposition of the nature of instinct by Dr. Leupoldt, it will also be well to add what has been said later, from a purely physiological basis, in explanation of instinct. The best views I know of are advanced by Prof. Ewald Hering and

Mr. Samuel Butler. The latter has translated Hering's lecture on this subject, and inserted it in his book on "Unconscious Memory," p. 97 (London, 1880).

Professor Hering starts from the proposition "that we owe to memory almost all that we either have or are; that our ideas and conceptions are its work, and that our every perception, thought and movement is derived from this source. Memory collects the countless phenomena of our existence into a single whole, and as our bodies would be scattered into the dust of their component atoms if they were not held together by the attraction of matter, so our consciousness would be broken up into as many fragments as we had lived seconds but for the binding and unifying force of memory" (p. 115). Further: "We have ample evidence of the fact that characteristics of an organism may descend to offspring which the organism did not inherit, but which it acquired owing to the special circumstances under which it lived; and that, in consequence, every organism imparts to the germ that issues from it a small heritage of acquisition which it has added during its own lifetime to the gross inheritance of its race" (p. 118).

"When an action, through long habit or continual practice, has become so much a second nature to an organization that its effects will penetrate, though ever so faintly, into the germ that lies within it; and when this last comes to find itself in a new sphere, to extend itself, and to develop into a new creature (the individual parts of which are still always the creature itself and flesh of its flesh, so that what is reproduced is the same being as that in company with which the germ once lived, and of which it was once actually a part)—all this is as wonderful as when a gray-haired man remembers the events of his own childhood; but it is not more so" (p. 123).

"But if the substance of the germ can reproduce characteristics acquired by the parent during its single life, how much more will it be able to reproduce those that were congenital to the parent, and which have happened through countless generations to the organized matter of which the germ of to-day is a fragment? We cannot wonder that action already taken on innumerable past occasions by organized matter, is more deeply impressed upon the recollection of the germ to which it gives rise than action taken once only during a single lifetime. We must bear in mind that every organized being now in existence represents the last link of an inconceivably long series of organisms, which come down in a direct

line of descent, and of which each has inherited a part of the acquired characteristics of its predecessor" (p. 124).

"An organized being, therefore, stands before us as a product of the unconscious memory of organized matter, which, ever increasing and ever dividing itself, ever assimilating new matter and returning it in changed shape to the inorganic world, ever receiving some new thing into its memory, and transmitting its acquisitions by way of reproduction, grows continually richer and richer the longer it lives" (p. 125).

"The memory of organized substance displays itself in the case of a chicken in the most surprising fashion. The gentle stimulus of light proceeding from the grain that effects the retina of the chicken, gives occasion for the reproduction of a many-linked chain of sensations, perceptions and emotions, which were never yet brought together in the case of the individual before us. We are accustomed to regard these surprising performances of animals as manifestations of what we call *instinct*, and the mysticism of natural philosophy has ever shown a predilection for this theme; but if we regard instinct as the outcome of the memory or reproductive power of organized substance, and if we ascribe a memory to the race, as we already ascribe it to the individual, then instinct becomes at once intelligible, and the physiologist at the same time finds a point of contact which will bring it into connection with the great series of facts indicated above as phenomena of the reproductive faculty. Here, then, we have a physical explanation which has not, indeed, been given yet, but the time for which appears to be rapidly approaching.

"When, in accordance with its instinct, the caterpillar becomes a chrysalis, or the bird builds its nest, or the bee its cell, these creatures act consciously, and not as blind machines. They know how to vary their proceedings within certain limits in conformity with altered circumstances, and they are thus liable to make mistakes. They feel pleasure when their work advances, and pain if it is hindered; they learn by the experience thus acquired, and build on a second occasion better than on the first; but that even in the outset they hit so readily upon the most judicious way of achieving their purpose, and that their movements adapt themselves so admirably and automatically to the end they have in view—surely this is owing to the inherited acquisitions of the memory of their nerve-substance, which requires but a touch and it will fall at once to the most appropriate kind of activity, thinking always, and directly, of whatever it is that may be wanted" (p. 128).

"He who marvels at the skill with which the spider weaves

her web should bear in mind that she did not learn her art all of a sudden, but that innumerable generations of spiders acquired it toilsomely and step by step—this being about all that, as a general rule, they did acquire. Man took to bows and arrows if his nets failed him—the spider starved. Thus we see the body and—what most concerns us—the whole nervous system of the new-born animal constructed beforehand, and, as it were, ready attuned for intercourse with the outside world in which it is about to play its part, by means of its tendency to respond to external stimuli in the same manner as it has often heretofore responded in the persons of its ancestors" (p. 129).

Mr. Samuel Butler advances the same ideas some years later, and although entirely independently of Prof. Hering, yet so remarkably conforming to the same, that he says in his book on "Unconscious Memory" p. 82, where he gives an introduction to Prof. Hering's lecture: "Concerning the identity of the main idea put forward in 'Life and Habit' [another most interesting work of the same author—Ed.] with that of Prof. Hering's lecture, there can hardly, I think, be two opinions." I need, therefore, not quote specially from "Life and Habit."

Comparing these two views on the nature of instinct, we find that Dr. Leupoldt lays the main stress on the intimate relation of the creature with, and its dependence upon, surrounding nature, of which it is, so to say, a mere organ, and therefore fitted out with corresponding receptivities for her most delicate influences. This describes, no doubt, a most important agent in the phenomena of instinct, but does not explain the readiness with which instinctive action can be so perfectly performed without any previous experience, as is shown, for instance, in the case of the chicken and other animals, when they exhibit at once actions, and complicated actions at that, as if they had been accustomed to perform them for a long time.

Now here Hering and Butler step in and say: "Indeed, they have been accustomed to all these actions, and for countless generations, when they, as parts and portions of their ancestors, were practicing these arts which astonish us now. For in the germ from which they evolved lay all these arts as un-

conscious memory, and this memory not only shapes and builds their bodies with fitting organs, but which also knows how to use these organs as of old for specific actions, whenever external stimuli excite the same into corresponding vibrations." We cannot but admit that this view would solve the occult nature of instinct, if a "*specific kind of material constitution*," as Hering says, were an adequate explanation of *psychic* action and development, whether conscious or unconscious. The simile which Professor Hering uses in order to make his assumption of a "*specific kind of material constitution*" plausible, is neither convincing nor satisfactory, for it fails to bridge over the gap that exists between material and psychic development. He says: "The curves and surfaces which the mathematician conceives, or finds conceivable, are more varied and infinite than the forms of animal life. Let us suppose an infinitely small segment to be taken from every possible curve; each one of these will appear as like every other as one germ is to another, yet the whole of every curve lies dormant, as it were, in each of them, and if the mathematician chooses to develop it, it will take the path indicated by the elements of each segment" (p. 121).

This is true as far as it relates to curves; but each segment, if developed, will produce only a *curve* and nothing else, nothing that is absolutely different and *sui generis* from the segment, in a sense as psychic modifications (conscious or unconscious) differ from nerve-cells and external stimuli. We have spoken of this difference already in the physiological part of this work, and shall speak of it again in 110. A specific kind of *material* constitution might explain a specific kind of *material* development; but it falls far short of the mark when applied to *psychical* development, simply because no amount of "an infinitely small change of position on the part of a point, or in the relation of the parts of a segment of a curve to one another," nor, as we might add, any combination or shifting of material atoms or molecules, will ever produce anything like a sensation or perception, etc. The two are not commensurable. Psychic development requires different kinds of forces, in which the development into conscious modifications

is just as inherent as the development into space-occupying formations is inherent in all material forces. Where both kinds of forces are united we find vital manifestations, a shaping, molding and handling of the material forces to purposive ends. In the psychic forces lies the potentiality for purposive action. Without them life is an enigma. But the psychic forces, although sensed and believed in for ages, have, through the influence of modern materialism, fallen entirely into disrepute. As these psychic forces had been called, in contradistinction to the material forces, "*immaterial*," what further testimony was required for their utter rejection? They could not be anything, as there existed, so it was taught, nothing besides matter. Rather than believe the determining cause of the ulterior development of the germ an immaterial something—that is, according to the materialistic view, a nothing—they preferred "a specific kind of material constitution." And what is that? Well, a specific kind of material constitution. And now everybody thinks he knows all about it. It is just a specific kind of material constitution. That's all.

But do we fare any better with the assumption of "psychic forces?" What are *they*? To commence with their most pronounced manifestations in man, they are the primitive forces of sight, hearing, touch, smell, taste and feeling in all the variations of the vital senses (72-77). In the higher animals they are the same (except in quality of retentive power, which makes man a spiritual being); in the lower to the lowest animals the psychical forces manifest themselves in various kinds of sensibility. In plants we call these forces irritability, while, if we wish to trace them still further, we may recognize them in the inorganic world as chemical affinities. Are all these forces nothings, because they cannot be weighed and bottled? Are they nothing, because they have been called immaterial for the sake of contradistinction to forces that can be weighed and grasped? What would all the material forces be without these imponderable forces, in spite of their specific kind of constitution? Or, rather, what does this specific kind of material constitution mean, if it is not psychic forces united to material forces. This is another bugbear for the material-

istic mind. How can an immaterial something be combined with matter and affect it? Because the "immaterial something" is a real substantial something, as real as any piece of substantial matter with which you can break the thickest skull, and it combines in all possible variations with all kinds of material forces, and molds them into the different varieties of things that exist, for it alone possesses the potentiality for purposive action. But where does it come from, and where is it? Where does matter come from, and where is it? May not the one be as eternal and omnipresent as the other? *Instinctive action* may be traced through all nature. The air consists of just four-fifths of nitrogen, one-fifth of oxygen, and a trace of carbon dioxide, and this proportion is constant all over the earth. Water is invariably a chemical combination of two volumes of hydrogen and one volume of oxygen. All chemical affinities have constant relations. We may well declare that the reason of these peculiarities is "a specific kind of material constitution," because we do not know any better what concerns the real nature of matter or material forces. But dare we say that we thereby explain the ultimate reason of these combinations and relations? Might not these material forces just as well be combined with still finer forces, forces that do not lie in the range of our senses, and yet be the moving cause of all the changes in the material world? Or, if this is more palatable, might not material forces themselves ultimately consist of such "immaterial" forces and be a mere expression of the latter? Might not, therefore, instinct commence in the inorganic world, and chemical affinity and gravitation really be instinctive actions of the so-called material forces?

When we further consider the instinctive actions in all forms of life—the vegetable as well as the animal—our faith in "a specific kind of material constitution" is still more shaken. Everywhere we meet nothing but the 65 or 70 elementary bodies combined, not only in the inorganic, but also in the organic world, into countless varieties of more or less stable forms. This number of elements might explain well enough the make-up of the numerous inorganic bodies, by various combinations, in the same way as the millions of words of the

different languages are the result of the various combinations of a limited number of sounds and letters. However, in the organic world we meet a difficulty which cannot be explained by mere mechanical atomic juxtapositions and motions of the different elementary bodies; namely, growth, irritability and sensibility; in short, *life phenomena*. With the first manifestation of vital action, action other than that arising from known elementary forces (bodies), a new explanation is demanded to account for life phenomena. (Compare 110.) Psychological forces although unperceivable to the senses, are no less realities than the material forces. What are psychological forces? As stated above, they are those imponderable (immaterial) forces that in the vegetable kingdom constitute *growth*; that is, a purposive selection of material forces and their molding, changing and combining to specific living forms, with *irritability* approaching in many species to sensibility.

Still more glaringly these "immaterial" forces manifest themselves in the animal kingdom, where they gradually appear from the lower vital forces up to sight as differentiated sensibilities. No amount of shifting and combining material atoms will ever (not even in billions of years) produce anything like sensibility and consequent consciousness, without the action of those "immaterial" forces which alone possess the potentiality for conscious development. We have called these immaterial forces primitive forces of the soul. Here we arrive at the point where we must divest our minds of the ambiguity in which the terms "*memory*" and "*consciousness*" have constantly been used.

Prof. Hering says: "Memory collects the countless phenomena of our existence into a single whole; and as our bodies would be scattered into the dust of their component atoms if they were not held together by the attraction of matter, so our consciousness would be broken up into as many fragments as we had lived seconds, but for the binding and unifying force of memory." Here memory is objectified as a binding and unifying force, which it is not. What we call memory is not a particular power which does this or that. It is simply the continuance of primitive forces as modified by

external or internal stimuli in an unconscious or latent state (102). The memory does not "collect the countless phenomena of our existence into a single whole;" but the countless phenomena of our existence continue to exist as modified primitive forces—as vestiges—and make up the unconscious, latent treasure of our soul or our memory. Our consciousness would not "be broken up into as many fragments as we had lived seconds but for the binding and unifying force of memory." No, not at all; but we would never come to any kind of consciousness without the endurance of the primitive forces as modified by corresponding stimuli. The term "memory" has become so thoroughly amalgamated with the term "consciousness," that in common parlance "remembering," "having a memory of," "being conscious of," have become synonymous terms. However, consciousness and memory are two entirely different things. While "*memory*," as above stated, merely signifies the continuance of the primitive forces as modified by corresponding stimuli (external or internal) in an unconscious, latent state, "*consciousness*," on the other hand, has four distinctly different meanings: 1. The consciousness which is the opposite of consciousness not yet existing (97). 2. The excitation of unconscious mental modifications (98). 3. The consciousness of psychical processes, which depends on special concepts, so-called internal senses, introspection, self-consciousness (104). 4. The consciousness of the *ego* (105).

We know not only this, but also that consciousness in its first sense, as opposite to consciousness not yet existing, develops in various degrees or intensities from sight down to the vital senses in man, and from the highest gifted to the lowest animal; and that all the modifications of the primitive forces, no matter in what degree of consciousness they have developed, appear throughout either in the form of perception (sensation), conation or feeling, and are alike governed by the same laws of psychic activity, as has been explained in the three first parts of this work, to which of necessity I can here merely refer.

Thus animals form perceptions, conations and feelings as we do, and the combinations and excitations of these psychic

modifications are governed by the same laws as ours; but the difference between the psychic modifications of animals and man lies in the degree of consciousness in its first sense, because the primitive forces of animals, even of their best developed senses, lack the retentive power which is so characteristic of man's higher senses. Animals undoubtedly do acquire intellectual forms of psychic modifications—analoguees to our concepts and inferring capabilities; they undoubtedly show conative forms in all the varieties of their spheres; they undoubtedly manifest many of the emotions and feelings similar to those of men; and yet they remain animals and never attain to human capacity. The difference does not lie in the kind of sensibilities, but in the quality of their primitive forces to endure distinctly in the specifically modified state which external or internal stimuli have wrought in them, or as Beneke has it, in the "*Kräftigkeit der Urvermögen.*"

Now, then, we will be better able to review what Professor Hering says: "When, in accordance with its instinct, the caterpillar becomes a chrysalis, or the bird builds its nest, or the bee its cell, these creatures act consciously and not as blind machines. They know how to vary their proceedings within certain limits in conformity with altered circumstances, and they are thus liable to make mistakes. They feel pleasure when their work advances, and pain if it is hindered. They learn by experience thus acquired, and build on a second occasion better than on the first." All this is true in a certain sense. These creatures do act "consciously and not as blind machines." It all depends on what we understand by "acting consciously." It is not a consciousness of their psychic activity (104), but merely an excitation of specifically modified vestiges, which are capable of being set into motion by corresponding stimuli, and which must have been acquired by, and transferred from, generation to generation. The entire process of their action, therefore, rolls off *unconsciously* or unbeknown to themselves, yet strictly according to psychical laws. Consciousness we can ascribe to these instinctive actions of animals only in its first and second meaning (97 and 98), and this, too, only in a degree of intensity and clearness as the primitive

psychic forces of animals are capable of. If we wanted to make comparisons, we might liken these conscious activities to the sensations and actions of a new-born child when it commences to breathe, to suck, to cry, etc. (see 89, on reflex action), or to our own involuntary actions, which likewise to a great extent ensue unbeknown to ourselves, or even to the unconscious rolling off of whole chains of mental modifications during the highest and most complicated mental activities, which we call the "tact," "dexterity," "productive action" of our soul (100).

After these psychological considerations we necessarily arrive at the conclusion that Prof. Hering's physiological explanation of instinct is not adequate to its pretension. We want more than a mere "specific kind of material constitution." Instinct is so obviously of a psychical nature, that a specific kind of material constitution no more affords an explanation than a specific kind of material constitution of the brain, and the whole nervous system will ever explain mental activities in all their forms of development. Material constitution and psychic development are clearly two things not commensurable.

Instinct, as a psychic activity, pre-supposes primitive *psychic* forces just as necessarily as the make-up of material forms pre-supposes *material* forces or so-called material elements. The primitive psychic forces manifest themselves as sensibilities, differentiating gradually, as the being rises in the scale of organisms, to organic senses. The lowest grades of sensibilities develop but low grades of consciousness in its first sense (97), and none at all in the sense of introspection (104), so that the excitation of its modifications rolls off unbeknown to the individual. This excitation, however, follows the same laws as the most intensely conscious mental modifications, and produces, therefore, the same purposive effect as do mental modifications of the highest grade of consciousness. The animal acts, then, as if guided by deliberation to a purpose without being really conscious of it. But as the animal has not had the opportunity of gathering any experience in this line, we must admit with Professor Hering, "that as the animal even

in the outset of its career hits so readily upon the most judicious way of achieving its purpose, it is owing to the inherited acquisitions of its memory" (though not of its nerve substance, but of its inherited psychical nature, *i. e.*, its sensibilities), "which require but a touch and they will fall at once to the most appropriate kind of activity." That this must be so is proven by the fact that each animal during its development shapes and molds its own body for specific purposes, which purpose lies in its *psychical* nature as an inherited prototype from its ancestors. As this psychic being, by new conditions, may either become more perfect or deteriorate, one can easily understand why some animals, especially under domestication, acquire in the course of generations certain traits which they had not before, or lose traits which they owned in former generations; or, as Darwin has it: "Under domestication instincts have been acquired and natural instincts have been lost." (Origin of Species, p. 211.) We come thus to the conclusion: Both reason and instinct have their root in the *psychical* part of organized nature; reason in the energy or retentive power of the higher senses; instinct in the great sensitivity of the vital senses to terrestrial influences. Reason elevates the individual over nature, makes him to a certain degree her master. Instinct coerces the otherwise helpless individual to self-saving actions, makes it a readily responding organ of external nature. The cause of both is their psychical nature, a nature widely different from so-called matter. It is the shaping, organizing, ruling principle in nature, which escapes all attempts to bring it before the sensorial organs, and without which even the ingenious explanation of Darwin of the origin of species lacks a real foundation. His causes of variability, his principles of natural selection, etc., clamor constantly for a deeper agency to account for their existence and action than mere external conditions, and Darwin himself says: "The nature of the organism seems to be much more important as a cause of variation than the nature of conditions" (Origin of Species, p. 6). What is that nature?

108. VARIED COMBINATIONS OF THE QUALITIES OF THE PRIMITIVE FORCES.—TEMPERAMENTS.

We are already acquainted with the innate qualities of the primitive forces. (See 5, 7, 8, and 14.) If we consider their natural relations in general, we find that the *retentive power or energy* in all healthy souls is greater in the higher, less in the lower senses (8). *Sensitiveness* is sometimes greater in one system of primitive forces, sometimes in another (5); and *quickness* seems to be in the highest degree peculiar to hearing (14), that is, speaking generally. In comparing individual men we find these qualities very variously combined. Take the faculties of sight, for instance. We may find them in one man

a. In a *high* degree retentive, sensitive, and vivid as well; or, while *very* retentive, they may be but *moderately* sensitive and vivid; or, they may join a *high* degree of retentive power with only *small* sensitiveness and vividness. Moreover, they may be

b. Only *moderately* retentive and in a *high* degree sensitive and vivid; or, but *poorly* retentive and highly sensitive and lively; or,

c. They may have a *low* degree of tenacity combined with little sensitiveness and vividness.

In short, these combinations are innumerable, since every degree of retentive power, from the highest to the lowest, may be supposed to be combined, and may really be found in combination with every degree of sensitiveness and liveliness.

Equally different may be the combinations as respects hearing, touching, tasting, smelling and the vital senses. When one reflects that in the above examples we have specified only *three* different degrees (high, moderate and low), whereas, in fact, an endless number of degrees and gradations are to be found, it is easy to infer how infinitely various and infinitely numerous the combinations of these qualities of our primitive forces may be. In reality we do not find two men who are exactly alike in these respects.

We have several times pointed out the influence exercised by these combinations on the evolution of the human soul.

Thus we find, generally, that a higher degree of *retentive power* produces greater strength and clearness in the psychical modifications (7, 10, 54, 55, 65); more *sensitiveness* gives them greater richness, complexity and delicacy (5, 10, 51); greater *vivacity* causes quicker apprehension, elaboration and consciousness of the impressions (14, 21). Consequently, where a man is endowed with these three qualities in a high degree, it naturally follows that very favorable relations are offered for the development of his soul. Possibly we might call such a texture of soul "a *choleric* temperament."

It often happens that one quality so predominates over the rest as to prove anything but an advantage. We find men, for instance, who combine a low degree of sensitiveness and vividness with a high degree of energy. It is evident that they will be wanting in those products which result from an equally high sensitiveness and vividness. Such a man may, indeed, develop such modifications as are produced in him in great clearness and strength, yet they can never attain to great variety, to great multiplicity and subtility, nor can he apprehend them quickly, or elaborate them, or bring them rapidly into consciousness; for great tenacity joined to defective vivacity cause these psychical acts to be performed with too much slowness. This kind of disposition is commonly designated by the term "*phlegma*."

A totally different effect is produced when the vivacity of man's primitive forces greatly predominates over their energy and sensitiveness. In such a case we find impressions quickly apprehended, elaborated and rendered conscious; but the retention of them after they have ceased to operate, a firm and deeply-rooted hold on them, great clearness and strength, as well as the abundance, multiplicity and delicacy of mental modifications, is absent. We find such men quickly take up any subject. They throw themselves into anything heartily, but they are not steadfast in their efforts, not deep in their feelings, and but superficial as to their knowledge. We may, perhaps, venture to place them in the class of "*sanguine*."

It is different again when *sensitiveness* greatly prevails over the other qualities of our primitive forces. In such a case,

since the soul, from its want of energy, is unable to attain to strength and clearness, overexcitation (compare 36) must easily take place, and being likewise defective in vivacity, this cannot soon pass away, but remains longer in consciousness, and thus a foundation is laid for defective mental modifications of all kinds, such as fear, irritableness, selfishness, ill-temper, etc. Possibly such a disposition may be termed the "*melancholic*."

The mode, therefore, in which these several qualities are combined at birth, exercises a most important influence on our mental development, so important, that as these relations vary the whole psychical condition must be of a different stamp. Hence it is that no two men, even if their external conditions are completely similar, can possibly exhibit exactly the same results in their development. Although directly after the birth of a child these different modes of combination are scarcely perceptible, still their constant and progressive influence confirms the old truth that "great effects spring from little causes." *The whole constitution of the soul, arising from the innate differences between the several qualities of the primitive forces and their combinations, is called a man's "temperament."*

If we are now convinced that the various degrees and modes in which these qualities may be combined are infinitely numerous, we may declare that the various "temperaments" are equally numerous and complex, and that the old-fashioned attempt to divide all men in this respect into *four classes* (the choleric, sanguinic, melancholic and phlegmatic) cannot possibly lead to any valuable results. Moreover, instead of deducing these temperaments from the constitution of the soul itself, the attempt was made, and erroneously made, to explain them by peculiar qualities of the blood and other fluids. It is true enough that the bodily constitution as a whole, the different primitive forces of which have in different men different degrees of energy, vivacity and susceptibility, exercises no contemptible influence on temperament; but the vital senses, which make the bodily constitution, belong likewise to the psychical nature of man, and thus it is the psychical nature, after all, that decides the temperament.

It must be allowed that this division into four classes, when nothing more than a rough outline is required, occasionally enables us to hit off the characteristics of individual men excellently well; but it is useless for scientific purposes. For scientific purposes special, not general, peculiarities are all-important, whereas in a thousand persons you can scarcely find two who exactly resemble each other in point of temperament.

The natural and *complete* similarity of all men, so often asserted to exist, is, accordingly, a palpable fiction. Even at their birth there are no two human beings alike, whether in body or in mind. How can they, then, afterward become alike, when innate dissimilarities are constantly multiplied in the accumulative process of psychical modifications during the course of development? In this varied combination of the different qualities of the innate forces in all sentient beings lies the *causa vera* of natural variation and selection. (From *The Elements of Psychology*, p. 237, etc.)

109. FORCE AND MATTER.

“*Force is that which is spent in the origination of motion, and what is thus expended is equivalent to its product, i. e., to the amount of motion produced.*” (J. R. Mayer, *Die Mechanik der Wärme*, p. 265.)

It is often the case that in speaking of force the product (motion) is mistaken for force. In this way we speak of light, heat, electricity, magnetism, chemical action, attraction, gravitation, etc., as “physical forces.” This is obviously wrong. Light is no force, but a certain undulatory motion of the ether. Whence is this motion derived? From *combustion* for one thing. What is combustion? “A clashing of minute particles of carbon, hydrogen and oxygen as they rush together.” *These* are the things *spent* in the origination of motion, and *they*, therefore, are in reality the *forces* which, in this instance, produce the undulatory motion of the ether known as the phenomenon of *light*. Associated with these luminous vibrations of the ether are heat-rays, which are *non-visual*. Even as

early as 1800 it was discovered by Sir Wm. Herschel that the temperature corresponding to each color of the solar spectrum augmented from violet to red, and actually increased to some distance in the dark space beyond it. Thus it was proved that the sun emitted, beside the luminous rays, also heat-rays, which are not visible to the eye.

On the other extreme of the color spectrum, beyond the violet, there are other kinds of invisible rays, which, however, instead of producing heat, cause chemical decomposition of certain compound substances, as is shown in the decomposition of carbonic acid in the leaves of plants, and in the phenomena of photography. These latter are called *actinic* or *chemical rays*.

Now the difference between these various rays consists mainly in the difference between the *periods* in which the waves of the ether vibrate. The number of shocks upon the retina per second necessary to the production of the impression of *red* is four hundred and fifty-one millions of millions, while the number of shocks corresponding to the impression of *violet* is seven hundred and eighty-nine millions of millions. This gives for the length of a wave of the extreme red the 36,918th part of one inch, and for a wave of the extreme violet the 64,630th and one part of an inch. In this range of ether-vibrations are included all the effects the visual capacity of the human eye can appreciate. Vibrations of ether below or above the rate noted cease to produce any luminous impression. If *below* this rate, the vibrations are felt as *heat*, if *above*, they manifest themselves in *chemical changes*.

That these three apparently widely different phenomena—light, heat and chemical changes—are in their nature different modes of vibration of one and the same ether, is proved by the following facts: When the longer waves of heat are intensified, they gradually grow shorter, until finally they reach the periods of the waves of the spectrum. This fact has been demonstrated by Dr. Draper while heating platinum. As the heat augments, the platinum becomes luminous, and the different colors from red to white heat appear successively in the natural order of the spectrum. *Thus heat is converted*

into light. When a *black* ribbon is passed through the successive colors of the spectrum, it quenches them all, that is, it absorbs all the constituents of the solar light. When a *red* ribbon is passed through the spectrum, it appears still brighter in the red light, while in the green or blue of the spectrum it is black as jet. A *green* ribbon also shines brighter in the green of the spectrum, while in the red it appears perfectly black. All these phenomena take place because objects we call black, red or green are so constituted that the black is conformable to all the luminous waves of the ether, which waves black assimilates or absorbs, while the red is antagonistic to the red, and the green to the green, which it consequently does not assimilate, but rejects.

Now, what does all this mean? Are the waves of white light, when falling upon a black object, or the green and blue, when falling upon a red object, or the red, when falling upon a green object, really annihilated? By no means. Examining closely, we find that during the described process these objects have undergone a change in *temperature*. *Their heat has been augmented to a degree exactly equivalent to the light extinguished.* The periods of the luminous ether have simply been lowered, made slower, so as to escape the visual range. In short, *light has been converted into heat.*

When the ultra-violet waves—which exceed in rapidity those of the violet, and which, therefore, lie out of the range of vision—are made to impinge upon the molecules of certain substances (on those of sulphate of quinine, for instance), their rate of vibration is at once brought down through the intermediation of the sulphate of quinine to a slower period, and the heretofore *invisible* rays are rendered *visible*. In other words, *actinic rays have been converted into light.* (Compare John Tyndall's Lectures on Light.)

All this shows clearly that light, heat and chemical change (chemism) are, in their very nature, different vibratory motions of one and the same medium, the all-pervading ether; that these different rates of vibrations may be converted into one another, and that the *correlation of these so-called forces* consists in their common nature, all being vibratory motions of one

and the same ether, though of different periods, periods peculiar to each of them.

Now the question arises: What originates these vibrations, or what are the causes which produce these effects?

It has already been stated that in the case of light, for one thing, these phenomena are brought about by combustion. As, however, combustion consists of the clashing together of minute particles of carbon, hydrogen and oxygen, it follows that the origination of these phenomena lies in the nature of *carbon, hydrogen and oxygen*, and that *these elements*, therefore, must be accredited with the title of "*forces*."

When heat-waves are to be converted into light, the only requisite is to intensify the heat, so that the amplitude of the waves not only becomes greater, but their length shorter, which raises them to the range of the spectrum. In order to effect this, a greater amount of carbon, hydrogen and oxygen, or a stronger voltaic current must be expended, and consequently it is again the particles of *carbon, hydrogen and oxygen*, and in the case of the battery, the particles of *copper, zinc and acid*, which convert longer into shorter ether-waves, and change heat into light; and these elements, therefore, are the *causes*, and should be considered as the "*forces*," while heat and light are the *effects*—the peculiar vibrations of ether produced by them.

When we see that a black ribbon quenches all the colors of the spectrum, a red one the green and blue, and a green one the red, and we find afterward their temperature raised to a degree exactly equivalent to the light extinguished, we conclude that in these instances light has been converted into heat, or that the shorter luminous waves have been changed into the longer heat-waves. But how has this change been brought about? As we cannot say the ether-waves have done it of their own accord (since they elsewhere continue in their accustomed rhythm if not interfered with), we must necessarily place the *cause* of this change in the peculiar nature of the *particles* which constitute the black, red or green ribbon, and must consider the particles, therefore, as the *forces* which produce this effect, *i. e.*, convert light into heat.

The same must be said of the sulphate of quinine and many substances which reduce the invisible actinic rays to a slower period of vibration, and make them visible or convert them into light-waves. The *cause* of this change in the period of ether vibrations is the *quinine* and *other substances* (a long list of which has been examined by Stokes). As *these substances* are spent in the change of the ether motion, their particles are the *forces* which produce this effect—the conversion of *actinic* into *light-waves*.

Since, furthermore, heat may be transformed into electricity, and electricity into magnetism; since chemical changes may produce electricity, or heat, or light or magnetism; since gravitation may be transformed to any of these forms, or to all of them in succession—we may safely infer that these so-called *physical forces* are in reality but *modes of motion*, caused and originated by what has thus far been designated by the term “*matter*.” Matter, then, instead of being subordinate to these so-called physical forces (which have been thought to play and mold it), is, on the contrary, the very cause. Matter is spent in the origination of these modes of motion, and must, therefore, rightly be considered as the “*force*” which produces all physical forces.

We must, then (in opposition to the common view, which speaks of force and matter as two different things, of which the first uses the latter as the material out of which it molds all existing things), declare that such a distinction is not tenable; that, on the contrary, *every particle of matter is force*, and that the so-called physical forces are but modes of motion produced by these forces. We must, in speaking of matter, discard all notions of *dead* and *inactive*, and fashion our mind to conceive every particle of matter as a force (force constitutes its nature, its essence) which may change its form, but which can never be destroyed.

Accordingly, a plant cannot be said to *possess* forces; it is force and nothing else, a *system of diverse forces* which appears to our senses as something long, broad, thick, heavy, colored, sweet, bitter, etc., etc.; in short, appears as that which we call body, material, matter or substance.

If force and matter were two distinct things, were they actually opposed to each other, it would follow that we must be able to separate (*e. g.*, in plants) their forces from the dead material. But cut a body into its smallest particles, divide it mechanically or chemically as far as it goes, and you will never light upon force without matter. Force and matter will always be found united; they are never separable except in thought, just because they are, in fact, one thing, *i. e.*, *force*.

Men and brutes require nourishment in order to exist. The food taken and digested is changed into blood, and carried all over the body in a suitable form for assimilation by parts which have suffered loss and decay. Thus the organism is renewed daily and obtains new forces by the nutriment which it takes in and prepares for ready assimilation. But still it remains matter *and* force all the same, which again, by the activity of the organism, is converted into motion.

Forces are never at rest. Even where they exist to the human senses in complete repose, as in the state of crystallization, or in the compact form of a rock or a metal, it is the attraction of their own particles which keeps them in this static condition, and these particles (molecules) even here "are held to be in motion—possibly like the heavenly bodies around their central sun, and, for ought we know, at relatively as great distances from each other. A nebula in the heavens appears to the naked eye as a compact mass having a definite form like a common solid; but the revelations of the telescope show that the bodies which compose it are millions of miles from each other." (Boston Journal of Chemistry, Apr., 1875, p. 110.)

Forces are never at rest. Those which constitute our atmosphere and soil combine and differentiate in the vegetable organism to higher forms, such as vegetable albumen, legumine, amyline, fat, sugar, vegetable acids, cellulose, etc., which again, in the economy of animal organization, rise to still higher differentiations. But scarcely have they fulfilled their mission, when by a retrograde metamorphosis they join again the sources whence they were originally derived—the atmosphere in the form of gases, and the soil in the form of fluids and solids. This is the eternal revolution of forces by which

nothing is lost, and yet an incalculable amount of work is done in every second of existence!

110. SOUL AND BODY.

Now the question arises: Are the known sixty-five elementary bodies, and all their ever-varying combinations, which constitute the material world, *all* the forces that exist? If they were, the greatest part, and by far the most important part of all, the phenomena which the living world presents, would be entirely incomprehensible. Let us take, as an instance, the phenomenon of *diffusion of fluids* through different cells. It has been supposed that the facts obtained by numerous physical experiments in regard to the laws of diffusion might be applied to the living organism. It would apparently seem that that which could be observed to take place in an artificial cell-apparatus, would also naturally take place in living tissues. However, this conclusion proved to be a grand mistake, as the researches of Sachs, Gerlach and Joh. Ranke have sufficiently shown. Sachs, in his *Handbuch der Experimental-Physiologie der Pflanzen*, p. 157 (Leipzig, 1865), states expressly: "That if a cell is killed, even without any visible injury, the phenomena of diffusion change at once, and strikingly." Gerlach states ("Wissenschaftliche Mittheilungen der Erlanger physikal-medicin. Gesellschaft, 1858, *Ueber die Einwirkung von Farbstoff auf lebende Gewebe*"), "that the assimilation of new material by living tissues is a vital process and totally different from the inorganic process of hydro-diffusion," and this important fact has been confirmed by Joh. Ranke in regard to muscles and nerves. (Joh. Ranke, *Die Lebensbedingungen der Nerven*, Leipzig, 1868, p. 73, etc.) His experiments prove that living and dead tissues differ not only in their capacity to imbibe, when brought in contact with a weak solution of kitchen salt, or distilled water, etc., but also widely in their capacity of admitting salts. Hence he came to the conclusion that the appropriation of inorganic material by the living muscle and nerve-tissue does not ensue according to the laws of inorganic diffusion. (Compare *Grundlinien der Pathologie des Stoffwechsels*, by Dr. F. W. Beneke, Berlin, 1874.)

What does all this mean? Diffusion is motion. Motion cannot take place without a corresponding something that is spent in its origination. If, now, diffusion (motion of fluids through tissues) is different in living and dead tissues, it follows that there must be a something in the living that is not in the dead. As *force* originates motion, it follows further that the living tissue contains forces, which forces the dead tissue does not contain. What are these forces? Thus far no one has succeeded in exhibiting them to the senses. Do they, therefore, not exist? Did thallium not exist before Mr. Crookes discovered it?

We have here a simple fact, an undeniable *effect*, that diffusion is materially changed in the self-same tissue, when that tissue is living and when it is dead. This effect—motion, diffusion—cannot be altered without a corresponding change in the forces which produce it. Now, as these forces, so far as they are the known constituent parts of the tissue, remain, to all appearance, the same dead or alive, it follows that what produces the *change* must be of a nature which lies out of the range of appearance. It must be either of a quality which escapes detection by the *usual* mechanical or chemical means, or it must be of a finer quality for the detection of which there exist no means of any kind. Hence, we are driven to the assumption of the existence of forces which lie out of the range of mechanical or chemical analysis.

Diffusion is an instance drawn from the lowest plane of vegetable and animal life. Let us also consider an instance from a higher plane—*sensibility*.

Sensibility must not be confounded with irritability. Sensibility is the basis of all *conscious* development, and is closely associated with the nervous structure of the animal kingdom. (Compare 70, 71.) In the course of progressive differentiation the nervous structure grows in complexity. At the same time sensibility unfolds to greater conscious activity or intelligence, and hence it was assumed that intelligence was merely a function of the nervous tissue.

We have shown the fallacy of this conclusion in the physiological part of this work. A closer analysis brings us to quite

different conclusions. We see that nervous tissue retains sensibility only so long as it lives. At the moment of its death sensibility ceases, and chemism assumes full sway over its constituent parts. As such a change, in fact any change, in action (motion) cannot take place without a corresponding change in the forces which produce it (just as little as heat can be converted into light, or light into heat, or chemical action into light, without corresponding changes in the intermediating forces) (compare 109), the question arises: What is it that causes this change of sensibility into mere chemism? And, on the other hand, what is it that converts chemical action in the *living* organism into sensibility? We stand obviously before a gap which cannot be bridged over by mechanical or chemical contrivances.

Dr. Fletcher, in his *Rudiments of Physiology*, tries to overcome this difficulty by declaring "that the truly living matter was not in simply a somewhat different chemical state from that in which it exists after death, but that the elements are in a state of combination not to be called chemical at all in the ordinary sense, but one which is utterly *sui generis*; that, in fact, no albumen, fibrine, myosine, protogine or fats exist at all in the living matter; but that the sum of the elements of all these is united into a compound, for which we have no chemical name; that of the complex made, in which the atoms are combined, we can form no idea, and it is only in the moment of death that those chemical compounds with which we are familiar take their origin. In fact, that death means simply the resolution of this complex combination into the simpler compounds (albumen, fibrine, and the rest), we find on analysis." (*The Protoplasmic Theory of Life*, by John Drysdale, M.D., London, 1874, p. 5.)

Dr. Fletcher considers, then, *living* matter as entirely different from *dead* matter, and that "chemical analysis must be considered as useful in showing us *not* what such matter *was* composed of while it possessed vitality, but what it *is* composed of *afterward*." (*Ibidem*.)

We may accept this hypothesis to a certain extent. We are likewise of the opinion that nervous tissue retains sensi-

bility only so long as it lives, and that with the cessation of life chemical affinity takes its hold. We must also differ, however, from his views. We cannot understand why a power, "which may be called vital affinity," should be superseded "by another power called chemical affinity," without there having occurred, at the same time, a change in the special forces which produce the difference in the action of "*living* and *dead*" matter. That "vitality or irritability is a mere property of organized or living matter, as inflammability is characteristic of phosphorus, or elasticity of ivory," would, in fact, say no more than that the living matter is alive. Fletcher's hypothesis, therefore, does not bridge over the gap completely. Although he admits the difference between "living and dead" matter, he makes that difference a mere property of living tissue, its vital affinity.

But this affinity is exactly the thing which has to be explained. His assertion, "that the instant the power called chemical affinity succeeds another power which may be called vital affinity, and by which it had been previously superseded, common chemical compounds are all that is left of the organized mass," does not in the least tell us how this change of vital into chemical affinity is brought about. Any change in action (motion), as previously stated, presupposes always a corresponding change in the forces which produce it; and if, after that change, "common chemical compounds are all that is left of the organized mass in which the elements had been associated," it follows that previous to that change, "while it possessed vitality, such matter was composed of something of which it is not afterward." This admission is satisfactory, but it has no great weight; for, at the same time, Dr. Fletcher also asserts: "Nor is this power called 'vital affinity' any essence or force added to the living matter, for irritability or vitality is a property of organized or living matter," etc. This power called vital affinity is, indeed, no essence or force added to the living matter. It is the effect, the action, the motion of that matter thus composed. If, now, as Dr. Fletcher correctly asserts, chemical analysis shows us not what such matter *was* composed of while it possessed vitality, but what it

is composed of afterward," we are compelled to assume that the living nervous tissue consists of still other forces than those which make up its material body, and which lie entirely out of the reach of any and all mechanical and chemical means of detection; for without corresponding forces a change in action (motion) is as incomprehensible as it would be illogical to admit.

All life phenomena force upon us this conviction, and it is only "when preconceived ideas tyrannize over the understanding" that the facts which teach this simple truth, and which are as common as the falling apple, are overlooked or treated with "scientific" ignorance. All life phenomena would be utterly incomprehensible without the assumption of the existence of higher forces. In the first and faintest motion that life begets lies the unsurmountable boundary of "a science" which assumes nothing but forces which can be traced and determined by crucible and scales. It is an arbitrary fencing in of a narrow road for human thought, a limitation which the ever-expanding mind—itsself the outcropping of higher forces—will never tolerate.

When we find that at a certain stage of evolution the known (so-called) material forces are absolutely insufficient for the explanation of phenomena which are as absolutely real and objective as any in the organic world, we must necessarily conclude that there are still other forces at work, although they do not lie in the range of our senses and their auxiliaries. It is a hypothesis as correct and as necessary as that of gravitation, or the theory of atoms. And as these forces produce effects as real as any of the material forces, they must in turn be themselves as real as any of the forces which appear to our senses. From their effects we learn their nature, and in this they differ as much as "material" forces differ among themselves. We observe a constant gradation from lower to higher ones, until in man—the microcosm—all seem to be united, from the lowest earthy to the highest psychical forces. But still, all constituent parts of man are *forces*. There are no such two things as force and matter. What we call *matter* is force capable of affecting the senses, and if it is customary to call

all that possesses this property "*material*," there is no cogent reason why forces, the nature of which lies out of the range of sensual perception, should not be called "*immaterial*," without detracting by this designation, in the least, anything of their reality and substantiality.

The term merely implies that, in contradistinction to the first class, the latter are of a nature which is not capable of affecting the senses, or rather which our senses in their ordinary development are not capable of perceiving. We know so very little yet about the nature of *matter*, except that our nose appears sometimes longer than our arms, when in the dark we run against an open door and strike it with that precious organ, which means that the common idea of matter is but the crudest conception of its impenetrability by another object. We might, perhaps, from another standpoint, call matter with the same right "*immaterial*," and mind, the only matter that exists. But what would we gain by it? Some prefer the designation "*transcendental*" or "*supersensuous*," that is, transcending the senses. Even that is admissible, if we understand by it not something that is nothing, but real, actual forces, which differ from the so-called "*material*" forces merely in that the supersensuous forces lie out of the range of sensuous perception; and that is really the same idea we want to express by the term *immaterial* forces. These explanations are indeed only necessary for those who are not capable of understanding anything but what they can grasp, or are contentedly convinced that what lies out of the range of their grip does not exist at all—*is not*.

It is scarcely necessary to again detail the psychical forces of man at this time. We have largely treated of them in the course of this work under the name of *primitive forces*. The psychical forces in their union constitute the *soul*, while all the material forces in their union constitute the *body*. *Man*, then, so long as he lives upon this earth, is a system of interblending material and immaterial forces, and not a juggling together of two diametrically opposite things—spirit and body; the first imaginary, divested of all substantiality (regarded by some church-creeds as an undefined something and yet nothing,

and by materialists as a mere function of the brain), and the latter imaginary, degraded to a mere heap of dirt, or idolized as the all of all. Man is a system of interblending material and immaterial forces which we will try to examine still further.

The ultimate points to which physiological and microscopic anatomical researches have reached, and will ever attain to, are the *bioplasts*—microscopical bodies too minute to be weighed, and which appear perfectly structureless, colorless, and transparent and semifluid. The smallest of them are spherical, and the largest assume the spherical form when free to move in a fluid or semifluid medium. There is not one portion of a living, growing tissue the five hundredth part of an inch in extent, in which bioplasts cannot be demonstrated. They are separated from one another at every period of life, in every part of the body, by a distance little more than the one thousandth part of an inch. Bioplasts are prior to the cells, the latter being products of the former, or material formed. Indeed all formed material grows out of bioplasts and constitutes the body of the living thing. (92, Beale's *Protoplasm*.)

Now let us suppose we could, by chemical agencies, dissolve all the formed material of the body without destroying its bioplasts—as we can dissolve by hydrochloric acid the calcic elements of any bony structure without destroying its organic constituents—we should then have a body left of such an attenuated form, that it would appear as a transparent object, although in its outlines, height, width, depth and internal arrangement corresponding exactly to the original body, because the bioplasts are not further apart from one another than the one thousandth part of an inch in any part of the living body. But still it would represent only *material* elements; namely, that portion of the body out of which originally all the formed constituents are evolved.

All bioplasts appear alike. It is impossible to distinguish the bioplasts which are to evolve the oak from those which are the germ of a vertebrate animal; nor can any difference be discovered between the bioplasts of the lowest, simplest, epithelial scale of man's organism, and those from which the nerve-cells of his brain are to be evolved. Neither would the

most careful microscopical observation, nor the most skilful chemical analysis enable us to distinguish the bioplasts obtained from the body of an ape from those taken from a man, a dog, or a fish. Yet we know that the life-history of these bioplasts is very different. Two forms of living matter (bioplasts) may be indistinguishable by observation or experiment, and yet they may be as widely removed from one another as are the poles. The remarkable differences, however, are not of a kind to be expressed in any terms known to physics or chemistry. The differences are of the *vital* kind; and although not recognizable by the balance or the microscope, their existence must be admitted, unless all the subsequent structural differences resulting from changes in the bioplasts can be otherwise adequately accounted for. (Compare Beale's *Bioplasm*, p. 17, and *Protoplasm*, pp. 284 and 286.)

Dr. Beale comes to the same results at which we have arrived; namely, that the living tissue consists of still other forces than those which make up its material body, and which lie entirely out of the reach of any and all mechanical and chemical means of detection; for without corresponding forces a change in the action (motion) is as incomprehensible as it would be illogical to admit.

Between the single protoplasts, wherever found, no kind of distinction can be made by any means, and yet their products are vastly different. Out of the one kind grow bones, out of another muscles, out of another fluids, out of another nerves, out of another brain, etc. The protoplasts, then, must contain forces specific in their kind, forces unknown to physics or chemistry, but nevertheless as *real* as the protoplasts themselves which embody them.

Here, then, we arrive at the point where *material* forces interblend with *immaterial* forces, with forces which by means of the protoplasts project their own essence, being and meaning into the material world, and thus give rise to a material expression of their own existence. They must, then, constitute in themselves a complex of forces—which must be a prototype of their material expression, just as the complex of protoplasts corresponds precisely in all its parts to the body from which

the formed material we might suppose to have been removed. To say the same thing in other words, the immaterial forces impart to the protoplasts their own nature, and thus work out through them the different kinds of formed material of which the material body consists. They are the builders of the body. Those, for instance, which control the bioplasts out of which a particular bone, or muscle, or fluid, or nerve, or part of brain, etc., is growing, must be the precise prototype of these several formations, and, paradoxical as it may sound, the various and manifold constituents of the material body must have their several exact prototypes in these immaterial forces which govern the bioplasts, by means of which all living bodies derive their formed material.

This implies that the body is but the material expression of its immaterial forces, which are the prototype of the entire bodily conformation. If we could see this prototype with our natural eyes or their auxiliaries, we would behold an exact counterpart of the material body in all its details and workings; it would be the immaterial body of the material thing.

Applied to man, it is all the same. By means of the protoplasm the entire human body is gradually evolved, as the structureless, transparent, semifluid, microscopic particles are transformed into definite shapes, into the special constituents of the body, all accurately coadjusted to one another and precisely adapted to the various functions of this wonderful machine. We see in this process all mechanical and chemical means used to advantage, but always under the regulation of a higher law by an unknown *vital* power.

The existence of this vital power (*Lebenskraft*) has frequently been denied by modern science and as often reaffirmed. What is it? As a *single power* it surely has no existence, just as little as the "understanding," the "reasoning power," the "will-power," etc., have any existence as single powers of the mind, unless taken in an abstract sense. (Compare the corresponding chapters of this work.) Hence the denial of "a vital power." There is not *a* vital power, but there are as many powers as there are immaterial forces acting in the billions of bioplasts, by means of which they incarnate themselves in the material world.

These immaterial forces build up the entire body, govern and regulate the nervous and digestive apparatus, the respiratory and circulatory organs, the bones, muscles and skin—in short, all the organs and functions of the body; and we have called them in 1 the *vital senses*, inasmuch as they also perceive and announce the regularity or irregularity with which the *functiones vitales* of the bodily organism are going on.

Another class of immaterial forces are those which we have detailed through the entire work as the primitive forces of our senses in connection with their organs. Still another class, very closely connected with the latter, are the immaterial forces which permeate the minute bioplasts known under the name “granules,” and are “directly concerned in mental action.” “The number of these bioplasts and nerve fibres is altogether beyond calculation. A portion of gray matter upon the surface of a convolution not larger than the head of a very small pin, will contain portions of many thousands of nerve fibres, the distal ramifications of which may be in very distant and different parts of the body.” “In these highest bioplasts the ‘vital power’ (the immaterial forces) determines movements which, by reacting upon the previously formed mechanism, may give rise to the most complex phenomena. In this mental apparatus the ‘will’ is the ‘power’ which determines the movements of the matter of bioplasts taking part in the phenomena of the mind. This is the highest *vital* action with which we are acquainted, but clearly to be included in the same category as the *vital* actions which determine the active movement of the matter in the simplest forms of bioplasm, as that of an amœba, or a white blood-corpuscle, or other bioplast. The movement of this highest form of bioplasm reacts upon a wonderfully elaborate apparatus, parts of which are in close relationship with the mental bioplasts. Changes excited in the apparatus are the immediate consequence of the vital movements. These last only are truly mental, while the expression of thought is but a result of the influence of the *mental vital action* [the action of the immaterial forces—Author] upon the mechanism concerned in expression, without which thought could not be rendered evident to another person. A great dis-

inction must, indeed, be drawn between the *thought* and the expression of the thought." (Beale's *Bioplasm*, p. 208.)

Thus we are again forced to the conclusion that back of the protoplasts exists a complete organized system of immaterial forces, which is the exact prototype of the material human body. We may call it an immaterial body, if that expression is rightly understood; or, according to Paul, a spiritual body. *It is the human soul*—that being of which most men have but a shadowy idea, because they have never been accustomed to self-observation. The soul consists of that organized system of immaterial forces by which it projects itself, on the one hand, into the material world. The soul consists, therefore, of an immaterial nervous, respiratory, circulatory, generative, muscular, bony and cutaneous system; has eyes, ears, nose, mouth and all the organs in every particular as expressed materially in the human body. On the other hand, by its higher immaterial forces, the higher senses, it develops into all those conscious modifications of which we have been treating in this work as cognitions, conations and feelings, and all their wonderful combinations.

This is the soul of man; not a nonentity, or a mere property of material forces, but the highest complex of organized immaterial forces, with capabilities higher than any other being known on earth. It is *the real we ourselves*, that self-conscious being, made capable, by its own incarnation, of living, thriving and acting in this material world.

The development of the primitive forces into the different conscious modifications (cognitions, conations and feelings) we call *mind*; and mind, according to Hamilton, is that which perceives, thinks, feels, wills and desires.

The *spirit* of man is the developed soul in its higher and lower senses, with an immaterial body of its own, its immaterial vital forces or vital senses.

The *body* is the material projection of the soul by means of the bioplasts from which all the formed material is derived.

How intimate this connection and relation between soul and body (that is, between the immaterial or psychical and the material or corporeal forces) is, can be further shown by the fact that they both are developed according to the same laws.

First, then, the psychical forces require for their evolution external stimuli. The psychical forces tend toward the external stimuli and are specifically modified by them. As specific modifications they endure in the form of vestiges, which distinctly differ from each other according to the elements (stimuli) from which they arise.

The case is exactly similar with our body. The structureless and colorless bioplasts (corporeal forces) tend to move toward the pabulum which they are about to take up and transform. In this way *formed* material results, which may be solid, fluid or gaseous, soft or hard, colored or colorless; and this relation is definite, so that from the same kind of living matter under similar conditions the same formed substances result.

Secondly. In the soul mobile elements (primitive forces and stimuli, so long as they have not yet united in fixed forms) flow from one mental modification to another, and accumulate on them and excite them. By this process quiescent (unconscious) modifications are roused into consciousness, painful modifications are driven away by pleasurable ones, and conversely, etc.

In the body we find exactly similar phenomena. Its fluid and mobile elements diffuse on all sides and are assimilated by the protoplasm. New material is formed, and old material is carried off. In this way existing healthy parts of the body are strengthened and sickly and disorganized parts are restored to a healthy condition, and conversely, etc. The so-called "*vis medicatrix naturæ*" obviously consists in this transference of mobile elements.

Thirdly. In the soul, like attracts like and coalesces into one whole.

This law prevails in the body as well. The fresh material is converted by the protoplasm into its own kind, and out of it again grows the various and specifically formed material. Accordingly, the original formation of the body, such as occurs in the mother's womb, is, as it were, the prototype and original that will be copied all our life long. Fresh hair and nails are always like the old. Lost tissue (skin, bone) is

reproduced in such a way that it, at least in the main, resembles the old. Even deformities, provided they originated with the body, continue themselves, *e. g.*, six fingers instead of five, a crooked spine, etc. Later growth and development does not transform them into something opposite to what they were first, and so on.

Fourthly. In the soul originate constantly fresh primitive forces, which process we shall consider more fully in the next chapter.

After what has been stated, it needs no detailed exposition to show that the body does the same. Nourishment is assimilated by the protoplasm and changed into matter of its own kind, that is, into fresh corporeal forces analogous to those already existing.

Thus, as the same laws govern the development of soul and body, there must surely exist a close relationship between psychical and corporeal forces. Although we have taken great pains to prove that "matter is force," and that "soul is force," and thereby have apparently favored the monistic theory, there is still left a wide difference between "soul-force" and "matter-force." Let us state the question fairly and squarely: *What is the fundamental distinction between psychical and corporeal forces, if there be any?*

The soul is constantly acted upon by external stimuli, and by this action the innate capacity of the primitive soul-forces of *becoming conscious* is developed into *actual consciousness*, which development endures even when, by the removal of the stimulant, it turns again from the *excited* to the *unexcited* condition, or to a vestige (97, 98). The body likewise assimilates nutritive elements from the external world; but its forces *never become conscious* by so doing.

All the primitive soul-forces developed by external elements and thus carried on toward perfection, follow their respective affinities and coalesce in a whole, the effect of which is that *more clearly conscious* modifications are produced in proportion as the vestiges from which they result are more numerous; but, however complex the resulting whole may be, however varied may be the association into groups and series, vestiges

never produce anything *extended in space*. The soul never swells or enlarges the head, however much it may have enlarged its acquisitions by study. The corporeal forces, also, developed by nutritive elements and thus carried on toward perfection, follow their respective affinities and fuse into a whole, the effect of which is that the formed material thus produced causes gradually the development of the various organs, and *the consequent growth of the entire body in all three dimensions* until it reaches a certain size; but, however complex and extended in space that body may be, it never develops *anything like consciousness*. Does it really not? Are not toothache, stomachache, hunger, thirst, and all the numerous aches *bodily feelings*? No, they are not. The body or its corporeal forces act merely in these instances upon the vital senses, the lowest psychical forces we possess, which perceive this action, just as light or sound act upon sight and hearing. The body never feels. The body makes *us* feel if anything is the matter with it; *i. e.*, the corporeal forces never develop consciousness, just as little as any other material force; but they act precisely and quite unmistakably upon their corresponding psychical forces as other external stimuli do. What we call *bodily feelings* or *sensations* are the impressions made by the body upon our vital senses, which are of a *psychical* nature; and therefore, even here, the distinction between psychical and corporeal forces remains sharply defined. By the law of the attraction of similars the soul-forces acquire *consciousness*, but always remain *spaceless*; whereas corporeal forces, according to the same law, gain in local extension and fixity, but never attain to *consciousness*.

111. GENERATION OF FRESH PRIMITIVE FORCES.

Directly we apprehend or perceive anything, the primitive forces are acted upon by external stimuli, and are correspondingly modified by them (4). Whoever has been in an exhibition of works of art or industry, in a gallery of pictures, or a museum of natural history, etc., and spent one or two hours in carefully examining the objects there, without feeling con-

siderable fatigue and relaxation in his visual forces? The same effect is produced on the auditory forces at a concert, if we listen to the music with close attention for several hours. The like is the case with the primitive forces of taste and smell, when they are stimulated for a long time; and he who has spent the day in chopping wood will not deny that his muscular forces flag considerably in the evening. In like manner we feel tired, even though the senses be unemployed, when we think of anything intently for a long period, or keep our mental modifications awake, and, as it were, in agitation, by cares and anxieties, etc.

From these illustrations it is clear *that the available and unoccupied primitive forces decrease in proportion either as they are acted upon by corresponding external stimuli or are spent as mobile elements.* After a sound sleep the expended forces seem to be replaced again. Indeed, by the rest alone we indulge in after exertion we feel refreshed, and even sometimes by changing one kind of activity for another. A social conversation after a hard day's work enlivens us afresh. These facts prove that not all the primitive forces throughout the soul have been spent, but only in those systems which have especially been occupied by work.

The restoration of the consumed forces takes place mainly during sleep, if not exclusively during that time of rest. Sleep consists of the predominant assimilating activity of the corporeal forces, a condition periodically necessitated whenever the primitive forces, mental or corporeal, have become exhausted by the performance of a certain amount of work (103). The generation of corporeal forces Dr. Beale describes as follows: "In the process of nutrition pabulum passes into living bioplasm, and is then converted into this substance." "The formation of bioplasm from the pabulum is an essentially vital act, and one which occurs in every form of nutritive process. The changes which occur during this process, however, are very difficult to investigate, if, indeed, they be not beyond the province of investigation altogether." "It is interesting, however, to inquire by what means the soluble pabulum is caused to pass into the bioplasm. No form of attraction or affinity

with which we are acquainted will account for the passage of pabulum toward and into living matter. The question is one upon which I have ventured to speculate. The tendency every mass of bioplasm exhibits to divide into smaller portions, each part appearing to move away from other portions, suggests the idea of there being some power of centrifugal movement in operation. The moving away of particles *from* a centre would necessarily create a tendency of the fluid around to move toward the centre. I think, therefore, that the nutrient pabulum is, as it were, drawn in by the centripetal currents, excited by the centrifugal movements of the particles of the living bioplasm." (Beale's *Protoplasm*, pp. 266 and 277.)

"The bioplasm alone possesses power of growth and of producing matter like itself out of materials differing from it materially in composition, properties and powers.

"The pabulum does not shade by imperceptible gradations into the living matter, but the passage from one state into the other is sudden and abrupt, although there may be much living matter mixed with little lifeless matter, or *vice versa*." (Beale's *Protoplasm*, p. 185).

Viewing these quotations we see that bioplasm generates itself by an unknown vital act, an act by which it assimilates pabulum of a nature materially different from its own, and converts it suddenly and abruptly into matter like itself. Inexplicable as is this conversion of pabulum into bioplasm or corporeal forces—as inexplicable as all processes in regard to life—we still see, at least, the material out of which these living forces (bioplasm) are prepared. This is not so easily shown in regard to the generation of psychical forces. And yet a restoration of the same is not only an absolute necessity, but a fact we can observe daily.

This problem has never been thought of before Beneke, and even since his researches have been published, years ago, it has not been made a special study by psychologists, who never penetrated to an understanding of the nature of the primitive forces of the soul, just as little as the physiologists knew anything of bioplasm before Beale, although the name bioplasm was used to signify quite a number of different substances. (Compare Beale's *Protoplasm*, p. 88, etc.)

Let us now, with the plummet of Beneke, try to sound this subject, in order to find what can be elicited concerning a process that is performed in the hidden workshop of nature, by logical reasoning upon facts that lie before us.

Consider the following: In classifying a number of minerals I apply my sight-forces. After some time I grow so tired I cannot make headway. Next morning all goes on very well again. Another example: I think for a long time upon a knotty point, but cannot succeed in making the matter clear to my mind. After a sound sleep the new exertions bestowed upon it bring me much nearer a solution, and finally I master the subject. We go on a pleasure trip *per pedes apostolorum*. We feel tired after the first day's outing; but if our first exertions were not too great, and our feet not blistered, we get on better the next and the following days.

It seems, thus, that *in the soul, as well as in the body, the greatest number of primitive forces are formed exactly where the greatest number has been expended.*

It is important to bear this first conclusion in mind. It may lead us to one of the sources (and materials) whence the new primitive forces are derived. The primitive forces are consumed in proportion, either as they are acted upon by corresponding external stimuli, or are spent as mobile elements. The first of these uses—the primitive forces being acted upon by external stimuli—for our present consideration is the most important.

What are external stimuli? In 78 we have defined the various stimuli which excite corresponding sensory organs as agencies, the essential nature of which consists of *motion*, of motion of the ether, of the air, of solids, of fluids and of molecules. We may generalize this by saying: External stimuli are all those terrestrial and sidereal influences capable of affecting the senses. In affecting the senses the stimuli modify the corresponding primitive forces in a more or less enduring manner, forming sensations, perceptions, etc.; they must, therefore, be considered not as a mere abstract motion, but as *moving matter* of their own kind, differing entirely from the primitive forces as the pabulum does from the bioplasm. As little as

formed matter can grow out of pabulum, just as little can external influences produce conscious modifications. The production of modifications is solely the property of the primitive forces. The external influences are merely the means of modifying in a definite manner the primitive forces.

But these external stimuli are moving matter, which is received and somehow appropriated by the psychical forces and thus converted into forces of their own kind. How? Somehow! It is of no use speculating about this deepest of all life-processes. Only one thing seems certain. We have to deal with *forces* on both sides, with so-called material forces (matter) on the one hand, and with so-called immaterial forces (primitive soul-substance) on the other. But as we do not understand the nature of either any further than their effects reveal, we might as well content ourselves with the conclusion that as *forces* they must have some relationship to each other, and may be convertible into each other. We might say that the received external stimuli, by an unknown life-process, are converted into fresh soul-forces, just as pabulum, by an unfathomable vital process, is converted into bioplasm. And this would appear, after all, nothing more than a higher differentiation of forces by the innate transcendental (supersensuous) nature of living things, a process just as inexplicable at the lowest beginning of life as it is in the highest. This view is strengthened when we consider the above-stated experience: The greatest number of primitive soul and body-forces are generated at the point where they have been spent most largely in the appropriation of external stimuli. A large amount of such stimuli must naturally have aggregated around and about the newly formed modifications; and it appears to be a logical conclusion, if we take the partially appropriated external elements as one source of material from which fresh psychical forces are generated. Thus *we might consider the newly formed psychical modifications as the very birth-place of freshly generated psychical forces.*

When we further consider that even bioplasm is *living* matter only because it is associated and endowed with psychical forces (by which it is enabled to produce formed matter;

or, as Beale has it, it is the "vital power" of the bioplasm that does it), and that the highest bioplasts are directly concerned in psychical operations, it is surely not out of the way of logical reasoning to suppose that the nourishment of the bioplasts has also something to do with the generation of psychical forces; and that, therefore, *bodily forces contribute likewise to, and are a joint source in, the generation of fresh psychical forces.* The objection that we thereby degrade the soul to a material thing, is not well put. In 109 we have shown that there are no such two things as matter and force, but that all is force which in the course of evolution is gradually differentiated to higher and higher states of being; and I do not see any cogent reason why bodily forces could and should not be sublimated into higher psychical forces, especially as bodily and psychical forces exist in such close connection as they actually do. How could they reciprocally influence each other if they were of a nature entirely and diametrically opposed to each other? The intimate union between soul and body teaches the contrary.

The *terrestrial and sidereal influences*, then, in the form of external stimuli and *bodily forces*, seem to be the two main sources whence the material for the generation of fresh psychical forces are derived. We might add to them a *transcendental source*. Man is planted in material soil. He grows and unfolds into spiritual development, into a sphere that is most probably the moving cause of all terrestrial evolutions. We cannot say how much of sustenance the human soul may constantly receive from that spiritual source.

Still another question concerns us here: Are the primitive soul-forces generated in one continuous mass or singly? When we take a view of a city or another complex object for the first time, we do not gain at a glance anything like a perfect notion of it, not even when the object is presented to our eyes all at once. We are obliged to examine in detail. It is only after single apprehensions of the several parts have been obtained and united by mobile elements into one whole or group that we gain a perfect knowledge of an object. This speaks clearly for the assumption that the primitive soul-forces must have been formed *singly* and not as a continuous mass.

Although it is true that we gain, even at a glance, a kind of total image of an object, and that image is clearer the more energetic our primary forces are (7), and more precise, individual and exact, in proportion as they are more sensitive (5); yet such an effect is produced only so far as we have already within us something ready to be reproduced by this impression; a complete and perfect image it certainly is not. When, therefore, we find some men who are able to comprehend a highly complex object in a very brief time, they do so because they already possess a larger quantity of modifications corresponding to it, and because of the greater vivacity and quickness of their visual forces, by which their time is economized. But particular and repeated examination of the object, by which alone a perfect notion of the whole can be obtained, is as necessary in their case as it is with other persons. Our visual forces do not work as a mass, but invariably as single and individual forces, as it were, point by point, or drop by drop. Nor is the case different with the sense of hearing. In a piece of music, say a quartette, a chorus, where four or more voices or instruments are heard together, the ear only apprehends a few sounds definitely at the one time. If the practiced musician is able to hear more than one who is no musician, he is indebted for that ability to the numerous vestiges which simultaneously listen, which he had acquired one by one at some previous time; for vestiges are able to operate more in a mass simply because it is only necessary that they be reproduced. The elaboration, the development of the primitive forces, their modification by external stimuli, on the contrary, always take place singly, one by one. It is with the psychical forces as it is with the corporeal forces, the bioplasts; they are not one mass, but consist of innumerable microscopical particles of a jelly-like, transparent stuff. We may infer, then, *that the primitive forces are generated from the very start as single forces, one by one*, like the bioplasts.

We must add still another point. In 24 we spoke of the quantitative relation between external stimuli and primitive forces. We found that the former might be insufficient, full,

very full, or too strong (either suddenly or gradually too strong); all of which conditions occur. If, for instance, we were to light a room, from an unsatisfactory twilight up to the most dazzling splendor by degrees (and we were to let all these light-stimuli, in all their degrees, successively affect our visual forces), a dim light would prove unsatisfactory, because the stimulant would be too little for our sight-forces. One, two or three candles would suit them; ten, twenty or thirty would set them in full swing; and a thousand, all concentrated and blazing together, would upset them. This upsetting would not occur once or twice, as a matter of chance. It would recur regularly as often as we repeated the experiment. In the other senses experience shows that the same thing occurs. Hence it follows *that the primitive forces are, from the very first, exactly alike as respects their strength; i. e., their capacity of apprehending and receiving a certain amount of external elements* (that is, be it well observed, the single, individual primitive forces of one and the same system). It is true that in different men this capacity is also different. One finds himself comfortable under a given stimulant, a stimulant which would be too much for another. But in the *same* person we find all the primitive forces, so far as they belong to the same class, of the same capacity; and when they are weaker, as in many cases of sickness, where one cannot bear the glare of ordinary daylight, or the ordinary sound of the voices of those around, etc., the freshly generated forces are *all*, either of one or several or of all our sensory systems, equally depressed. It is noticeable that at such times the bodily forces, which are the support of the psychical, are below their ordinary strength.

In summing up we arrive, then, at the following results:

1. Fresh primitive forces are generated mainly during sleep.
2. Where most primitive forces have been expended, there most are generated.
3. The forces are formed by some kind of transformation (which constitutes the most secret process of life in the soul, as well as in all living things) from a portion of the external stimuli taken up and assimilated; and, therefore,
4. The special centres for the formation of fresh primitive

forces are the newly produced sensations and perceptions (4); and, in like manner,

5. The bodily forces contribute their share to the formation of fresh primitive forces.

6. The primitive forces are formed in the soul from the first, singly, one by one, in the same way as the bioplasts are formed in single microscopical particles; and,

7. All forces that belong to one and the same class are exactly alike as respects their strength and qualities.

They all deserve the name of *primitive forces*, because, although of later growth, they do not differ either in essence or in operation from those primitive forces of which the soul consists at birth. We ought not to speak, then, of *a* power or *a* faculty of sight, hearing, etc., unless we mean to use this term *in abstracto*; for, in fact, the power of sight consists of numberless single concrete visual forces, as the material body consists of countless numbers of bioplasts.

On the whole, it is but right to add that we do not consider this exposition of the subject of the generation of the primitive soul-forces as exhaustive. It may even, in some of its propositions, be faulty. All this, however, does not alter the fact that it is at least an attempt to clear up a subject which, before Beneke, had not even been made a problem to be solved by "psychological science."

112. FINAL AND NECESSARY SEPARATION OF SOUL FROM BODY— DEATH.—CONTINUANCE OF THE SOUL AFTER DEATH.

If all and everything that takes place in the soul with any approach to perfection leaves a vestige, and if such vestige is associated with those resembling it that have already been formed, *the soul must be continually increasing in growth and internal strength up to the very moment of death.*

Is this borne out by experience? Apparently not, at least not always; for we find that not the mentally weak only, but not unfrequently the strongest souls also, fall, at an advanced age, into a condition of *idiocy*. Now, although numbers may be instanced who, up to the last moment of advanced old age,

showed no such symptoms, still that does not do away with the other and opposite fact. This much, however, is obvious at first sight: This kind of idiocy, which is completely different from the *congenital* form, must be based, not on some law of nature, but on something accidental and contingent, for otherwise it would constantly occur in all old people. At any rate we must consider this, as well as other phenomena of age, somewhat more closely.

Anyone who has been moderately attentive to what passes within him, must admit that there are occasional periods in his life when mental activity is all but impossible. After a busy day such moments are especially common. Strive as you will to reflect on some subject, all remains dark and unconscious. In many maladies this is so much the case that the patient seems to do little more than vegetate.

But so soon as these conditions have passed away the soul is again the same active, vigorous, strong soul that it was before. Hence the weakness, the impotence, could in no wise have affected the *inbeing* of the soul, could not have touched the acquired modifications themselves, which are the real estate of the soul; for if these modifications had been destroyed, by what magic could the soul have become again, directly after the illness, exactly the same as it was *before*? We have considered the true cause of such passing weakness in 13, and discovered that it is to be found solely in the deficiency of either fresh or partially modified primitive forces (modified by general stimuli), since they are the means by which the unexcited becomes excited, the unconscious is made conscious. Without agitation the strongest and clearest psychical modifications are as good as non-existent. Consequently, a deficiency in the elements which arouse consciousness, must always produce either a total cessation or a partial obstruction *in the current of our thoughts*.

Thus, after a hard day's work, when most of the primitive forces have been expended in forming vestiges, few only remain that can still receive general external stimuli. We may fall asleep or become unconscious in spite of all that happens around us. We are exhausted, that is, our primitive forces are

spent. The same must be the case in many maladies, where either the generation of new primitive forces is impeded, or some damage is done to the *connecting vestiges*. The latter is notably the case when in some violent sickness the whole memory (as people call it) appears to be lost or deranged to such a degree, that the patient after recovery has to learn to read, write, cipher, etc., over again. Experience has proved that the forgotten education is re-acquired with remarkable quickness. After a few weeks' work the whole former knowledge is again produced, *i. e.*, active, a knowledge that at first it took years to acquire. The malady, therefore, only affected what was constructed out of mobile elements namely; the associations and *connections between the mental modifications*, and not the modifications themselves. These latter continued to exist, but their connecting vestiges had, by weakness or impediment, become so damaged that the usual exciting mobile elements, which always flow in the direction of the connecting vestiges, were interrupted in their natural course and failed to find access to the corresponding modifications. So soon as this damage is repaired by new connecting vestiges, the acquired mental modifications can be roused again into consciousness as before the disability. Hence there is nothing inexplicable in the above-mentioned attacks of idiocy or incapacity for mental exertion. *It appears that such apparent lapses of knowledge were only stoppages in the process by which our psychical modifications become reproduced in consciousness, caused partly by a deficiency of mobile elements, partly by damage done to the connecting vestiges.*

Sometimes the cause of impediment lies in a derangement of the brain or certain parts of it, a normal state of which is a necessary condition for the exhibition of mental phenomena.

We see this particularly in the affliction called *aphasia*. In a moment it may unfit a person to express a single thought, although, in fact, his thoughts are unimpaired, and the organs of speech without fault. But it has been found in many cases that a little clot of blood in the median artery of the left frontal lobe, and especially in its third frontal convolution, impedes the circulation in these parts and thus cuts off the supply of corporeal forces which are needed for the execution of those

nervous motions by which the psychical force is converted into corporeal; in other words, by which thought can be expressed in audible language. Aphasia consists, therefore, in a breakage of the connecting line of forces which mediate in the conversion of psychic into corporeal forces; but it is not a damage to the mind itself.

Now, if we should be able to show that as we grow older the elements of consciousness must needs decrease, we would have an explanation of the idiocy which sometimes accompanies advanced age, and we should have proved that it is *not a weakening of the inbeing of the soul itself, but merely a defective excitation of our mental modifications.*

If we observe a child we find it almost entirely the slave of external stimuli. A fly on the wall destroys the child's attention, and a cart passing by the window attracts the little one's eyes toward it. It resists impressions of pain as little as it does those of pleasure; it is equally the captive of either.

A boy—the child grown a little older—is far less dependent on external stimuli. He can endure pain and abstain from pleasure. He can in general withdraw his attention at will from external things, and he begins to elaborate the knowledge he has gained in a more independent manner.

A mature man occupies himself by preference with his early acquisitions, and is often only with difficulty open to the reception of new truths, especially when they run counter to his former notions. Hence it is that among all classes of men who have attained this riper age, we so frequently find an attachment to the usual and beaten path. In old age this is very much more the case. Of many we say they are dead to all progress. The following observations will reveal the cause of these phenomena. When we meet agriculturists, what is their favorite topic of conversation? Agriculture. Go into the company of teachers and you will find that education is the staple of their talk. Go among physicians, theologians, botanists; listen to merchants, mechanics, soldiers, etc., and see whether their conversation does not mainly turn on their respective occupations. Nor can it be otherwise; for that which is strongest, *that which is based on the largest number of vestiges, must be the*

easiest to rise into consciousness. This is the case with all men as respects concepts relating to their daily occupations. Such concepts are nearest to consciousness.

Now, since our mental modifications can only be made conscious by the addition of mobile elements, we see that these elements flow to or are attracted in the largest amount by those mental modifications which are strongest in the soul, or which consist of the largest number of vestiges. (99-102.) This fact explains the phenomena instanced above. In the child's soul there *are* as yet no modifications of very numerous vestiges, and hence the mobile elements are not particularly attracted by such modifications; *consequently the primitive forces are free and open to the influence and reception of external stimuli of any kind.* They abandon themselves to whatever acts upon them. In the somewhat older boy the strength of his mental modifications is considerably greater than in the child, and therefore the mobile elements are attracted to these modifications more readily and render them conscious, and the mobile elements are in the same proportion drawn away from external impressions. Briefly: *The more the mental modifications increase in the number of their vestiges (in strength), the more are the mobile elements applied to rendering them conscious, and the more are these elements withdrawn from the reception of fresh impressions.*

Hence, the man of mature age is more disposed to elaborate and use what he already knows, than to apply himself to acquire new information or aptitudes, while the old man has almost entirely broken with the external world. He lives in the past rather than in the present. Therefore, *the strength of the internal being of the soul, which increases as we grow older, ipse facto, produces a decrease in the formation of new sensations and perceptions.*

But still more follows from this fact. We are aware that the mobile elements consist of fresh primitive forces, and of such as have been partially modified by external stimuli (32), but also that the primitive forces are generated by some unknown transformation through the medium of partially modified forces; that, consequently, the newly produced sensations and perceptions must be regarded as the special centre and labora-

tory where fresh primitive forces are generated. What will be the consequence when the larger number of these primitive forces are spent in the excitation of those mental modifications which are now most numerous in vestiges, instead of being used (as heretofore) in the reception and assimilation of external stimuli? There will be a corresponding decrease in the generation of fresh primitive forces. Consequently, it follows that, in proportion as a larger number of primitive forces are expended in the excitation of acquired mental modifications, both sources of the mobile elements are curtailed. External elements are taken up in a *decreasing amount*, and, as a consequence, fresh primitive forces are generated in a *smaller amount*.

But more than that. It is an almost universal fact that old people complain of their poor memory. They have a complete and clear recollection of what they saw and did thirty, forty or fifty years ago, but they often forget what they saw and heard but yesterday. According to this, the primitive forces generated in old age are not only less in amount, but also less energetic or retentive. Thus each condition helps the other. External stimuli are taken up in continually decreasing numbers, and the body also, which has become rigid and brittle, is continuously less able to assist in the formation of new primitive forces. What other result, then, can follow, than that *the mobile elements should constantly become less, and that the fresh primitive forces should become continually more and more imperfect?*

Now, if the primitive forces are the means by which the accumulated treasures of our soul, its acquired mental modifications, are rendered conscious, ought we to wonder that when they decrease the current of thought is less rapid, less comprehensive, or that at last the most cultivated soul retains in conscious existence but few mental modifications? *This condition constitutes the idiocy of old age.*

It is, therefore, not in the least a consequence of any *decrease in the strength of the inbeing of the soul*—of the sum of its accumulated wealth; but, on the contrary, it is *an effect of the continually increasing strength of the soul.*

Experience confirms this conclusion. It is told of Kant,

“that at the time of his greatest weakness, when he was unable to express himself intelligibly about the commonest things, he gave astonishingly correct and precise answers when questioned about matters of physical geography, natural history and chemistry, as well as about learned subjects in general.” Now, if the internal, the real being of his soul, had been affected by this weakness, how would such answers have been possible, especially on the physiological ground that the brain and whole body is continually renewed at certain periods of time? Would not the oldest and the more difficult have been destroyed before the latest and the easiest? Yet we have seen that, notwithstanding Kant’s extreme weakness in other respects, it was exactly the older and the most complex modifications that were manifested with their wonted strength and clearness, while he was unable to give any account of objects he had seen around him only a moment before, etc. This story clearly proves that the primitive forces last generated were very weak—so weak, indeed, that impressions just made were either not retained by them at all, or only so feebly that he could not attain to a consciousness of them.

Few aged men retain their mental vigor up to the time of their death, because few enjoy so happy a constitution that no essential diminution in the elements which excite consciousness occurs. In most men who reach old age there is a progressive decrease in the power of appropriating external elements, because the sense organs become less and less able to perform their functions and to assist the soul in its work. We have, then, arrived at these conclusions:

1. *That the soul constantly increases in internal strength from birth to death.*

2. *That this very increase in strength produces a constant diminution in the mobile elements; and that, consequently,*

3. *The excitation to consciousness (not consciousness itself, 97, 98) is more and more impeded, until at last, when the generation of fresh primitive forces is brought to a stand-still by the same cause, it stops altogether, and the soul abandons the body, in the society of which it is no longer able to increase its powers, and, consequently, is unable to make any further*

progress. *This is the death necessitated by nature.* Death from disease requires no explanation. It is the result of the unfitness of the corporeal forces to longer sustain, as a necessary condition, the evolution of psychical forces. In both cases, however, the man dies, not because life (a general vital power) leaves him, but because the soul leaves the body, which, on that account, by no means ceases to live. What speaks for the continued existence of the soul after death? *The soul's constant increase and growth in strength up to its departure.*

The body grew and became strong in consequence of the increase in the number of its vestiges, and after having reached its prime gradually decreased again in strength. These changes are in accord with the laws of growth. An increase of the body's forces, unlike that of the soul, implies an increase in space; and since *the limit of its bulk* is a given one (given at the first moment of its existence in the womb, as an inheritance from the parents), it necessarily follows that, as it never ceases to grow, that is, to form vestiges (as long as it *lives*), it must grow *denser*, must condensate so that its particles, as they accumulate, press more closely one on the other; the different organs gradually grow harder, tougher, and even ossify, by which ossifying process the organs of nutrition are gradually diminished, and the capacity of forming fresh corporeal forces decreased. The final result of this change must be that the body becomes more and more unfit for the constantly growing soul, and a separation of the two must inevitably follow—an event which is the necessary consequence of *our constant growth, i. e.*, of the continuous generation of fresh vestiges both in soul and body. As the rising and setting of the sun is the result of one and the same law which revolves the earth on its axis; as summer and winter are produced by the one immutable law which makes the earth revolve around the sun, so also the rise and decay of corporeal perfection depends on one and the self-same law, that of growth. Since this law incessantly operates in body and soul alike; since it never varies, never gives way to another; since, moreover, the chemical laws, to which “matter” is subject, remain invariably the same, it follows that the *results* must gradually

become more and more different. The body and soul grow asunder. While the *psychical forces* have continually gained in strength and perfection, the *corporeal* have grown more and more dry, brittle, less elastic, coarser—in short, more and more unfit for psychical activities—which necessitates their dropping off and their final subjugation to the sole sway of chemical affinity. Now that their separation has been effected, is either of them destroyed? We know that not an atom of the body is lost. Why should the soul cease to exist? But how can those psychical forces (which we do not know otherwise than to originate and to grow in conjunction with material—corporeal forces—a body) subsist without a body? How do we know that when these psychical forces leave the “material body” they are without a body? What has become of those “immaterial forces,” without which material forces can never form a living being? (110, 111). Is not force imperishable, whether material or immaterial? If these immaterial forces were able and competent to mold the lowest material forces (in spite of their chemical affinities) into an harmonious organism to serve as a medium for the development of psychical forces in this material world, it is quite likely that they will be sufficient also to supply them under conditions for which the “material forces” are no longer fit and suitable. There is no other way of escaping this proposition than to fall back upon the materialistic view that mind is a mere function of the brain; and I hope to have sufficiently proven, in the physiological part of this work, that such a view is possible only to a mind that is illogical enough to confound cause and condition.

When the soul departs from the body it leaves as a perfectly organized being of immaterial forces, as fully substantial as any living body ever was in this world, with this difference only: It cannot be reached by any mechanical or chemical means of detection. It is then and there the same soul it was before, beautiful or ugly, good or bad, wise or foolish, corresponding exactly to the development which it has attained while associated with material forces. We are not yet done with this subject.

PART VI.

OCCULT PHENOMENA.

113. SENSITIVITY.

By referring to paragraphs 5 and 82 it will be seen that I need here merely state that the psychic primitive forces of man vary greatly in their acuteness or sensitiveness, not only in different individuals, but also in the different systems of one and the same individual. In the paragraphs referred to I dealt only with the ordinary occurrences of daily life. Exceptional cases did not come within the scope of those researches. We needed a generally accepted basis for our inferences. But, as we shall presently see, the instances cited do not by any means cover the whole ground of our subject.

Sight.—Gustavus Anschütz, an artist-painter, in Vienna, was able to see on dark nights luminous emanations, not only from *magnets* and crystals, but also from the face and hands of his wife. The drawings and paintings he made thereof corresponded precisely with the description given by numerous sensitive persons who had previously and independently observed such “od-emanations” from different objects hundreds of times, in the dark room which Baron von Reichenbach had constructed for the purpose of examining this strange subject. (See Reichenbach’s *Dynamiten*, Vol. II, p. 33.

Another well-authenticated case is the luminous figure which Billing, the secretary of Pfeffel, saw on dark nights in Pfeffel’s garden, always in the same spot. No other person saw it. Upon digging into that place a skeleton was found

immersed in lime, and after the removal of all the debris (lime and bones), no luminous figure ever again appeared to Billing on that spot, although in church-yards he still continued to see similar luminous figures arising from certain graves.

This single instance is corroborated by many (although not individually authenticated) stories of persons who have seen similar luminous emanations on dark nights in church-yards and other places. Popular superstition believes them to be ghosts while, in fact, they are od-emanations strongly developed by chemical processes, but still only visible, in the absence of other light, to very sensitive eyes. The numerous and elaborate works of Reichenbach on this subject abound in experiments which he instituted and controlled, by change of time, persons and things in a thousand different ways, to prove that sensitive persons can and do see in utter darkness, and, therefore, are able to move about and to find and describe things with almost as much ease as in daylight.

Before such overwhelming testimony little weight need be attached to the opinion of seven Berlin professors, who declared "that the experiments exhibited by Baron v. Reichenbach had not proved to them what he intended to prove," for the simple reason that these *savants*, notwithstanding polite invitations, did not come to examine when, after great labor and difficulties, Reichenbach was ready to give this proof. During this Berlin episode (1861 and 1862) Reichenbach succeeded in procuring another objective proof of the reality of luminous od-emanation, by its action upon photographic plates. For further detail see Reichenbach's "*Od'sche Begebenheiten zu Berlin in den Jahren 1861-1862.*"

Hearing, smell and taste.—There are a number of persons who cannot bear the noise produced by rubbing paper over paper or over a table, or a hand over silk, or of hard things upon each other. All kinds of scraping, scratching, grating and like sounds affect them most disagreeably.

Miss Nowotny often listened to the poles of magnets. She compared the sound which she perceived to the sound of a tuning-fork just when it ceases to vibrate, or with the dying away of a sound from an Æolian harp. Miss Maix and Miss

Sturmann perceived the same sound, but in an intermitting manner, the sounds and pauses repeating in regularly. Friction applied to sulphur or glass or sealing-wax caused Miss Nowotny to hear a fine hissing and crackling sound, a sound others could not perceive. (Reichenbach, *Der sensitive Mensch*, Vol. II., p. 458.)

In regard to smell, we find the peculiarity of fine perception even more extended. Everybody, I might say, has met with persons who positively cannot endure the smell of some odors—odors, too, generally considered agreeable. Some faint away, some feel deathly sick at the stomach, some are seized with headache, etc., from being exposed to the effluvia of certain things (flowers, leather, metals, etc.).

There are persons who can distinguish the different metals by the sense of smell alone (chromic acid, even through a hermetically closed glass bottle); who recognize their friends by smell, and distinguish a healthy from a sick person; who assert—and their assertion has been put to the test—that the north pole of the magnet has an acid, while the south pole has a disagreeable alkaline smell. A lady, 23 years of age, could not approach a table upon which a rock-crystal was lying, still less could she touch the crystal, on account of its disagreeable smell. (*Internationale Hom. Zeitung*, Vol. IV, 1874, p. 225, Dr. G. Pröll). A lady, 38 years of age, was able to smell the rock-crystal and several other minerals. (*Ibid.*) A lady, about 40 years of age, robust and healthy, could never touch a rock-crystal without experiencing a painful sensation, and she disliked it on account of its disagreeable odor. (*Ibid.*)

A consideration of the sense of *taste* yields similar results. Some persons have a decided disgust for certain things (eggs, butter, etc.). In general, according to Reichenbach, sensitive persons prefer acidulated to sweet or fatty things. There are persons who immediately taste it when food has been cooked or prepared in metallic vessels; and in some even unpleasant sensations arise in the tongue when they hold metals in their hands. I have met with patients who could at once detect sulphur by the taste when a few globules of the thirtieth or even a higher potency of that substance was put on their

tongue, and the same experience has been confirmed by the observation of a number of homœopathic physicians.

Vital senses.—The sense of *general feeling* is with some persons exceedingly fine. They not only feel all negative od-emanations as cool and pleasant, and all positive od-emanations as lukewarm and oppressive, when in their immediate presence, but they feel them even at a distance and through thick walls. As, however, this general sense of feeling is variously interwoven with sensations which originate *in the sympathetic* system, and a distinction between them is oftentimes impossible (compare 72 and 73), I shall treat of the phenomena related to one or the other or to both under the common title of *vital senses*.

In Zschokke's *Selbstschau*, p. 237, we find the following remarkable instances of rhabdomancy. "Persons endowed with the mysterious gift of nature to perceive by a peculiar sensation the presence of water, metals and other fossils underneath the surface of the earth, are found almost in any of the cantons of Switzerland. I have known several of them, and have tried their wonderful sensitiveness. The Abbot of the Monastery St. Urban (Canton Luzerne), Ambrosius Glutz, a scientifically educated prelate, was one of them. But Katharine Beutler, from Thurgau, surpassed in this sensitivity all others of whom I had heard, even Pennet, Campetti and others. I led her, on several occasions, in company with a friend of hers, into regions unknown to both, where, however, to my knowledge, subterranean layers of salt, ore, sweet water canals, etc., were situate. In no instance was she misled by her miraculous sensitiveness. This young woman was healthy, strong, and not at all a nervous or hysterical person. She would in many instances describe the peculiar sensations she had when near certain minerals. *Gypsum*, for instance, produced in her a spasmodic contraction of the muscles of the throat; *coal*, a sensation of warmth in her body; *sulphur*, a similar, but yet different sensation, which she could not clearly define; *salt*, perspiration on the lower arms and salty taste; *anhydrite*, stinging on the tongue as from pepper; *alum*, cold, etching water on the upper teeth; *marl*, burning in the stomach; *water*, a sensation as of a column of water rising in the body and falling down again drop by drop; *copper*, a feeling of warm, bitter water in the mouth; *arsenicum*, an unpleasant, strong beating in the head; *silver*, strong pinching in the intestines, etc."

In the *Internat. Hom. Presse*, Vol. IV, p. 212, Dr. Gustav Pröll details ten cases of sensitive persons, some of whom were cured and others improved by the use of the Gastein hot springs. One of them was a seamstress, thirty years of age, who had been ailing in different ways for many years. Being destitute of means to pay for baths and board, Dr. Pröll took her in his house, and allowed her to do some nominal work for him, such as dusting his book-cases, tables, cases for mineral collections, etc. One day, when occupied in this work, the girl gave a sudden shriek. Hastening to see what was the matter, the doctor found her in a drooping position, with tears in her eyes and nictitation of the eyelids. Her face was pale and distorted, and her body writhing with pain. She was speechless and unconscious. After shaking her arms (her right arm with his left, and her left with his right hand) she gradually recovered, and upon being asked what had befallen her, she said: "That stone there has given me so much pain," pointing to a beautiful rock-crystal (quartz composed of a six-sided pyramid and a six-sided prism), which had been presented to the doctor the previous evening. The moment she undertook to lift the crystal, in order to brush off the dust underneath it, she felt something like a violent blow in her hand, which ran up the arm so painfully that she had to cry out. The pain spread all over her body, but was felt most in the pit of the stomach, when she sank down. On being requested by the doctor to again touch the crystal, she commenced crying and begged to be excused, as even the smell of the stone was so very disagreeable to her. This the doctor seemed to doubt, but on bringing the crystal near to her nose, she again (with the same symptoms, except the shriek) fell to the floor. On the following day the doctor determined to test the woman's veracity. He carefully wrapped the crystal in cotton and laid it in a little closed box. In order to prevent her from becoming suspicious about the box, he handed the box and a book to her, telling her to take both book and box to a gentleman whom he named. She took book and box without the slightest suspicion, and went to do his bidding, but before she reached the door she slowly fell to the floor without a

shriek. The doctor brought her to by shaking her arms and removing the crystal. On the following day the doctor wished to ascertain what kind of influence other minerals would have upon her. He opened his mineral case in her presence. The smell alone proceeding from these minerals affected her so powerfully that she came near fainting. She had to withdraw to the farthest corner of the room. By bringing the minerals one by one to her, the doctor found that all stones that were interspersed with little rock-crystals nauseated her even at a distance; while a calc-spar, which looked externally very much like a rock-crystal, did not affect her unpleasantly at all. At night, in total darkness, she saw bluish flames emanate from the rock-crystal. There were several other minerals which by their smell affected her unpleasantly; others she was indifferent to. A non-crystallized so-called "milk-quartz" had a very pleasant effect upon her. She said this particular specimen smelt good, and made her strong. She kept holding it in her hand, and after the doctor had finished replacing the minerals, he found her fast asleep in a standing position. Her breathing was deeper than usual; her face had a quiet expression; her pulse was slow and she spoke indistinctly in her sleep. The usual means of rousing her, however, had no effect. Calling loudly her name, sprinkling cold water in her face, shaking her body, etc., were of no avail. Not until the doctor shook her arms with his opposite hands did she awake, looking around astonished. She had had a pleasant dream, of which, however, she could remember nothing. A few days afterward two esteemed medical professors had the opportunity to convince themselves of the truth of the above-stated facts.

Once this girl could not eat her meal, although she felt hungry, and there was nothing in her throat to prevent swallowing. The doctor could not detect any reason, nor she give any. Finally he observed that her back was turned toward the south. He at once placed her with her back toward the north. She then ate quickly and without hinderance, although she did not have the slightest inkling of what the change of position meant, nor indeed any idea of north and south. On

the following day the doctor had four chairs placed in the exact direction of south, north, east and west. He ordered her to do some work and sit alternately for a time first on the one and then on the other chairs. In no direction did she feel comfortable, except when turning her back toward the north. She felt worst when turning her back toward the south.

The doctor frequently sent her to the woods to gather flowers for him. Once she came home crying, and said that she could not bring any blue flowers, but only yellow ones, because she could not bear the sight of blue, while yellow was very pleasant to her. Later she bore the sight of blue equally as well as yellow.

During the first week of her stay at the doctor's house, she became suddenly nauseated if any person happened to stand behind her looking in the same direction she did. This nausea also disturbed her if anyone stood or sat on her right side. If the doctor looked with his right eye into her right, or with his left into her left eye, she experienced an unpleasant sensation in the eye looked into, while the look of the opposite eye she bore quite well. This sensitiveness, however, gradually diminished as her health began to improve by the judicious use of baths at Gastein. When she at last entirely recovered, she came to the normal standard of common sensitivity.

A young woman, of about 29 years of age, fell twelve years before, striking upon the back of her head. Since that time she had suffered greatly from spasms of a peculiar kind. She came to Gastein; and on taking a rock-crystal into her hand at once felt such a violent pain that under no consideration could she be persuaded to touch it a second time. This effect was much lessened, however, if the crystal was wrapped in a handkerchief before it was handed to her, or if she handled it with gloves on. At night she saw the rock-crystal shine and emit a bluish flame, and in order that she might carry the mineral without touching it, she had a handle made for it and used it as a night-lamp. Whenever this patient held her face over a point of the crystal she smelled a stupefying odor. She, too, recovered at Gastein, and when her recovery was

complete the crystal no longer shone or gave forth odors for her."

The celebrated chemist, Berzelius, in company with v. Reichenbach and Dr. Hochberger, made, in 1845, in Carlsbad, the following experiment upon a sensitive lady, von Seckendorf. They spread a large number of chemical preparations wrapped in paper upon a table, and asked her to slowly move the palm of her right hand over these small parcels. In performing this movement she experienced different sensations, derived from the several parcels. Some would produce a kind of drawing sensation in her hand, which others did not. Being asked to separate the different parcels according to the different sensations produced, into two rows, "the author of the electro-chemical system was absolutely struck with astonishment when he found that in the row which produced a drawing sensation none but electro-positive, and in the row which had no such influence, none but electro-negative bodies were discovered. The separation of these many parcels into positive and negative minerals was complete; and what had required a whole century of the greatest industry and sagacity to elaborate, the classification of chemical bodies into their natural electrical series, was effected by this sensitive person in ten minutes, through the simple guidance of her sensations." (Reichenbach: *Aphorismen über Sensitivität und Od.* 7, 8. Wien, 1866. *Der sensitive Mensch*, I, 706. Stuttgart, 1854.)

We see that the primitive psychic forces of some persons are influenced by stimuli so subtle that the majority of men, ordinarily constituted, are not capable of perceiving them. Have these influences, then, no existence because they are experienced only by a minority? Is this minority to be disbelieved because a majority whose senses are of a duller make do not confirm the minority's findings? We might as well ask does light not exist, because the blind cannot see? Do the various colors have no existence, simply because the color-blind do not perceive certain shades? That the stimuli of any kind be perceived, it is necessary that the stimuli find forces upon which they can act, which they can influence. Without the qualification of an organism to perceive them, stimuli

would have no existence *for that organism*, notwithstanding the reality of the stimuli. It follows that it would be an illogical inference to conclude that because this or that person, or even a hundred persons, cannot perceive a certain influence, that the influence does not exist. The quality of perceiving other stimuli than those which affect all commonly endowed primitive forces we shall call *sensitivity*. No one has so well investigated this obscure subject as Reichenbach; and, according to his observations, the number of sensitive persons is much larger than an occasional observer would suppose. Neither is it true that only sickly persons are thus peculiarly constituted. Among the list of his sensitives are quite a number of healthy and robust persons. (Compare Reichenbach: *Der sensitive Mensch*.)

In the year 1883, April 24th, a committee of the Society for Psychical Research gave the following opinion on Reichenbach's researches on the visibility of magnet-emanations in a dark room: "The committee feel at least justified in recording: Firstly, that three observers, separately, on distinct occasions, were in some way immediately aware when an electro-magnet was secretly 'made' and 'unmade,' under such precautions as were devised to suppress ordinary means of knowing, and to exclude chance and deception; and identified such magnetization by luminous appearances which, as described, agreed generally with the evidence recorded by Reichenbach. Secondly, that there were, though less directly, indications of other sensory effects of magnetism. In view of these apparent confirmations of previous testimony, the committee incline to the opinion that, among other unknown phenomena associated with magnetism, there is a *prima facie* case for the existence, under conditions not yet determined, of a peculiar and unexplained luminosity resembling phosphorescence, in the region immediately around the magnetic poles, and visible only to certain individuals." (Proc. S. P. R., Vol. I, Part III, p. 236.)

114. MUSCLE-READING, MIND-READING, THOUGHT-
TRANSFERENCE.

The preceding facts lead us naturally to the consideration of what has become universally known under the name *mind-reading*. The so-called faculty of mind-reading has been exhibited on the stage by showmen (Brown, Bishop, Cumberland and others), and has been introduced into the family circle as a play under the name *willing-game*. It consists in this: A person is selected to "guess." He goes into another room while the company agrees upon a subject or object concerning which the person shall be made to "guess"—either to select a particular card or object in the room, or to execute some particular action. When the guesser, blindfolded, comes back into the room, he is taken hold of by one or two of the company by his hands or touched lightly upon his shoulders, while the rest concentrate their thoughts intently upon the thing or action to be guessed. A sensitive person usually finds it easy to "guess" rightly, so that it appears as though he had been able to read the minds of the company. But the term "*mind-reading*" is undoubtedly a badly chosen expression, if by mind-reading it is intended to give a clear insight into the processes thus described, and often executed with striking results. Thinking minds soon discovered that there was very little, if any, mind-reading in most of these performances.

The best description of the process I know of is that given by Rev. E. H. Sugden, B. Sc., in the Proceedings of the S. P. R., Vol. I, Part IV, p. 291. He says: "About six months ago I was led to try a few experiments in so-called *thought-reading*, as exhibited by Stuart Cumberland, and I was very soon convinced that all that he had done, and much more, could be effected by careful interpretation of muscular indications."

"*Character of the experiments.*—They include the discovery of persons thought of in the audience and articles worn by them; the finding of pins and other hidden articles; the reading of the numbers of bank-notes, both by means of tickets with the ten digits printed on them and placed on a table, and by writing the numbers on a blackboard; the localization of

following a track chalked out on the floor; and other similar tests. It will be observed that in all these cases the thought discovered is a thought involving either motion in a definite direction, or a definite point in space, the position of which has been indicated by movements.

“Modus operandi.—The subject was directed to concentrate his whole attention on the person, number, etc., thought of. I (of course, blindfolded), took his left hand, as being more automatic than the right; then, if the object was to find some person or thing in the room, I walked somewhat rapidly in front of my patient, following the indications he gave, until the person or thing was reached. If the number of a bank-note was to be discovered, I moved the patient’s hand rapidly to and fro over the figured cards on the table until I found where it most contentedly rested, so obtaining the five figures in succession; or else laid his right hand upon the back of my own, and, following his indications, wrote the figures successively on a blackboard. In localizing a pain, the patient’s hand was rapidly passed over his body until some preferential point was discovered. I found, further, that for the large scale experiments it was quite enough to have a walking-stick between myself and the patient, he holding one end and myself the other. Indeed, I have succeeded occasionally with only a piece of thin wire as a connective.

“In all cases *muscular* indication was all that I used. I never had any thought borne in upon my mind, or any image produced there; there was no genuine thought-reading. I simply followed muscular signs. These varied much in clearness and force. Sometimes the subject positively did all the work, leading me to the place, writing the figures and so on, while I was as passive as possible. In such cases I have often gone on to write words or sentences upon the board under their guidance, but such instances were rare. As a rule, I had to make a careful estimate of the muscular resistance in each direction, and follow the line of least resistance until the place was reached, or the figure so far shaped as to be recognizable. Then the indications became much more positive.

“Failures and their causes.—I failed more or less completely in about one case in four on an average. Probably the failures would have been fewer if I had had ladies as my patients, as I have always, in private experiments, found them very good subjects. In every case of failure where inquiry could be made sufficient reason was discovered. The most usual cause was determination not to allow the thing to be done, the patient having an idea that it was a question of

his will being conquered by mine, and so braced himself up to resist. Occasionally persons came forward determined to thwart me, either because they thought it was all 'humbug,' or because they considered the phenomena to be due to spiritualistic agencies. When the subject had a financial interest in the experiment, I found success to be very difficult to obtain. Boys, as a rule, I found to be impracticable subjects, possibly because they found it impossible to concentrate their thoughts intently while facing a large audience. I soon found out, too, that persons with cold, dry hands were never so easy to deal with as those with warm, moist hands.

"*The experience of the patients.*—It is most important to note that in almost all cases the question was asked: 'Did you give me any indication of what you were thinking about?' and the answer was invariably, 'No, not the least.' The whole was done without any consciousness, and often in spite of a resolution to be quite passive. This should be remembered whenever contact has been allowed in supposed genuine experiments in thought-reading. The assurance of the person who is in contact with the thought-reader that he gave him no indication is absolutely worthless. The most respectable and trustworthy persons have, over and over again, assured me that they have never moved their hand, when I have known that they have simply used my hand as a pen, and have written with it and the chalk it held, using far more effort than they would if the chalk had been in their own fingers. It should be further noted that contact with my hand is not necessary. I have succeeded in finding a person thought of in a room when the patient's hand was simply laid upon my forehead or upon my shoulders. The result of my experience would lead me to doubt any case of alleged thought-reading where contact of any kind had been allowed.

"One or two observations, bearing on the unconscious action of the mind, may be recorded. I noticed very often that when an article had been hidden in one place, and then transferred to another, my patient almost invariably took me first to the first place, and then after a short search there suddenly went off to the right place. The same sort of thing has happened in the case of figures. If the figure has been changed, the one first thought of came out first, only to be declared wrong. Once in writing a bank-note number I could get nothing but twos; they were declared to be wrong; 'but,' said the patient, 'there were twos on another part of the note which I particularly noticed.' This is of interest as bearing on the well-known fact, that in so-called spiritualistic

revelations the things told are things which the questioner has possibly even forgotten, but which have once been in his mind.

I also found that it is difficult for the mind to avoid transferring itself from one thing to another like it. In finding pins, etc., I have often been led, not to the right place, but to a place similar to it; as, *e. g.*, the pin has been in one corner of the room, and I have gone to the other; or it has been in some one's pocket, and almost every pocket that I came near has had to be searched. One case was very singular. The pin had been hidden in the heel of a man's boot, under the instep. I was at once taken to a man near the platform, and got down to his boot-heel and to the very spot where the pin really was, but in another man's boot. I could get no further with that 'subject,' but, on taking another, I at once found the right man and the pin in his boot-heel.

"I may add, finally, that I have no special power in this direction. I have rarely found anyone who could not pretty readily succeed in performing any of these experiments after a very little practice, and even on the first attempt if they had confidence."

This clear exposition of self-experienced and self-executed experiments is sufficient to establish the fact that the kind of *mind-reading* or *thought-reading* usually exhibited by showmen or introduced in family circles as a pastime, is indeed no *mind-reading* at all, but merely *muscle-reading*. It does *not* require "a special power in this direction," as the reverend gentleman correctly observes, but merely a fine sensitivity of the muscular sense and some practice. However, such experiments do not do away with or explain the deeper researches which the committee of the S. P. R., of London, on *thought-reading* have instituted, and which they have executed so exceedingly well. This committee consisted of Edmund Gurney, M. A., F. W. H. Myers, M. A., and Professor of Physics W. F. Barrett. They preferred to designate the group of phenomena which they had under examination as *thought-transference*, instead of "thought-reading," and came to the conclusion that thought-transference is "*the mental perception, by certain individuals, at certain times, of a word or other object kept vividly before the mind of another person or other persons, without any transmission or impression through the recognized channels of sense.*" (Pro-

ceedings of the S. P. R., Vol. I, Part II, p. 70.) This definition, of course, excludes muscle-reading and all guessing from gestures, signs or other collusions. In fact, the committee have guarded the experiments with such exceeding care against everything which in any way could impair the purity of the results, that the most rigid scrutiny cannot say ought against them. The phenomena under examination were such as "where a number, name, word or card has been guessed and expressed in speech or writing, without contact, and apparently without the possibility of the transmission of the idea by the ordinary channels of sensation." (Professor W. F. Barrett, Proceedings of the S. P. R., Vol. I, p. 18.) To these experiments others were added afterward, in which a simple geometrical or other kind of figure, of which the percipient could not possibly have received any kind of knowledge, was drawn off-hand by some one of the committee. The original drawings and their reproductions by the percipient have been published in the Proceedings from the authentic drawings photographed and transferred to the wood-blocks. To detail here all these experiments is unnecessary and lies entirely outside of the scope of this work. I can merely refer to the Proceedings of the Society for Psychical Research, Vol. I, Parts I-VII. These experiments were not all successes; but the failures are also recorded, and these latter are in many respects as valuable as the reports of successes.

We can now consider the question which, at this point, concerns us most: How is a word or other object, kept vividly before the mind of a person or persons (the agent), transmitted to the mind of another person (the percipient), otherwise than through some of the recognized channels of sense. In other words: How can a conscious modification in one person (the agent) excite into consciousness a like modification in another person (the percipient) without taking its course through some one of the recognized channels of sense?

To simplify this question, let us ask first: How do unconscious modifications in us become excited into consciousness in one and the same person? We have dwelt upon this process at length in several parts of this work. The surest and

never-failing way is the excitation by external stimuli. The corresponding stimulus finds and joins the already acquired vestiges, from like or similar stimuli, and excites them into motion or consciousness (12).

But, beside this mode of excitation into consciousness (a mode carefully excluded from what the committee called *thought-transference*), we know of two other means by which latent modifications are excited into consciousness: The fresh primitive forces, and those which have been only partially modified by general stimuli. (Compare 13.) The first variety are of an active, living nature, constituting the will-power of man, and cause all *voluntary* excitation into consciousness; the second partaking of the nature of both, of the conative primitive forces and of the external stimuli; one office of which is to cause *involuntary* excitations. They are active, living forces, and are so modified by external stimuli that they act according to the law of the attraction of like to like, and will associate with vestiges of a more or less similar make and rouse them into excitation. These three modes of excitation into consciousness are active constantly in the waking soul, and partially also during sleep. They constitute the activity of our mental life.

What has all this to do with thought-transference? A great deal, as we shall presently see. If the recipient guesses correctly a word, name or number which the agent looks at fixedly, and holds in his mind vividly, what does that mean? Nothing more than that the mental modification so vividly excited in the agent becomes also excited in the mind of the percipient. It is a perception roused into consciousness by the vivid excitation of a similar object in another person's mind. It is therefore a process which similarly and constantly occurs in our own minds, and even with the same accuracy or inaccuracy in the agent. If I perceive an object by any of the senses dimly, it will rouse a correspondingly dim mental modification. I may mistake a perfect stranger for an old acquaintance. I may not be able to find the right word or a name at all, however sure I am that I know it, and exert myself to utter it, although it may "dance upon my tongue" in the

shape of similar or totally different names. We see all these features presented in cases of thought-transference. Thus we read in the Proceedings, pp. 163 and 164: "In some of the less accurate reproductions, Mr. Blackburn (the agent) complained of the difficulty he had in keeping the original drawing steadily in his mental view; and on one or two occasions we asked Mr. Blackburn to draw his recollection of the picture simultaneously with Mr. Smith (the percipient) (the two, of course, being kept out of sight of each other). We found that the main errors in Mr. Smith's reproductions existed already in Mr. Blackburn's recollections of the drawing." We also find on p. 273: "When the object has not been first shown, but is only thought of, success seems to depend upon the vividness of each person's mental picture." In short, a dim perception in the agent will rouse only a dim perception in the percipient.

"Or the percipient guesses, instead of *Barnard*, first *Harland* and then *Barnard*; for *Bellairs*, *Humphreys*, *Ben Nevis*, *Benaris*; for *Johnson*, *Jobson*, *Johnson*; for *Wissenschaft*, *Wissie*, *Wissenaft*" (see Proceedings, p. 80); all examples (and many more illustrations like these can be found in the experiments of the committee) which prove that, instead of fully alike, frequently only similar modifications are excited into consciousness in the percipient's mind. Sometimes the percipient has "to give it up," because no definite modification presents itself to his mind, or he makes a "guess" entirely wrong, from some impression which is not at all connected with the agent's mind, but may be entirely a product of the unconscious working of the percipient's own mind. Occasionally the idea or name of the object did not come at first to the percipient, but the appearance seemed to dawn gradually upon the mind, and sometimes it only presented itself in its general features, so that often the object could only be *described*, but not *named*. First the color impression was received, then the general shape, and afterward any special characteristic, and finally the name. As an illustration, take the case of a blue feather. The "subject" said, "It is pale. It looks like a leaf; but it cannot be a leaf; it looks like a feather curled—Is it a feather?"

Again, a key was described as "a little tiny thing with a ring at one end and a flag at the other, like a toy flag." Urged to name it, she said, "It is very like a key." (Guthrie, Vol. I, Part V, p. 27.) These facts evidently prove that the concrete thing, looked at by the agents and fixed in their minds, aroused gradually the corresponding modifications in the mind of the percipient; and not until all the particular characteristics of this thing had been excited into consciousness could the percipient add also the name. The first modifications were those of *sight*-reproductions, and the later of *sound*; which is just exactly the same order in which the mental modification of either a "feather" or a "key" had originated in her mind. The concrete perception of sight-stimuli produced the first mental modifications of either key or feather, and the sound-stimuli "feather or key" (different in different languages) were added to it afterward. The process would have been entirely different had the "agents" kept vividly before their minds the *sound-modifications* "feather or key;" then the *names* would have been guessed first, and the *sight-modifications* would have remained either indefinite or entirely unconscious, according to the various shades in which these sight-modifications existed in the minds of the agents at that time.

Again, "anxiety to secure success on the part of the subject of experiment is nearly always fatal and always prejudicial; and hence the little trepidation that exists when set trials are made, or trials before strangers, tells most unfavorably upon the results of experiments. We found that casual experiments, made when the subject was under no restraint, gave very satisfactory results, albeit on such occasions our precautions to avoid erroneous convictions were in no way relaxed." (E. Gurney, Proc., Vol. I, p. 70.)

On the other hand, "it would appear that any mental disturbance on the part of the operators or on the part of the 'subjects,' due to anxiety to succeed, or to the novelty of the *entourage* of persons or things, very much interferes with the success of experiments. I may here remark that the result of our experience is that success or failure depends as much (if not more) upon the condition of the *agent* as upon that of the

percipient. It has happened that after a complete failure before strangers, the agent and percipient have been almost immediately able to obtain a successful transference of a number of impressions, the previous failure having probably been due to the mind of the agent occupying itself with the presence of the visitors, instead of being directed exclusively upon the object to be described. As regards the condition of the agent, I may say that although I have been very successful myself in giving impressions to each of the 'subjects' without the presence of any other person, still, under precisely similar conditions, when I have not felt equal to the required effort of concentration, I have been unable to repeat the success. We have also found that wandering thoughts on the part of the agent are misleading. Experiments, therefore, before a large miscellaneous company are not likely to be successful." (Guthrie, *Proc.*, Vol. I, Part V, pp. 27 and 28).

What does all this prove? It proves that "thought-transference" succeeds or fails under the same conditions as the excitation of certain mental modifications succeed or fail in our daily mental life. Anyone who has bestowed the slightest amount of observation upon himself will know how internal as well as external disturbances hinder the easy flow of excitations in his own mind.

There is still to be mentioned another peculiar feature of these experiments on "thought-transference," and that is, that the excitations in each particular sense (sight, hearing, touch, smell and taste) are reproduced in the percipient by their similar sensations. This fact shows that the law of attraction of like to like even here is the ruling agent.

We may, then, safely affirm that the reproductions roused in a percipient occur by reason of the same laws and are hindered or assisted by the same conditions as the usual excitations into consciousness in our own minds.

But how can such excitation be transmitted from one mind into another mind? That is the question. So long as the excitation into consciousness takes place in one and the same mind, it can easily be accounted for as the consequence of the existing connection between the single modifications among

themselves. But how can a mental modification which is agitated in the mind of one person, excite in the mind of another person corresponding similar modifications into a like agitation?

To remove the difficulty of understanding this occult process we have first to remove preconceived notions regarding the real nature of the human soul itself. These notions or ideas are of two kinds, *materialistic* and *spiritualistic*. The materialistic view is of the notion that soul-action is simply a process of brain-action. Without brain there is no soul, and, consequently, all phenomena which cannot be explained by the theory of molecular movements of nervous matter (of which, indeed, they know nothing), are either unconscious cerebration, or imagination, or superstition, or collusion, fraud and criminal deception. I shall not attempt at this place to refute the falsity of these coarse notions, but refer the reader to the physiological part of this work, in which the erroneous position taken by the materialists has been disproved. By *spiritualistic* notions I do not understand modern spiritualism, but that old psychological view which considered the soul as a purely simple, uncompounded being, endowed with certain abstract faculties or powers, such as a faculty of perception, of understanding, of reason, of will, etc., which create the several single perceptions, concepts, inferences, desires, volitions and will-acts.

It is clear that with such notions firmly rooted in the mind we cannot approach our subject on any side; for with the materialistic view soul-action must cease where the brain ceases; and with the spiritualistic view there is no understandable means of explaining how the power of reason or will could ever create such modifications in another person as were present in the mind of an operator in the experiments cited. If we want to consider this subject understandingly we must necessarily drop both these notions. The soul is neither mere brain-matter, nor is it a nondescript something possessed of imaginary powers. *The soul actually consists of its different systems of substantial primitive forces.* These forces must not be understood to mean forces in the same sense as light,

electricity, etc., are spoken of as forces. That would be an erroneous understanding of the term as we employ it. The primitive forces are real psychical substances, and are quite as real as any material substance. (Compare 109, on Force and Matter, and 110, on Soul and Body.) By the action of corresponding stimuli these primitive forces develop, as we have shown throughout this work, into the different mental modifications of greater or less strength or clearness of consciousness, in the proportion as their vestiges are multiplied by similar impressions. These modifications never gain anything in *space*. They are and remain *spaceless*. When we speak of psychic forces we must then discard our notions of *space*. The acquired mental modifications constitute the treasure of our mental development; but we are conscious of only a very small fraction of this treasure at a time. Incomparably the greatest portion of our mental acquisitions lie dormant in unconsciousness. Any of them may, however, under favorable conditions, be excited into consciousness. The exciting elements, as has been stated before, are either external stimuli, or primitive forces partially modified by external stimuli, or lastly, void, unoccupied primitive forces; all of which we have described under the name of *mobile elements*, because they are constantly flowing from modification to modification during our waking state, and sometimes also during sleep.

Now, as the excitation of a particular modification in the "recipient" ensues exactly in the same manner and under the same conditions as in our own minds, it is but logical to assume that the modification is also *produced by the same means*—the mobile elements. Of the methods of excitation into consciousness the external stimuli have been most rigidly excluded by the committee. Thus only (a) partially modified and (b) void primitive forces remain to be considered. Of these, the class of primitive forces partially modified by external stimuli is undoubtedly the most potent agent which brings about the apparently obscure phenomena of which we speak, and they are fully competent for the task. They command all the requirements for the occasion. In the first place, they possess the naturally active, moving principle of the primitive

forces; secondly, they are so fully charged with the peculiar character of those specific external elements which excite the particular modification now vividly before the mind of the "agent," that they, by the law of attraction of like to like, strike and excite also the corresponding modification in the mind of the "percipient," because, thirdly, they are spaceless, as are all psychic forces, and consequently not restricted by any corporeal distance or interference, so that they can reach a similar psychic modification in another mind, as well as in their own, and impart to it their own state of excitement and make it conscious. The free or void primitive forces no doubt likewise exercise a considerable influence in this process of transference, inasmuch as they constitute the *willing* in the *agent* to concentrate his attention to the one particular modification which is to be transferred. But the excitation of the similar modification in the mind of the percipient no doubt ensues principally by reason of the action of the partially modified primitive forces, which, by the law of the attraction of like to like, find their similars and impart to them their own peculiar state of excitation. That psychical, or *spaceless* (or as we have called them *immaterial*, 109) forces are not hemmed in by corporeal distances and interpositions in this process, is clearly proved by the experiments of the committee. (Proceedings, Vol. I, Part I, p. 37 and other places.) The percipient was placed in another room, and yet the impressions from the agent were transferred to him all the same. This is altogether a different genus of forces from those we are accustomed to call *material*, and with which we think we are so thoroughly acquainted, because we can weigh and measure them! What a coarse inference in the face of proofs which clearly show that not one-half of these facts could be understood without the assumption of psychical forces! On the other hand, what a superficial inference in the face of facts which clearly show that even the susceptibility to the various different influences varies immeasurably in different individuals! That this susceptibility changes even in the case of thought-transference has also been proven by the committee, when Professor Barrett says on page 78 in the Proceedings: "The fact seems to be

(and the children of the Creery family themselves are regretfully conscious of it) that the capacity is gradually leaving them—a fresh illustration of the fleeting character which seems to attach to this and other forms of abnormal sensitiveness.”

I think we have now in our hands all the points needed for explaining the apparently occult process of “thought-transference.” It requires first a fine susceptibility for psychical influences on the part of the “percipient,” and a clear and vivid excitation into consciousness of the mental modification to be transmitted on the part of the “agent.” The susceptibility of the percipient varies in degree, not only in different persons, but also at times in the same person, and anxiety, exhaustion or uncomfortableness of any description interfere decidedly with the success of experiments. In a like manner success is impeded or frustrated if the “agent” is mentally agitated by things foreign to the excitation of the mental modification which is to be transmitted. The nature of thought-transference consists essentially in the excitation of the modification in the recipient, similar to the one excited in the “agent,” and is effected by mobile elements, and principally by primitive forces partially modified or charged with external stimuli. Void primitive forces determine the concentration of the mind to the modification which is to be transferred. The mobile elements (as all soul-forces are spaceless) do not move in the sense of corporeal forces from place to place; theirs is an attraction of like to like, independent of corporeal distances or interpositions. Although the soul needs and uses and builds up a corporeal mechanism in order to live and thrive in the material world, yet its conscious manifestations are all spaceless. We can never place any of our thoughts in this or that or another part of the brain, no matter how lively our mental modifications may appear, vanish and be exchanged for others. They are purely spaceless excitations according to their connections and similarity, but never manifest any kind of moving from this to that or another cerebral organ, or place; and if I could ever conceive anything of the nature of a fourth dimension, it is this action of psychical forces, independent of space, as it discloses itself

to self-observation, which would bring it nearest to my comprehension. If the fourth dimension is, according to Zöllner, a necessary consequence of mathematical reasoning, in the spaceless action of psychical forces we might find the only semblance to its nature that is accessible to our observation. It is this action of psychic forces, independent of space, which alone makes the occult process of "thought-transference" comprehensible. As spaceless forces they are not restricted by space or bodies *in* space. Their action is outside the limitations of space, just as they themselves lie entirely out of the reach of any and all mechanical and chemical means of detection. We must disabuse ourselves of the common mode of thinking, that motion of psychical forces is a traversal of space, if we want to understand the transference of thought from one person to another. It is not a transference in space, but an excitation of psychical modifications by means of similar primitive soul-forces, partially modified by corresponding stimuli, which are spaceless themselves and for which there exists no space.

115. MESMERISM, ANIMAL MAGNETISM, TELLURISM, HYPNOTISM, STATUVOLISM.

In describing these subjects I shall make use of the words of the several authors of the systems.

Mesmer says in his work, edited by Wolfart, Berlin, 1814, p. 17 :

"An invariable observation of all nations has formed a general belief in the influence or action of the greater celestial bodies, and especially of the sun and the moon upon the earth. The people observe in vegetation, in fermentation, in animals and also in diseases, a regular, mutual process corresponding to the constellation and interaction of these bodies.

"Not at all disposed to detest and reject these views as antiquated notions, I endeavored to discover the real cause of these effects in nature. It appeared to me at last that this cause was similar to that which manifests itself in the magnet. Numerous observations and experiments justified this presumption, and I became more and more convinced that the animal body was capable of receiving an energy which, by

virtue of a reciprocal action and counteraction in the midst of an unlimited and uninterrupted body of matter, the *all-flood* ('Allfluth'), makes itself sensible to all that surrounds it, even to the action of the most distant bodies. I believe I may call this kind of influence '*nature's magnetism*,' or natural magnetism.

"Just as the property of the magnet may be excited and increased in iron and steel by certain manœuvres (so that it becomes a true magnet), so have I found the means to augment in me the natural magnetism to such a degree that I am able to produce phenomena which are analogous to those of the magnet. In the same way as the natural heat by certain operations may be produced and augmented to a mode (tone) of motion by which fire is produced, so also has the natural magnetism become a kind of invisible fire, which communicates itself to other animate and inanimate things, by the continuity of certain series of the all-flood to immeasurable distances. I am, therefore, able to excite this fire or this tone of motion in one of the series of the all-flood, which, on account of its rarity, penetrates all matter, manifests its action immediately in the substance of the nerves, and consists probably of the same fluid stuff with which the nerves are impregnated. And this fire, in consideration of its application as a remedial agent upon the organism of animate beings, is what I call *animal magnetism*" (pp. 17-19).

"Discerning experience has proved that animal magnetism is similar to the nature of fire, but in no ways a *substance*, but a motion, like the sound in the air, like the light in the ether, modified in a certain series of the universal flood. But this flood, or this series of motion, is not that of the common fire, nor that of the light, nor that of the magnet, nor that of electricity. It is of an order which exceeds all in rarity and mobility. Probably it is one and the same with that which impregnates the nerve substance. This homogeneity and continuity of both would bring them in a reciprocal relation with the whole universe.

"This tonic motion may be communicated to all animate and inanimate bodies, and may inflame them, so to speak. Since this motion is communicated to the most interior parts of the bodies, it causes effects which correspond with the organization of these bodies, and, once excited in a substance, it endures therein. As the general action of magnetism consists of regulating the in-going and out-going currents, it is clear that in the magnetized bodies, and especially in the limbs and in the nooks of the body, originate, as in the magnet, poles which are opposite in their direction. There is

also similarity of these same directions with the great mundane currents in the phenomenon of inclination and declination" (pp. 110 and 111).

"This original or excited fire, or this tone of motion, can be communicated to all organized substances, such as animals, trees, plants, stones, sand, water and other fluid and solid substances, to all distances and in all magnitudes, even to the sun and the moon, etc. The real communication is effected by mediate or immediate *touch* with a magnetized body—that is, with a body inflamed by this invisible fire; so that a mere direction with the hand or a conductor, even a glance of the eye, or the mere will, may be sufficient" (pp. 111 and 112).

"The *transference* is effected by concussion like light and sound, or like electricity in the continuity of the fine stuff through all fluid and solid bodies which stand in some uninterrupted connection with the magnetized body; *e. g.*, through strings, wood, balls, twigs of trees or plants, etc., also through mediary bodies like air, ether, water, through sound and light; from looking-glasses it may be reflected, through a dash made with lead-pencil, pen or otherwise, and generally through the *direction* determined by the pole from which it emanates to the pole which receives it.

"This motion penetrates, in the perfect continuity of the fine flood, all bodies. It is propagated almost instantly to a distance, the limits of which we cannot measure" (p. 112).

"The *application* of magnetism may be made with the *hand*, by moving it over the affected parts and holding it there. The presence of magnetism usually manifests itself as a feeling of slight warmth in the hand. There may also be used a *conductor* of wood, iron or glass, etc., which must be directed toward the affected part: *Parapathos*. 2. By means of a magnetic *vessel* (baquet) which contains magnetized water, sand, stones, bottles filled with water, from which the concentrated magnetism is led by iron rods outside the vessel to the person to be magnetized, by taking hold of such rod" (pp. 115 and 116).

"The *effect* shows itself in sensations, and thus it is clear that magnetism directly affects the nerves. Indeed, the observations made prove that this fluid is the same as that which animates the nerves. The influence of this fluid cannot be recognized by the common senses" (p. 118).

"To *magnetize* is nothing else than to impart, directly or indirectly, the tonic motion of the fine fluid by which the nerve-substance is impregnated" (p. 119).

"In order to establish harmony with the patient, the magnetizer, who sits opposite the patient, lays his hands upon the

shoulders of the patient, and lets them glide down the arms to the fingers. For a short time he takes hold of the patient's thumbs, and repeats this process two or three times. After this he makes a few similar strokes from the head down to the feet" (p. 180).

"If the disease is located in the abdomen, the magnetizer should touch the spot with the index finger and thumb, or two or three other fingers, or with the flat hand, and move them upon the abdomen as much as possible in the direction of the nerves, and, lastly, hold all five fingers separated and bent over these parts. The touch at a small distance from the abdomen acts stronger, because there exists a stream between the hand of the operator and the patient" (p. 182).

"There may also be used a conductor, such as a rod of glass, iron, steel, gold or silver, etc. It is also good to oppose one pole to the other, for instance, to place the right hand on the head, chest or abdomen, and then lay the left hand on the opposite part of the back, especially in the median line" (p. 183).

"In all times it has been observed that certain persons walk about during their sleep, and execute the most complicated actions with the same reflection and attention, and with even greater precision, than during their waking state. And still more marvelous is the development of *intellectual* functions, which often excel by far the best developed in the normal state. In this state the patients can foresee the future and represent to themselves the remotest past. Their senses expand to all distances and in all directions, without hinderance. It appears as if all nature were present to them. But these capacities differ in different individuals. The most common phenomena are to be able to see the interior of their own bodies and those of others, and to recognize not only the disease, but also the course it will take and the means which will cure it. But these capacities are seldom found united in one and the same individual" (pp. 199 and 200).

"A reflection alone on the subtility, mobility and the continuity of matter filling all space, lets us understand that no motion or displacement in any of its least particles can be possible without affecting the whole universe. Hence it follows that all that exists can be felt, inasmuch as there is no being nor combination of matter which would not, in consequence of its relation to the whole, affect likewise that part of matter in which we live. All animated beings which are in conjunction with all nature are able to sense distant beings and occurrences as they follow upon each other" (p. 201).

"A *communication of will* to another in the common way is brought about when the movements produced by the thought are transferred from the centre to the vocal organs, and from thence by means of air and ether to the organs of sense of the other person, who then perceives them. These same motions of thought, modified in the brain and in the nerves, are at the same time communicated to a series of a subtle fluid with which the substance of the nerves is connected, and can be transferred independently of air or ether into space immediately to the inner sense of another individual. Thus it is not difficult to conceive how the will of one person can be communicated to the will of another merely by means of the inner sense, and how, therefore, a harmony and agreement can be established between two wills. This harmony or agreement of two wills is called: *to be in rapport*" (p. 202).

"Of still greater difficulty is it to explain how things can be perceived which do not yet exist or which have passed away long ago. I shall try to explain the possibility of these occurrences by a common illustration. Suppose a man to be standing on a hill from which he can look down upon a river upon which a boat is floating. There he can trace not only the way which the boat has made, but also the space which it has yet to run through. If we apply this simple likeness to the explanation of a knowledge of the past and future, and remember that man, by means of his inner sense, is in constant connection with all nature, and therefore able to perceive the concatenation of causes and effects, we can conceive that to know the past means nothing but to perceive the causes in the effects, and to know the future, to sense the effects in their causes, independent of any distance that may lie between the first cause and the final effect.

"Beside, everything that *has been* has left some traces of what is to be and exists already in the sum total of causes that will produce it, and thus the idea lies near, that in the universe all is present, and that the past and future are merely different relations of the parts to each other."

"As, however, this kind of sensing 'can be obtained only by means of series of the all-flood,' which are so much finer than ether, as ether perhaps excels in subtilty the air, we are in want of words to explain these processes, just as we cannot explain colors by sounds. We must supplement them by contemplations on the *pre-apprehensions* or the *foresight* which men, and especially animals, show of great natural events in distances beyond the bounds of their sensory organs" (p. 204).

"During sleep (natural or magnetic) the surrounding matter does not act through the external sense-organs, but immediately upon the nerve-substance. The inner sense is now the only organ for sensation. These impressions, independent of the external senses, as the only ones now existing, are felt by and through themselves. In consequence of an unalterable law, that the weaker impression is subdued by a stronger one, these faint impressions can be felt only in the absence of the stronger sensory impressions. Thus are the stars invisible to us during the day, because the stronger sunlight quenches their weaker light. In sleep, however, man feels his connection with the whole of nature" (p. 205).

"As the knowledge of the most learned man would remain unknown without communication, so would also this phenomenon remain unknown, if there were not individuals who retain the capacity during their morbid or critical sleep to manifest by speech and action what takes place within them.

"The light somnambulistic sleep is an intermediate state between waking and sleeping, which can approach more or less the one or the other, and is, therefore, more or less perfect. If it is nearer to the waking state, then memory and recollection take still some part in it; and as these sensations commingle with those of the inner sense, sometimes predominantly, the whole must be classed in the category of dreams. If, however, this state approaches nearer to sleep, then the utterances of the somnambulist person are the result of sensations of the inner sense only, and not of the external senses, which are blocked out. The perfection of the critical sleep varies according to the character, temperament and habits of the patient. Although in the critical sleep the substance of the nerves is immediately excited, and the entire activity of the person is under the influence of the inner sense, still the effects of the different excitations are always referred to the external senses which especially correspond to them.

"If, therefore, a somnambulist says, 'I see,' then it is not the proper eyes that receive the impressions of the ether, but he refers to sight those impressions which are awakened in him by the motions of light from the different outlines, figures and colors. If he says, 'I hear,' it is not his ear that receives the different modulations of the air. He only refers to it the impression of motions which he receives. The same holds good in the other senses, and he makes, so to say, only a kind of translation in order to express the sensations which he receives by the inner sense. For this

reason his expressions may easily be falsely interpreted, and it takes a good observer to understand them correctly. The perfection of this sensation depends clearly on two conditions: On the totally arrested activity of the external senses, and the disposition of the organ of the inner sense. This organ consists in the union and combination of the nerves; and I do not understand by this a single spot or centre, nor a circumscribed region, but the nervous system as a whole; that is, the entire brain, the spinal cord and all nerve-plexuses and ganglia. These different parts may, as regards their functions, be compared singly and in the whole to the different strings of a musical instrument, the accord of which only produces perfect harmony" (pp. 205-208).

"It is essential to again repeat that all kinds of mental aberrations are but modifications of a perfect sleep" (p. 209).

TELLURISM.—The author of this term wrote the following work: "*System des Tellurismus, oder thierischen Magnetismus. Ein Handbuch für Naturforscher und Aerzte, von Dr. D. G. Kieser, Hofrath und Professor zu Jena. 2 Bände. Leipzig, bei Fz. L. Herbig, 1822.*"

I shall quote this author in his own words :

"Animal magnetic influence or animal magnetism upon our earth is the (intentionally caused) reciprocal action of two living organisms upon each other, in which not the *solar* but the *telluric* force preponderates and decides" (Vol. I, p. 7).

"The solar force, although magnetically analagous, is nevertheless directly opposite to the telluric force, it is heterologous to it, for everywhere, where in single things or their lives the solar force steps in, there telluric force and life cease; but where the telluric force predominates over the solar, there the telluric force is homologous to the magnetic force, or is identical with it. Therefore, the night acts magnetically, the day anti-magnetically. The action of the moon, being a part of the earth, is homologous to that of the earth; and therefore the lunar force has the same effect upon somnambulists as the telluric force has" (Vol. I, p. 11).

"The activity which brings about the magnetic rapport is the animal magnetic force, or the magnetic agent. It is, therefore, the living activity of the earth or its representative, the *telluric force* itself, which emanates in different forms during the reciprocal action between two things from the magnetizer upon the somnambulist. It is not anything material, but the force or spirit of the earth which, in the different forms of the magnetizer, either as metallic, vegetable, animal or human

spirit, is always the expression of the *telluric spirit*" (Vol. I, p. 18).

"The communication of the magnetic force to other bodies not magnetic, is not a passive receiving and advancing of a material stuff, as, for instance, as ponce sucks in and retains water; but it is a purely vital process, a true magnetizing of these substances, in consequence of which they assume a telluric life, like the somnambulist, and act as such. The magnetophores might, therefore, more correctly be called *anorganic somnambulists*" (Vol. I, p. 310).

"All magnetophores act less energetically, and only during a certain length of time, steadily decreasing in power, than the body by which they were magnetized" (Vol. I, p. 315).

"As the telluric force is the most universal force of the earth, and no earthly stuff can escape the power of its influence, it follows that all earthly bodies must be conductors of the telluric force" (Vol. I, p. 318).

"The telluric force is, therefore, not an electric or galvanic force, nor is it identical with the mineral magnetic force, neither is it merely the psychic force of man, nor his nervous activity; it is not the all-flood of Mesmer, nor general vital power, nor is it identical with light, heat or chemism, or a dead, fine exhalation of an animal body, nor even the pure psychic force of spirits" (Vol. I, pp. 338-344); but, as said before, the most universal force of the earth, the living activity of the earth, which in the different forms of the magnetizer, either as metallic, vegetable, animal, or as human spirit, is always the expression of the telluric spirit" (Vol. I, p. 18).

The means of magnetizing were: The will, the look and various manipulations with the hands and fingers of the magnetizer and the unmagnetized baquet, all of which Dr. Kieser describes at full length from page 347-407 in Vol. I.

HYPNOTISM.—Dr. James Braid made known his researches on this subject in two works:

1. *Neurypnology, or Hypnotism, or Nervous Sleep*. London, 1843; and,

2. *Magic, Witchcraft, Animal Magnetism, Hypnotism and Electro-Biology*. (3d edition, Churchill, Princess St., Soho, London; Adam and Charles Black, Edinburgh, 1852.)

I shall extract from these books only what is necessary to obtain a clear understanding of Braid's results and views:

"In November, 1841, I was led to investigate the pretensions of animal magnetism, or mesmerism, as a complete sceptic,

from an anxiety to discover the source of fallacy in certain phenomena I had heard were exhibited at M. Lafontaine's conversazione" (*Neurypnology*, p. 2).

"My first experiment was to prove that the inability of the patient to open his eyes was caused by paralyzing the levator muscles of the eyelids, through their continued action during the protracted fixed stare, and thus rendering it *physically* impossible for him to open them" (*Ibid.* p. 16).

"It is on the principle of overexerting the attention, *by keeping it riveted to one subject or idea which is not of itself of an exciting nature*, and overexercising one set of muscles, and the state of strained eyes, with the suppressed respiration and general repose which attend such experiments, which excites in the brain and whole nervous system that peculiar state which I call *hypnotism*, or nervous sleep.

"The most striking proofs that it is different from common sleep are the extraordinary effects produced by it. In deep abstraction of mind, it is well known, the individual becomes unconscious of surrounding objects, and in some cases even of severe bodily inflictions. During hypnotism or nervous sleep the functions in action seem to be so *intensely* active, as must in a great measure rob the others of that degree of nervous energy necessary for exciting their sensibility. This alone may account for much of the dulness of common feeling during the abnormal quickness and extended range of action of certain other functions" (*Ibid.* p. 48).

"The *hypnotic* condition resembled, in two patients who had hypnotized themselves, very much the same state as that produced by the laughing gas. One lost the power of speech for two hours, as happened also after the gas. But there is a remarkable difference between the hypnotic condition and that induced by nitrous oxide gas. In the latter there is great, almost irresistible, inclination to *general muscular efforts*, as well as laughter; in the former there seems to be no inclination to *any* bodily effort, unless excited by *impressions from without*. When the latter are used, there is a remarkable difference again in the power of locomotion and accurate balancing of themselves, when contrasted with the condition of intoxication from wine or spirits, where the limbs become partially paralyzed, while the judgment remains pretty clear and acute. The state of muscular quiescence, with acute hearing, and dreaming, glowing imagination, approximates it somewhat to the condition induced by conium" (pp. 57 and 58).

"The first symptom after the induction of the *hypnotic* state, and extending the limbs, are those of *extreme excitement*

of all the organs of sense, sight excepted. A patient who could not hear the tick of a watch beyond three feet when awake, could do so, when hypnotized, at the distance of thirty-five feet, and walk to it in a direct line without difficulty or hesitation.

"*Smell.*—One patient has been able to trace a rose through the air when held forty-six feet from her.

"The *tactual* sensibility is so great that the slightest touch is felt, and will call into action corresponding muscles, in which will also be found a most inordinate power.

"The *sense of heat, cold and resistance* is also exalted to such a degree as to enable the patient to feel anything *without actual contact*, in some cases at a considerable distance (eighteen to twenty inches), if the temperature is very different from that of the body; and some will feel a breath of air from the lips or the blast of a pair of bellows at a distance of fifty or even ninety feet, and bend from it, and, by making a back current, as by waving the hand or a fan, will move in the opposite direction. The patient has a tendency to *approach to or recede from impressions, according as they are agreeable or disagreeable, either in quality or intensity*. Thus they will approach to soft sounds, but they will recede from loud sounds however harmonious. A discord, such as two semi-tones sounded at the same time, *however soft*, will cause a sensitive patient to shudder and recede when hypnotized, although ignorant of music and not at all disagreeably effected by such discord when awake" (p. 62).

"By allowing a little time to elapse, and the patient to be in a state of quietude, he will lapse into the opposite *extreme of rigidity and torpor of all the senses*, so that he will not hear the loudest noise nor smell the most fragrant or pungent odor, nor feel what is either hot or cold, although not only approximated to, but brought into actual contact with, the skin. He may now be *pricked*, pinched or maimed without evincing the slightest symptom of pain or sensibility, and the limbs will remain rigidly fixed.

"At this stage a *puff of wind* directed against any organ *instantaneously* rouses it to ordinary sensibility and the rigid muscles to a state of mobility.

"Thus the patient may be unconscious of the loudest noise, but by simply causing a current of air to come against the ear, a very moderate noise will *instantly* be heard *so intensely* as to make the patient start and shiver violently, although the whole body had immediately before been rigidly cataleptiform.

"A rose, valerian or asafoetida, or the strongest liquor ammonia, may have been held close under the nostrils without being perceived; but a puff of wind directed against the nostrils will instantly rouse the sense so much that, supposing the rose had been carried forty-six feet distant, the patient has instantly set off in pursuit of it, and, even while the eyes were bandaged, reached it as certainly as a dog traces out game; but as respects valerian or asafoetida, the patient will rush *from* the unpleasant smell with the greatest haste. The same with the sense of *touch*" (p. 63).

"The brain being in a state of torpor, the limbs rigid and the skin insensible to pricking, pinching, heat or cold, *by gently pressing the point of one or two fingers against the back of the hand or any other part of the extremity* the rigidity will very speedily give place to mobility and quivering of the arm, hand or fingers, which is greatly increased by pressing another finger against the neck, head or face. In the latter case the commotion of the whole body is as violent in some patients as from shocks of the galvanic battery.

"By placing *both* fingers on any part of the head, face or neck the commotion almost or entirely ceases.

"By pinching the skin of the hand or arm with one finger and thumb, and the skin of the neck or face with another, *no* effect is produced.

"Pressure made with *isolating rods*, glass or sealing-wax, is followed by the same phenomena as when done by the points of the fingers.

"The *flat hand* applied has very little effect.

"The *pressure* being made against *both hands*, the arms are contorted, and if the head is partially dehypnotized the patient will complain of pains running into the fingers, especially if one point of contact is the hand and the other the face or head. These phenomena do not occur while the skin remains sensible to pricking or pinching" (p. 66).

"The following is the mode of operating for phrenological manifestations: Put the patient into the hypnotic condition in the usual way, extend his arms for a minute or two, then replace them gently on his lap, and allow him to remain perfectly quiet for a few minutes. Let the points of one or two fingers now be placed on the central point of any of his best-developed organs, and press it very gently. If no change of countenance or bodily movement is evinced, use gentle friction, and then, in a soft voice, ask what he is thinking of, what he would like or wish to do, or what he sees, as the function of the organ may indicate, and repeat the questions and the

pressure, or contact, or friction, over the organ till an answer is elicited. If very stolid, gentle pressure on the eyeballs may be necessary to induce him to speak. If the skin is too sensitive he may awake, in which case try again, *waiting a little longer*. If too stolid, try again, beginning the manipulations *sooner*.

"Whispering or talking should be carefully avoided by all present, so as to leave nature to manifest herself in her own way, influenced only by the stimulus conveyed through the nerves of touch exciting to automatic muscular action" (pp. 145, 146).

"*Resumé*.—1. The effect of a continued fixation of the mental and visual eye, in the manner and with the concomitant circumstances pointed out, is to throw the nervous system into a new condition, accompanied by a state of somnolence, and a tendency, according to the mode of management, of exciting a variety of phenomena very different from those we obtain either in ordinary sleep or during the waking condition.

"2. There is at first a state of high excitement of *all* the organs of special sense, sight excepted, and a great increase of muscular power; and the senses afterward become torpid in a much greater degree than what occurs in natural sleep.

"3. In this condition we have the power of directing or concentrating nervous energy, raising or depressing it in a remarkable degree at will, locally or generally.

"4. In this state we have the power of exciting or depressing the force and frequency of the heart's action, and the state of circulation, locally or generally, in a surprising degree.

"5. While in this condition we have the power of regulating and controlling muscular tone and energy in a remarkable manner and degree.

"6. We also thus acquire a power of producing rapid and important changes in the state of the capillary circulation, and of the whole of the secretions and excretions of the body, as proved by the application of chemical tests.

"7. This power can be beneficially directed to the cure of a variety of diseases which were most intractable, or altogether incurable, by ordinary treatment.

"8. This agency may be rendered available in moderating or entirely preventing the pain suffered by patients while undergoing surgical operations.

"9. During hypnotism, by manipulating the cranium and face, we can excite certain mental and bodily manifestations, according to the parts touched" (pp. 150, 151).

"From the first I was of opinion that much of the excitement and many of the phenomena developed were attributable to the altered state of the circulation in the brain and spinal cord, and especially to the greater determination of blood to them and all other parts not compressed by rigid muscles, arising from the difficulty, during the cataleptiform state, of the blood being propelled in due proportion through the rigid extremities. I conclude that the ganglionic or organic system of nerves is *also* inordinately stimulated from the same cause, and thus, having acquired an undue preponderance, induces many of the remarkable phenomena which have been referred to. Whoever examines carefully the injected state of the conjunctival membrane, and of the capillary circulation in the head, face and neck, the distended state of the jugular veins, the hard, bounding throb of the carotid arteries, and the greatly increased frequency of the pulse, during the rigid condition of the limbs, cannot fail to perceive that there is great determination to the head. Again, when all these symptoms are so speedily changed on reducing the cataleptiform condition of the limbs and consequent obstruction to free circulation through them, is the chief cause of the determination to the head and other parts not directly pressed on by rigid muscles." (pp. 155-157).

"The varieties which are met with as regards susceptibility to the hypnotic impression, and the mode and degree of its action, are analogous to what we experience in respect to the effects of *wine, spirits, opium, the nitrate oxide and many other agents*. They are all well known to act differently on different individuals, and even on the same individuals at different times, according to the condition of the system" (p. 158).

Extracts from "Magic, Witchcraft, Animal Magnetism, *Hypnotism* and *Electro-Biology*," by James Braid, 3d ed., London: John Churchill, Princess St., Soho; Adam and Charles Black, Edinburgh, 1852:

"The object of my pamphlet, published in July last, entitled 'Electro-Biological Phenomena Considered Physiologically and Psychologically,' was to prove the subjectivity of the hypnotic, mesmeric and the so-called 'electro-biological' condition in opposition to the theory of the mesmerists and electrobiologists; the former of whom contended for an occult or special influence, or the 'od force' of Reichenbach as the *cause*; while the latter attributed it to an electrical influence, excited and directed by the will and manœuvres of a second party. My theory was this: *That the phenomena resulted from*

the concentrated mental attention of the patient acting on his own physical organism, and the changed condition of the physical action thus induced reacting on the mind of the patient" (p. 10).

"Now, all I have ever laid claim to was simply the discovery of more certain and speedy modes of producing the hypnotic state, and applying it with greater advantage for the relief and cure of disease than by the old-established modes of mesmerizing; and also that my method has enabled me to demonstrate that the influence is *subjective*, or personal, and not *objective*, or the result of the transmission of an occult, magnetic, or odylie, or vital, or nervous influence or fluid, passing from the operator to the patient" (p. 21).

"It is a curious fact, and tells strongly in support of my subjective or personal theory, that while many insane patients, particularly cases of monomania, may be readily enough hypnotized, *I have never yet been able to affect an idiot*. Where there is no mind capable of being aroused to an act of sustained, fixed attention, I have never succeeded in hypnotizing the patient, although I have made many persevering attempts to do so" (p. 43).

"I am satisfied that all the mesmerizing processes produce their effects from what is essentially the same exciting cause as that which induces hypnotic phenomena, viz: by the production of a state of mental concentration, through the attention becoming so engrossed by watching the manœuvres or suggestions of the operator, as for the nonce to render the subject dead or indifferent to all other sensible impressions or trains of thought. In this condition the whole attention of the subject is given to every existing or suggested idea, and thus it works wonders in changing or modifying the existing condition of the physical frame. Moreover, suggestions may be given, either through words spoken or sensible impressions made on any of the organs of special sense. In this stage of the sleep the power of suggestion on the patient is excessive. Whatever idea is suggested to his mind, whether by the natural import of words spoken, or modified by the tone of voice in which they are uttered, is instantly seized upon by the subject and interpreted in a manner to surprise many, and lead them to believe it has been accomplished by a sort of intuition or inspiration. In this way you may vary or modify the ideas suggested in the most remarkable manner, and the patient sees and feels and speaks of all as real, without the slightest desire to impose upon others" (pp. 59 and 60).

"Arousing patients from the hypnotic state.—If I wish any predominant idea or *physical* change which has been induced

to be carried strongly into the waking condition, I arouse the patient *abruptly*, by a clap of my hands near his ear, when at the full height of the desired condition. If tranquilizing is intended, then he had better be aroused slowly and softly, as by gently wafting with the hand, or a fan, or open handkerchief, over the face, or by placing the thumbs gently on the eyes of the patient, or on his eyebrows, and carrying them laterally a few times, so as to produce gentle friction, to which may be added gentle fanning, if required. If the patient is in the sub or half-waking condition, a word spoken or a visible movement of any sort made, so as to break his abstraction excited temporarily by previous suggestion, will suffice" (p. 72).

"My investigations, supported as they are by the researches of many men of the highest rank and intelligence, fully prove that the solution of the problem is this: That many patients, who are naturally highly susceptible to such influences, become, at length, liable to be affected entirely through the force of imagination, belief, or habit; and that they do not exhibit these manifestations from any desire to deceive others, but because they are self-deceived, through their implicit credulity, belief and fixity of their attention on the ideas suggested in their hearing, or in any way associated in their minds with certain processes and combinations of circumstances" (p. 103).

"In conclusion, I beg leave to remark that, from ample experience, I feel pretty confident that all the phenomena alleged by me as producible in the above-named manner are veritable *facts*—that they are *not fallacies*. And from a consideration of the whole I am led to infer that my *subjective or personal theory* is, at all events, a step in the right direction, and somewhat nearer the truth than the theories of the mesmerists and electrobiologists" (pp. 104 and 105).

STATUVOLISM.—The author, Dr. Wm. Baker Fahnestock, who coined this term for artificial somnambulism, gives the following instructions in his book on "Statuvolism, or Artificial Somnambulism" (Chicago: Religio-Philosophical Publishing House, 1871):

"Various methods have been employed by different operators to induce somnambulism. The plan adopted and practiced by Mesmer and his pupils has already been detailed in a preceding chapter. The plans of modern magnetizers are scarcely less absurd than that employed by Mesmer and his immediate followers.

"Some operators of the present day, who believe in a magnetic influence, still pursue the ludicrous method of sitting

down opposite the patient, holding his thumbs, staring into his eyes, and making passes, etc., until the desired object is effected. Others who believe looking to be essential, direct the patient to look at some object intently until the lids close and the patient becomes unconscious.

"Very few, however, can be induced to enter the state in any of the above ways, and those who do usually fall into the *sleeping condition* of this state are generally dull, listless and seldom good clairvoyants. The most rational, certain and pleasant way of inducing this state which I have discovered is the following:

"When persons are desirous of entering this state I place them upon a chair where they may be at perfect ease. I then request them to close the eyes at once, and to remain perfectly calm at the same time that they let the body lie perfectly still and relaxed. They are next instructed to throw their mind to some familiar place—it matters not where, so that they have been there before and seem desirous of going there again, even in thought. When they have thrown the mind to the place, or upon the desired object, I endeavor, by speaking to them frequently, to keep their mind upon it, viz.: I usually request them to place themselves (in thought) close to the object or person they are endeavoring to see, as if they were really there, and urge them to keep the mind steady, or to form an image or picture of the person or thing in their mind, which they must then endeavor to see. This must be persevered in for some time, and when they tire of one thing, or see nothing, they must be directed to others successively, as above directed, until clairvoyance is induced. When this has been effected the rest of the senses fall into the state at once, or by slow degrees, often one after another, as they are enervized or not. Sometimes only one sense is affected during the first sitting. If the attention of the subject is divided, the difficulty of entering the state perfectly is much increased, and the powers of each sense while in this state will be in proportion as that division has been much or little.

"Almost every subject requires peculiar management, which can only be learned by experience or a knowledge of their character, etc. Much patience and perseverance is often required to effect it; but if both be sufficiently exercised, the result will always be satisfactory—if not in one sitting, in *two* or *more*. I have had several to enter this condition after twenty sittings, and had them to say that if they had not interfered and had allowed things to take their course they would have fallen into it in the first sitting. This shows that

those who do not enter it in one or two sittings must do something to prevent it.

"Many persons have entered the state in the above manner, who could not do so in any other, although repeated trials had been made to effect it.

"Taking hold of the thumbs and looking into the eye or at any other object particularly *is by no means necessary*; and as this state is one that depends entirely upon the state of the subject's mind, and is brought about by an act of his own will and not by that of the operator's, it must be evident to every intelligent mind that all that the operator can do, independent of the instructions which he may give, or the care he may take of them, etc., is perfectly useless, and ought to be dispensed with.

"I have found that persons always enter this state better without any contact, looking, passes, or anything of the kind, particularly when they are assured that they have some competent person to take care of and to converse with them while in it; and by observing carefully the instructions which I have given, it is possible for any person to throw themselves into this state *at pleasure*, independent of anyone; but it might not always be prudent to do so for the *first time*; for *some*, upon entering the condition for the *first time*, become unconscious of all that is passing around them; and if such persons were to throw themselves into it independent of anyone, and had not consented or made up their minds before entering it to hear or to speak to someone, it is most likely that when in it and spoken to they would not hear anyone, and in all probability would sleep for a longer or a shorter time without doing anything, and when they did awake would remember nothing, and scarcely know that they had been in it at all. Or they might get up and wander about, as is sometimes done by natural somnambulists, and unknowingly get into difficulties or meet with some accident which might not be very agreeable when they awoke.

"When they have entered the state frequently and have had the proper instructions *while in it*, the case is very different. They are then able to move about with as much certainty and safety as if they were awake.

"The sensations experienced by those who enter this state are variously described by different subjects; but most commonly they agree that after the eyes are closed and they have been endeavoring to see for a longer or shorter period, a drowsiness ensues, accompanied with more or less 'swimming of the head,' and a tingling sensation over the whole body.

"Some experience a feeling of sinking down, as if they were passing through the floor; others, again, feel as light as a feather and seem to ascend or to be suspended in the air. Some start and twitch involuntarily in various parts of the body; while in others the breathing is more or less affected; but there is no necessity for their feeling unpleasantly in any way. Some feel warm, others cold, but none of the sensations are described as being unpleasant, and when the state is entered perfectly the feelings are said to be delightful.

"All that is needful, when it becomes necessary that they should awake, is to ask them whether they are ready or willing to do so, and if they are, I direct them to do so at once, and they will awake at the word 'now!' in an instant. If, however, you should desire to awaken them, and they are not willing, it will be found impossible to do so contrary to their will, and you will be obliged to await their pleasure. Before they awake, however, I commonly request them to remember how they felt and what they saw, etc., or they may not know anything about it when they do awake, particularly if it be their first sitting. With some this is not necessary after the first or second sitting, as they commonly make up their minds to do so of their own accord. Yet I have seen some with whom it was always necessary. Indeed, I have two subjects with whom I have the greatest difficulty, when asleep, to persuade them to remember anything. Yet when they awake they are much mortified at not having any recollection of what has transpired; and it seems as if it were impossible for them to carry the resolution to do so *into* that state, and when in it to resolve to *remember* when they awake. Others, on the contrary, have the power of remembering whatever they please, or of forgetting what they please; or, in other words, they can remember all that has transpired, only a part of it, or nothing at all, as they may feel disposed at the time.

"This quality or power of the mind, while in this state, enables them to *create* pain, or feel pleasure at will, and if they imagine, or determine, that there is or shall be pain or disease in any part of the body, that pain or disease will certainly be felt at the time and place designated, and will continue until the mind acts, or is directed so as to alter the condition. This peculiar power of the mind, while in this state, I have taken advantage of to cure diseases, and if the mind be properly directed while in this state, so as to make them resolve to be well, pains, contracted habits or diseases are removed by an act of their will, as if by magic, and will last until the conditions are changed, or altered by influencing causes, or by a positive act of the subject's will." (*Statuvolism*, pp. 67-74.)

After having thus introduced, in their own words, four of the main authors on a subject which we call "*Mesmerism*," in honor of its rediscoverer and earnest expounder, Dr. Mesmer, we shall now state, in a few words, the agreement and the difference between them. They all agree that, by certain manipulations and procedures, a certain state can be induced in an individual subjected to them, of the most extraordinary and startling physical and psychical nature. They all differ from one another as to the means of inducing this state. Mesmer held that there existed an infinitely fine fluid pervading the whole universe; that this fluid could be accumulated in a person (or thing) like magnetism, and transferred to another person, in whom the nervous fluid, which Mesmer considered to be of the same nature as the "all-fluid," was by this means so excited and led in different directions and to different actions, that it produced this extraordinary state. As he considered this process similar to the induction of the mineral magnetic influence, he called the influence of certain persons upon others "Animal Magnetism."

Dr. Kieser, on the other hand, denies the existence of this universal fluid, and considers the animal magnetic influence due to the *telluric force*, which, according to his view, is not anything material, but the force or spirit of the earth in its different forms as a magnetizer, either as metal, vegetable, animal or human spirit. The magnetizing is to him a purely vital process, in consequence of which the magnetized assume a telluric life and act as if under the earth's influence.

Dr. Braid asserts "that the influence is subjective or personal, and not *objective*, or the result of the transmission of an occult, magnetic, or odyllic, or vital, or nervous influence or fluid, passing from the operator to the patient. It is on the principle of overexerting the attention, by keeping it riveted to one subject or idea which is of itself of an unexciting nature, and overexercising one set of muscles, and the state of strained eyes, with suppressed respiration, and general repose which attend such experiments, which excites in the brain and whole nervous system that peculiar state which I shall call *hypnotism* or nervous sleep."

Dr. Fahnestock, on the contrary, contends and proves by many experiments made about the time when Braid was engaged in his investigations, "that this state is one that depends entirely upon the state of the subject's mind, and is brought about by an act of his own will and not by that of the operator; that all that the operator can do, independent of the instructions he can give, or the care he may take of them, etc., is perfectly useless and ought to be dispensed with." Being a state into which the subject lapses by the exercise of his own will, Dr. Fahnestock called it "*Statuvolism*."

But these modes are not the only means by which the mesmeric state may be induced. The seamstress, whom Dr. Pröll, at Gastein, took in his house, was thrown into it by accidentally touching a "milk-quartz," of the nature of which she knew nothing. There was no expectation, no fixing of attention, or overexertion of any of her muscles, no wish or will on her part to be thrown into that state, of which she had not the slightest knowledge. It was the simple contact with the stone which induced in her the mesmeric state. (See 113.)

The Society for Psychical Researches found that, "with sensitive 'subjects,' the ticking of a watch held at the ear, and light monotonous passes acting on the nerves of touch, were as effective as the fixed gaze" (Proc. of S. P. R.; Part VII, p. 269). Indeed, the range of means for the induction of the mesmeric state may, by further experimentation, be still more widened. In fact, each mesmerizer follows his own mode with more or less success, and some persons do not succeed by any of these means. We have no right to form conclusions from the success of one or the other of these means as to the nature of the mesmeric state; and if we prejudge "this state" according to a certain mode or certain means by which *we* best succeed in inducing it, we certainly prejudice our own cause. The names given certainly fall far too short of the whole range of phenomena, of which they only describe a part. This is obviously the case with all the names heading this chapter. *Animal magnetism* does not explain the many cases where this state has been induced by unmagnetized agents (Kieser's method); *tellurism* is an ambiguous term, and, therefore, so

unmeaning that we scarcely know what to make of it; *hypnotism* seems to be a misnomer, as even, according to Braid's own observation, there is very little similarity between this state and common sleep; and *statuolism* comprises too little of the entire range of the phenomena observed. The name *Mesmerism* seems, therefore, to be best adapted as a designation for a state which is still so little known, or is wholly disputed. It honors the rediscoverer and first promulgator, and does not in any way commit us to any theory thus far elaborated.

The *symptoms*, although varying greatly in different cases, are, in the main, the following:

Braid says: "In the hypnotic state vision becomes more and more imperfect, the eyelids are closed, but have for a considerable time a *vibratory motion* (in some few they are forcibly closed, as if by spasm of the orbicularis). The organs of special sense, particularly of smell, touch and hearing, and those of heat and cold, and resistance, are greatly *exalted*, and afterward become blunted in a degree far beyond the torpor of natural sleep. The pupils are turned upward and inward, but, contrary to what happens in *natural sleep*, they are greatly *dilated* and highly insensible to light. After a length of time the pupils become contracted; the eyes still being insensible to light.

"The pulse and respiration are, at first, slower than natural; but, immediately on calling muscles into action, a tendency to cataleptiform rigidity is assumed, with a rapid pulse and oppressed and quick breathing. The limbs are maintained in a state of tonic *rigidity* for any length of time I have yet thought it prudent to try, instead of the state of flaccidity induced by common sleep. The most remarkable circumstance is that there seems to be no corresponding state of muscular exhaustion from such action." (*Neurypnology or Hypnotism*, p. 55.)

"In passing into natural sleep, anything held in the hand is soon allowed to drop from the grasp, but in the hypnotic sleep it will be held more firmly than before. *This is a very remarkable difference.* The power of balancing themselves is so great that I have never seen one of these hypnotic somnambulists fall." (*Ibid.*, p. 56.)

This observation is not corroborated by the experiments of the Committee on Mesmerism. On the contrary, only few were able to balance themselves in that state.

"Anæsthesia and rigidity can be induced, either generally or partially, in any specified portion of the body. Usually, however, anæsthesia and rigidity exist at the same time, and the anæsthesia may be so complete that no amount of pinching, pricking, burning, or strong electric shocks will produce the slightest protest or sign of pain, while at the same time the subject is acutely sensitive to pain inflicted on the operator." (Proceedings, Part III, p. 227.)

"Partial rigidity and anæsthesia may be induced while the 'subject' remains otherwise in a perfectly conscious and normal condition." (Proceedings, Part IV, p. 257.)

"A community of feeling, or *rappport*, between the 'operator' and the 'subject,' seems wholly indisputable, at least in many cases. The Committee on Mesmerism found a community as to sensation (Part IV, p. 225), will (Part IV, p. 256), and the ability of undoing this state." (Part VII, p. 290.)

"It is astonishing how most of the 'subjects' when in that state may become controlled by '*suggestions*' of the operator, and even obey commands given in that state when out of it, in a way, however, that the end being suggested, the 'subject' will take his own means to accomplish it." (Proc., Part VII, p. 284.)

One more remarkable symptom is that the subject awakes unconscious of anything which has happened during that state. However, this is not always the case. We see recollections in all shades carried over from the mesmeric into the normal state, especially from the first, or *alert* stage, as Mr. E. Gurney calls it. The alert stage lapses either gradually or suddenly into the *deep* stage, which is characterized "by closure of the eyes, insensibility to pain, disinclination, amounting sometimes almost to inability, to move, diminution of irritability of the conjunctivæ and susceptibility of the pupils to light, with irresponsiveness to any voice but that of the operator. But of these characteristics the only one which is invariable is the bodily torpidity." (E. Gurney, Proceedings, Part V, p. 65.)

116. THEORIES EXPLAINING THE MESMERIC STATE.

Under the title of "*The Problems of Hypnotism*" Mr. Edmund Gurney, in the Proc. of the Soc. for P. R., Part VII, p. 265, etc., gives an excellent article, discussing in an exhaustive manner the now existing explanations of the mesmeric state. I shall not go over this ground a second time, since Gurney has shown clearly the insufficiencies of the one-sided physiological, as well as of the one-sided psychological hypotheses. I must, however, speak here of certain terms which in these discussions are largely used, and sometimes so vaguely used that one cannot help thinking of Goethe's words: "*Da wo die Begriffe fehlen stellt ein Wort zur rechten Zeit sich ein.*" Even at the risk of repeating myself I shall consider the following terms: Automatic, cortical and motor centres, attention, concentration and reverie, memory and recollection.

Automatic means self-moving, a very wide and ambiguous term, but usually applied to machines which, by a driving power and adapted mechanical contrivances, simulate some definite action or actions of man or animal, purely in a mechanical manner. There is no spontaneity about it. This alone ought to make us hesitate in applying this term to psychical states. When applied to actions unconsciously performed (in the common sense), we ought to know that such actions cannot be performed without the consciousness of the special mental modifications necessary to their performance, although there may not exist any consciousness of the same. The performance of any psychical action always implies an excitation, *i. e.*, consciousness of the several mental modifications necessary thereto. (Compare the chapters on the different forms of consciousness in the preceding portions of this work.) When applied in the sense of *spontaneous* action, the term automatic implies that there are feelings or impulses at the bottom of it, which feelings or impulses ought to be defined. This is never done. The term automatic, therefore, does not *explain* anything. It is a mere catch-word used boldly by some "scientists," because apparently it snugly covers their own ignorance, and is believed in by the unthinking crowd,

because, not thinking for themselves, they take any learned expression seemingly appropriate as self-evidently correct.

Cortical and motor centres. I spoke of this materialistic subject at length in the physiological part of this work. (Compare 90 and others.) Although it is perfectly correct to assume corresponding corporeal means or organs by which the psychical governs the body in its connection with the external, it is altogether incorrect to consider these material parts as the *cause* of the phenomena ensuing. They are simply the *conditions* necessary for the production of these phenomena. On the other hand, it is true that when the corporeal conditions change, psychic utterances must likewise be modified. A cause cannot bring forth its normal effects unless normal conditions are given. The relation between soul and body is so intimate that the activity of the one cannot be understood without taking into full account also the state of the other. To refer the solution of the difficult problems offered by a consideration of the mesmeric state to *inhibition* of this or that nervous centre, is obviously merely begging the question. "What part of the brain is inhibited? By what is it inhibited?" are clearly questions which thus far have not been answered by the advocates of the nervous centre and the inhibition theory.

An equally poor showing is apparent in those "explanations" which make constant reference to "*attention and concentration, memory and recollection.*"

Attention, as we have seen in 100, "is the *arousing of vestiges previously acquired to a present impression*," and "its degree is nothing more nor less than the amount or number of vestiges previously acquired joining the excitation of the present impression."

Now, to look fixedly upon a button or "unexciting" object, is surely not apt to arouse many vestiges formerly acquired, unless in a speculative head who knows something about the manufacture of buttons, and calculates what the price of a dozen of the particular kind gazed at might be. He will not go to sleep, but will keep awake until he comes to some conclusion as to the material, the way of manufacturing, and

the price of that kind of buttons. His *attention* to the button will keep him *awake*. Another, knowing nothing of the button business, while staring upon such an object and not being troubled otherwise with many thoughts, may readily fall asleep, not on account of his attention to the button, to the perception of which no particular vestiges previously acquired are aroused or added, because he has none, but by his staring, which prevents him from observing what goes on around him, or, in other words, which prevents the arousing of vestiges previously acquired by what he might see or hear. The object must be unexciting enough *not* to cause attention, but to *deadens* attention to other things. Instead, then, of *attention* being requisite to promote the mesmeric state, it is just the opposite condition that is required, a blank, passive state of the mind that neither thinks, wishes nor wills. This is proved by the many cases in which the mesmeric state has been induced by quite different means than staring at a button or a lancet.

The irrelevancy of the terms "*reverie* and *abstraction*" to the mesmeric state has been so aptly and clearly shown by Mr. Gurney in the article above cited (Proc., Part VII, p. 267), that it would be waste of time to dwell upon it.

Of much greater importance is it to have a clear understanding of the terms "*memory* and *recollection*." Of all fundamental, as well as of all derivative modifications, the law holds that: What once has been produced in the soul with any degree of perfection *continues to exist*, even when it has ceased to be excited, *i. e.*, has become unconscious. It continues to exist in the substance of the soul as a vestige, that is, as a modified primitive force. This unconscious continuance of what has once come into existence (no matter in which of the different primitive forces of the soul) is *memory* (102).

From this it follows that what has been produced in the soul during the mesmeric state with any degree of perfection must also continue to exist even when it has ceased to be excited or has again become unconscious. But how can we know that this is the case? By the fact that the mesmeric subject is capable in many instances of *remembering* what has

transpired during that state. This has been proven beyond any doubt by the experiments of the Committee on Mesmerism, and Mr. Gurney again gives an excellent account of it in his article on "*The Stages of Hypnotism.*" (See Proceedings, Part V, p. 67, etc.) But years before, P. G. van Ghert had discovered how he could easily *make* his somnambulistic subjects remember all they had seen and spoken during their somnambulistic state, by simply connecting these occurrences to a single idea, which, when recalled during the normal state, would bring to consciousness all that had passed during the somnambulatory state in connection with it. Thus a somnambulist, who had examined the condition of her lungs during that state, and had found them to be not so seriously affected as she imagined them in her normal state, complained to her mesmerizer (van Ghert) that she felt sorry that she could not know anything of what she then seen during her normal state.

"Yes, you can," replied van Ghert, "if you will only direct your attention closely to what you then see, and connect it firmly to the number 'six.' Then when you get awake, if I ask you what you were to remember when I call your attention to the number 'six,' you will know everything about it." And so it was. Van Ghert adds: "I have been quite successful in the application of this procedure as often as I have practiced it, and consider it one of my most felicitous discoveries." (*Archiv für den thierischen Magnetismus*, Vol. III, Part III, pp. 35-37). This was in the year 1818. Dr. Kieser has confirmed it more than once in the case of the boy Arst, around whose neck he tied a white ribbon, or pasted a wafer on his nose during his somnambulatory state, with the admonition to remember what then had passed as soon as he would observe this sign when awake. (*Archiv*, Vol. VI, Part I, p. 165). And Dr. Fahnestock states that his subjects were capable of remembering all that happened in their mesmeric state "if they willed it." All this proves clearly that what has been produced in the soul during the mesmeric state with any degree of perfection also continues to exist after what has been produced has ceased to be excited or become unconscious (as is usually the case on entering again the

normal state), and that it remains a property of "the memory," an acquisition of the soul, although existing in a quiescent state. So long, however, as it remains in this latent state, it is of no practical use to us. If we can reproduce these acquired mental modifications in consciousness, or, as it is usually termed, *remember* or *recollect* them, we only really know that we possess them. The mere rising of latent modifications into consciousness, however, is not exactly what the term "recollection" expresses. Only when the process of becoming conscious starts from some main or leading notion, and proceeds so far that the notions of circumstances, time, place, etc., under which we formed that mental modification, also become conscious with it (so that it is brought again into connection with our former life), can we say we have a *recollection* (102).

This is not always the case after the mesmeric state. "Subjects" will sometimes perform exactly what they have been bidden by the mesmerizer after they have again entered the normal state, but have no recollection as to the time, circumstances, etc., under which the command was given. It is a simple reproduction into consciousness of a conative modification which was excited during the mesmeric state; or the leading notion, to do this or that, rises into consciousness without exciting also the circumstances, etc., under which the notion took its origin. But when, as in the case of a gentleman upon whom the committee operated, he afterward remembered that it appeared to him as though he knew it to be wrong to say "yes or no," but he said the one or the other because he felt impelled to do so by an influence of the mesmerizer, and whether he said the one or the other did not matter much to him, then it is a *recollection*, because it is an excitation into consciousness of all the circumstances which took place at that time.

This distinction between memory, reproduction and recollection we should bear in mind, for we may have reason to apply it to advantage further on.

The different "theories" thus far advanced to explain this occult state have certainly failed to bring us nearer to an insight into the secret workings of the human soul.

Automatism is truly applicable only to mechanical contrivances wholly destitute of living forces; *changes in cortical and motor centres*, and also of *the whole nervous system*, and "*inhibition*" should first be explained (why they occur, of what their nature consists, and how they can so abruptly be induced and again terminated) before they, with so much confidence, are made an explanation of this occult state.

Attention riveted to an object which is of itself of an unexciting nature, may in some cases, where it produces just the reverse (*inattention* to the surroundings), produce hypnotism, but is very far from *explaining* this state. *Reverie* and *concentration* are not at all applicable to the mesmeric state. What, now, is left us?

117. PSYCHOLOGICAL CONSIDERATIONS OF THE MESMERIC STATE.

We shall not be able to advance to a satisfactory solution of the problem of mesmerism so long as we continue to consider soul and body as two diametrically opposite entities, the reciprocal relation of which, though admitted 'on all sides, has thus far not been fully understood. I have endeavored to set this relation in a proper light when treating of force and matter and soul and body in 109 and 110. Here I can only refer to these explanations and mention that this relation is founded, upon the fact that soul and body consist of an uninterrupted circuit of living forces, from the highest mental—sight and hearing—to the lowest bodily—flesh and bone—forces; that, therefore, this relation may be simply reduced to an immediate transference of living forces upon living forces by the law of *diffusion of mobile elements*, which regulates not only the activities within the soul and within the body, but also the reciprocal action between the two (32).

Considering first the ways and means by which the mesmeric state may be induced, we have to note the following:

1. *Induction by means of one's own will*.—"Annals du Magnétisme Animal, à Paris, chez I. G. Dentu, Imprimeur-Libraire, Rue du Pont de Lodi, No. 3, 1818," make mention of *natural* and

voluntary somnambulism; as voluntary are mentioned (a) a case, from Avicenna de Animalibus, of a man who could voluntarily paralyze his limbs; (b) a case of a clergyman who could voluntarily go into apparent death; (c) the Turks, among whom voluntary ecstasy is quite common and hereditary; (d) the Brahmins, among whom voluntary somnambulism is said to be found frequently, and who even teach the ways and means to produce it.

Hieronymus Cardanus could, by his mere will, put himself in ecstasy. He says: "As often as I want to I lose the use of my senses and enter the state of ecstasy, but cannot remain long in this state. I feel, or more properly expressed, I produce when I enter this state a kind of severance in the neighborhood of the heart, just as if the soul were leaving the body, and it is as if a door were opened, or a band around the brain had been loosened. The commencement of this feeling is in the head, especially in the cerebellum, and from here it extends itself with great power over the entire spine. I feel that I am external to my body and can keep myself only with great exertion in this state" (*Sphinx*, Vol. I, Part V, 1886, p. 329).

To this class partly belongs Fahnestock's "Statuvolism."

2. *Induction by means of another's will.*—The most remarkable instance of this kind has been related by Dr. F. Zöllner, in his *Wissenschaftliche Abhandlungen*, Vol. III, p. 532, as follows: "During his stay in Berlin, Mr. Hansen had frequent opportunities to mesmerize a jeweler, Mr. L. Ehrenwerth, 39 Jerusalem Strasse, Berlin, and to observe particularly the strong psychic influence he had over this gentleman. One day Hansen, being invited by Mr. Ehrenwerth to dinner, found there, beside the members of the family, two other gentlemen likewise invited. While they all were conversing together a customer entered the store, which joined the sitting-room, but was separated from it by a door. Mr. Ehrenwerth went into the store to attend to the customer, closing the door behind him. At this time one of the persons present asked Mr. Hansen whether his power of influencing a person would reach into another room shut off from where he was. Mr. Hansen answered that he had had cases of this kind in his own practice, although

only seldom, and that a number of such cases had been recorded by trustworthy witnesses of other magnetizers. He volunteered to make a trial at once while Mr. Ehrenwerth was in the store, and asked the company to determine what he should will Mr. Ehrenwerth to do. One of the company proposed that Mr. Ehrenwerth should be made to select three of the costliest diamond rings in the store and hand them over to Mr. Hansen on his return. At once Mr. Hansen concentrated his will and ideas upon the proposed scheme. All were listening and watching behind the door to observe what Mr. Ehrenwerth would do in the store. After the customer had left Mr. Ehrenwerth did not return to the company at once. They heard him walking about in the store, opening and shutting several glass cases, and finally approach, with lingering steps, the door of the sitting-room, which he opened, and then, to the astonishment of the whole company, went to Mr. Hansen and laid three diamond rings in his hand. Mr. Ehrenwerth did all this in a state of unconsciousness, similar to that in which those persons were who ate potatoes for apples when influenced by Hansen to do so. Not until Mr. Hansen had awakened him by blowing at him and calling aloud 'wake,' did Mr. Ehrenwerth return to his natural condition, without remembering the past manipulations he had performed."

3. *Induction by means of various manipulations of an operator*—such as passes with the hands from the forehead down the arms to the hands, and holding the thumbs, or passes over the entire body, or laying the palms of the hands upon the pit of the stomach, on the head, or spine or different other places, or blowing upon the one or the other of these parts, etc., the usual method of old school mesmerizers; or fixation of eye or ear upon "unexciting" objects—Braid and the modern mesmerizers.

4. *Induction by means of contact with mineral and vegetable substances*—such as Kieser's sideric baquet (Kieser's *System des Tellurismus*, Vol. I, p. 429 etc.), the milk-quartz in the case of Dr. Pröll's patient (113), aconite in Van Helmont's case, which made him feel as though all his mental operations were performed in the stomach; the perfuming substances which were used by the priestesses of Delphi, etc.

1. *One's own will*.—What is it? There lies the difficulty. Even here we will have to part with old accepted notions. The will is not a one power of the soul, as has been taught and received so generally, a power which can will anything it pleases. An act of will is quite a complicated mental process, as we have shown in 41. It requires

(a) A special desire in connection with mobile primitive forces, which cause

(b) An excitation into consciousness of all the means by which the desired object may be obtained; and,

(c) The full conviction, beforehand, that the desired object can be attained by us, because we know ourselves in the possession, not only of the means, but also of the ability, to apply these means for that purpose.

When, therefore, Hieronymus Cardanus and others could *will* themselves into the mesmeric state, they had to fulfill all these conditions. They first had to have a desire to fall into this state; secondly, they had to know and to rouse into consciousness the means by which this object could be accomplished; and thirdly, they had to know themselves in possession not only of these means, but also of the ability to apply these means. All this they had to possess, whether they found it accidentally, by study, or by the teaching of others, and they had to practice it until they became experts. For it is not sufficient that a desire and a knowledge of means to attain an object should exist in the soul separately. The two must be joined together in one conscious act (42), and then by repetition must be developed into prompt action. Cardanus does not tell us what these means were. He merely states: "As often as I want to, I lose the use of my senses," and then describes the feelings that followed. Fahnestock, in describing the manner in which he put his patients into the mesmeric state by their own will, requests them to close their eyes and to throw their minds to some familiar place, to keep their minds steady and to form an image or picture of the person or thing in their mind, which they must endeavor to see (115). With some he succeeded quickly, with others only after many trials.

This "one's own will," then, is not a general will-power, but a special desire conjoined in consciousness with a corresponding series of ends and means, which one must know he is able to apply to attain that end. There is thus nothing mysterious about its action. It is by the diffusion of mobile elements that the normal conscious state is converted into the abnormal or mesmeric state.

2. *Another's will.*—The same is true of another's will, or of anybody's will. If one wants to influence another in a special way he must first have this special desire, this must be joined in consciousness with the corresponding series of ends and means, and at the same time he must be convinced that he is able to apply these means and thus attain that end. Without all this his desire will remain a "wish." If this desire and these ends and means are communicated by word or deed, we do not find anything particularly remarkable in the proceeding nor in the results. It is an occurrence of our daily intercourse with other people. But when we see another will affect a person at a distance, even through closed doors, without any of the usual means of sensory communication, as in the case of Hansen and Ehrenwerth, we feel rather perplexed at such effects. The solution of this problem, however, has partly been given in the chapter on "thought-transference," in 114. The excitation of the like or similar modifications in another mind is not a transference of psychic mobile elements in *space*. They are spaceless themselves, and therefore not restricted by corporeal boundaries. When Mr. Hansen compelled Mr. Ehrenwerth to do his (Hansen's) will, he had the desire to do so, and with this special desire joined at the same time the concentration of his primitive and partially modified primitive psychic forces upon Mr. Ehrenwerth, as the means to excite in his mind the similar modifications, which was the end to be attained. If he had not practiced this concentration for years, and, on the other hand, if Mr. Ehrenwerth had not been endowed with a receptivity responsive to it, the trial would not have succeeded. Scarcely another would have achieved these results, scarcely another could have been influenced in this way. But where the two meet (the ability of concentration and

the receptivity for such psychic influence), success is assured upon the same laws of diffusion which govern the constant activity in our own minds.

3. *Manipulations of an operator.*—"It is a fact that some persons can operate successfully and others cannot. There are all varieties, both of power and of susceptibility; but if we take a casual group of persons, omitting those who are in no degree susceptible, we shall probably find that they can be arranged somewhat in the following order: A and B can hypnotize *themselves*, either by the inward and upward squint, or, as it may sometimes seem, by mere imagination and expectancy. C and D cannot hypnotize themselves, but can be hypnotized by gentle rhythmical stroking by the hand of almost anyone. E and F can be slowly and partially affected by almost anyone, but immediately and thoroughly by a given 'mesmerist,' X. The rest of the representatives of the letters of the alphabet can be put into the sleep-waking state by X and by X alone, even though they may have no previous notion that X can affect them; nay, even though they are distinctly told that it is not X but Y who will be able to control them. In such a case, as we have ourselves seen, Y may be a Goliath and X a David in comparison, but the big man will not succeed in doing in an hour what the small man, who has the specific gift, will do in five minutes." "And just as X alone can send these persons into the trance, so X alone can awake them out of it. It is very easy to take care that the subject shall have no previous notion that X alone will be able to wake him; and, as a matter of fact, the most striking illustrations of this rule are cases where everyone present, mesmerist included, is new to mesmerism, and believes that anyone who chooses can wake any 'subject' up again. A typical case is somewhat as follows: A group of persons at an evening party begin to mesmerize each other in joke. One of the guests sends a schoolboy to sleep and drives off, thinking nothing more about it. At the end of the evening the boy's parents try to wake him up. They cannot do so. The boy begins to rave, and is worse when touched or spoken to. Next morning they send

in alarm for the guest who has done the mischief. He succeeds in waking the boy, but the experiment is followed by a week of headache and depression." "The reality of the mesmeric influence is further shown in the distress and even danger which sometimes follows *cross-mesmerization*—on passes, that is to say, made by Z upon a person whom X has already mesmerized, and over whom X may make passes as often as he likes with only a soothing result. In such a case Z's passes or personal contact may very probably have no effect whatever; but in a specially sensitive 'subject' they sometimes bring about a state of mental chaos of alternating violence and bewilderment, which, though it almost always subsides after a time, constitutes a risk against which experimenters in mesmerism must, before all things, be on their guard. To the reality of this singular state, whatever its cause, we can testify from personal experience." (Second Report of the Committee on Mesmerism. Proc., Part IV, p. 252.)

From this it incontrovertibly follows that there is an effluence going from the operator to a "subject" who is capable of receiving it. Braid and Fahnestock denied this effluence *in toto*, but both proved it by their successes, which they obtained where others had failed. It is certainly not an effluence which can be measured by electrometers, or barred by insulating glass-rods. It is force that acts upon force according to the law of similars, and for which exists only one reagent—the living organism. This explains why one person can operate successfully upon some persons and others cannot. The effluent forces must meet responsive forces, just as the light must meet sight-forces, or sound-waves must meet hearing-forces, as no amount of *light* will make us *hear*, and no amount of *sound* will make us *see*. This explains also the distress and even danger which sometimes follows cross-mesmerization. The double influence must necessarily, on account of its disharmony, produce confusion in the "subject," as well as opposite influences pouring at the same time upon one who is in a normal conscious condition, and may be harassing to distraction.

The various manipulations applied by operators may be merely convenient ways to which the one or the other operator

has accustomed himself; but they may not be unessential. Braid succeeded best by fixing the eyes of the subject upon his lancet-case, held a little above the straight line of vision. The committee, trying this mode, had very little success with it (Proc., Part III, p. 220). Mr. G. A. Smith, who mesmerized successfully before the committee a given finger of a subject's hands by making passes over it and looking at it, did not succeed if he made the passes without looking, or if he merely looked at the finger without making passes over it at the same time. (Proc., Part IV, p. 257.) This seems to favor the supposition that the mesmeric influence may be exerted by certain manipulations more effectually than by others; because, on the part of the operator, he may be so constituted that the acting influence is more readily diffused through his eyes, his words, breath or hands; and on the part of the subject, this influence may be more readily received by the eyes, ears, head, pit of stomach, etc. But all proves that the process rests on the diffusion of mobile elements.

4. *Contact with mineral and vegetable substances.*—Everything in the material world is force, or rather a compound of forces, which appears to the different senses in different ways, accordingly as the nature of objects are capable of affecting the primary forces (109). The beneficial, as well as the noxious, effects of certain plants and minerals around us have existed as long as man has stood in communion with external nature, and the observation of these influences has gradually developed into the science of medicine. Indeed, this influence of external nature upon the human system is denied by no one. It exerts itself whenever it meets a responsive receptivity. The only dispute that could possibly arise here might be about the mass or quantity which could affect. However, as it has been proven millions of times that matter, even in infinitesimal doses, is capable of exerting a definite influence, and that matter, in certain forms, according to recent experiments of physicians made before the Congress of Physicians at Grenoble, August, 1885, affects characteristically, even at a distance, some persons in whom is found a responsive receptivity, it may not be far from the truth to assert that even in such cases we have to deal

with a diffusion of forces upon forces, according to the law of similars.

Thus, concerning the ways and means by which the mesmeric state may be induced, it may be said of all the methods of producing that state, that we can reduce them all to the simple law of the diffusion of mobile elements.

We now come to the consideration of a more difficult point *concerning the nature of the mesmeric state*. The symptoms of this state have cursorily been given in 115, and the examination of the means to induce this state may aid us in understanding these symptoms. We have first to consider *the changes in the sensory functions* during the mesmeric state. They, in part or as a whole, become dulled or entirely suspended or changed, for the time being. We cannot say of any of the senses that one or the other is invariably first affected. Sight, though, it seems, is the sense that in most cases first loses its activity. This, however, takes place only when the mesmeric action commences at the head or eyes (by passes, by riveting them to an "unexciting" object or closing them voluntarily). In cases of partial mesmerization, when only one part of the body—a finger or limb—is brought under the mesmeric influence, sight and other senses remain in a normal condition. Sometimes the one or the other sense shows a heightened activity. Finally, all sensory functions lapse into complete torpor, accessible only to the passes, or the voice, or the will, of the mesmerizer. These are, in short, the effects which mesmerization exerts upon the sensorial functions.

Let us first consider the dulling of sight. The essentials for an act of seeing are (1) psychic primitive visual forces; (2) external stimuli; (3) normal organs of vision. — We cannot assume that by the mesmeric influence the primitive sight forces are all at once exhausted, as they are at night after a day's work. Neither can we attribute the dulling of the visual sense to a lack of sight-stimuli, which are as abundant when the mesmerizing takes place as at any other time. There remain for our examination only the *organs* of sight. What are normal sight organs? Anatomy and physiology describe these organs with sufficient accuracy, so far as they

appear to the senses, but anatomy and physiology do not penetrate to the forces that build these beautiful structures, keep them in proper condition, and animate the protoplasm for the particular office of seeing. Without these forces neither organs nor functions (or, in one word, *life*) would exist, and therefore we have designated them as the *vital forces* (73, 110). We can thus see that while the organs, that is, the *formed* material structure, might exist and remain in a perfectly normal condition, their functions may be dulled or suppressed or changed to a greater activity, whenever the *vital forces* of these organs were influenced accordingly. This seems to take place during mesmerization. The influence of the operator seems to subdue the normal activity of the "subject's" vital forces (which govern the visual organs) into inactivity, so that the organs of sight lose their ability to perform their functions; the sight grows duller and is at last entirely suppressed, until a reverse stroke, a word, or the simple will of the operator, withdraws this influence, liberates the "subject's" vital forces belonging to vision, and restores sight to the eyes at once. This also applies to all other sensory functions. But how can the influence of vital forces from an *operator* subdue or interrupt the normal activity of a "*subject's*" vital forces? Just in the same way as strong external stimuli sometimes interrupt and subdue our normal mental activities. If suddenly a noise, music, or something of the kind, stimulates our sense of hearing while we are in meditation or conversation, the mental modifications excited at the time disappear at once, and, only after the new excitation ceases, we may ask, perhaps, what was I thinking about? Of what did I speak? if we resume at all the previous train of thought. The effluence from the operator stands in exactly the same relation to the vital forces of a "subject" who is capable of sensing it, as sound does to the auditorial forces, or as any other external stimulus to its corresponding primitive forces. It interrupts the normal activity of the vital forces. The same applies when such influence is exerted by one's own will. Cardanus says: "I feel, or more properly expressed, I *produce*, when I enter this state, a kind of severance in the neighborhood of the heart, just as if the

soul were leaving the body, and it is as if a door were opened or a band around the brain had been loosened. The commencement of this feeling is in the head, especially in the cerebellum, and from here it extends itself with great power over the entire spine." This denotes clearly a diffusion of mobile elements, starting from the brain down, in normal tracts through the spinal column, just as in case of willing to move or to keep quiet any member of the body, the mobile elements of the psychic act diffuse over the corresponding muscular forces, and either stimulate them to contraction or subdue them to relaxation. This is the case also when the mesmeric state is induced by contact with mineral or vegetable substances. Under such circumstances we have forces which act according to their nature upon vital forces capable of being acted upon, either stimulating the same to greater activity or subduing them to torpidity, as the case may be. In short, the same universal law of diffusion of forces upon forces governs not only all mental, but also all bodily activities during life.

The well-known *rigidity* and *anæsthesia*, general or partial, during the mesmeric state, is explicable on the same grounds. "Rigidity and insensibility," say the committee, "have, in our observation, always been conjoined; but it is believed that this is not always the case" (Proc., Part III, p. 228). "Anæsthesia may be confined to some special part of the subject's body chosen by ourselves. Thus a limb, or portion of a limb, after being stroked two or three times by the operator's hands, would assume a condition of perfect rigidity, to which pinching, pricking, burning, or strong electric shocks might be applied without producing the slightest protest or sign of pain. This condition would last for a considerable period. Indeed, the committee have not yet observed a case in which rigidity, when once fully induced, has disappeared of its own accord. The limb is soon restored to its normal condition when stroked with the hand, in the reverse direction" (*Ibid.*, p. 227). The insensibility is often strictly defined. All parts above a definite line, apparently limited by the range of the "passes," are in a normal condition; all below seem as void of sensation as a piece of shoe-leather. Occasionally, while all sense

of *pain* is destroyed, the sense of *contact* is, to a certain extent, preserved. When this is so the subject will feel a pin touch the skin, but cannot feel it driven into the flesh" (*Ibid.*, p. 228).

To this I shall add Dr. Braid's observations on this point: "During the state of *cataleptiform rigidity* the *circulation* becomes greatly *accelerated*. In many cases it has more than doubled the natural velocity; and it may be brought down to the natural standard, in most cases in less than a minute, by reducing the cataleptiform condition. It is also found that it may be kept in a condition intermediate between these two extremes, according to the manipulations used; and that the blood is circulated with less *force* (the pulse being always contracted) in the *rigid limbs*, and sent in correspondingly greater quantity and force into those parts which are not directly subjected to the pressure of rigid muscles." "It is also important to note, that by acting on both eyes in the manner required to induce the state of paraplegia, the force and frequency of the heart's action may be as speedily and perceptibly diminished as the action of a steam-engine by turning off the steam. By again fixing the eyes its former force of velocity will be almost as speedily restored, as can be satisfactorily proved to anyone listening to its actions." (*Neurypnology, or Hypnotism*, p. 66.)

These two series of observations are complementary to each other, and will help us to better understand these surprising phenomena. Anæsthesia and rigidity may be confined to some special part of the subject's body chosen by the committee, and induced by a few strokes of the mesmerizer's hands over these parts. The mesmeric influence seems, therefore, to affect only the parts to which it is applied. The parts lose sensation and mobility. Are the nerves or organs of sensation and motion altered? The adjoining parts above the insensible and rigid part retain their normal functions, and a reverse stroke of the operator's hand restores sensation to the affected part in a moment. All this does not favor the assumption of a profound change in the nerves concerned, still less of the whole nervous system, nor any inhibition of some unknown part of the brain. We are again obliged to fall back,

as in the case of sight, *upon the vital forces* as the cause of functional activity, which are immediately acted upon by the mesmeric influence. If we add to this Dr. Braid's observation that during the cataleptic state the *circulation* becomes greatly *accelerated*, and that in the rigid limb the blood circulates with less force; that also acting on both eyes in the manner required to induce paraplegia the force and frequency of the heart's action may be speedily and perceptibly diminished, and that by fixing the eyes again the former force and velocity will be almost as speedily restored—we see that mesmerization results in two opposite effects, produced at one and the same time: a dulling of sensation and mobility in the parts immediately under the mesmeric influence, and an acceleration of the circulation in other parts outside this direct influence. How can these two opposite effects be harmonized?

Dr. Braid ascribes the accelerated circulation to the difficulty, during the cataleptiform state, of the blood being propelled in due proportion through the rigid extremities, which would naturally cause a greater determination of blood to all other parts not compressed by rigid muscles. (*Neurypnology*, p. 155.) This mechanical view, plausible as it is, does not altogether meet the case, for it leaves the anæsthesia and rigidity unexplained. Neither does it seem to entirely cover the ground, if we assume that mesmerization should act only upon one part (a finger or limb), and leave the remaining body unaffected. Dr. Braid seems to have felt this insufficiency, and he adds therefore: "I conclude that the ganglionic, or organic, system of nerves is *also* inordinately stimulated from the same cause, and thus, having acquired an undue preponderance, induces many of the remarkable phenomena which have been referred to." (*Neurypnology*, p. 156.) It is obvious that this clear-headed observer came very near to the truth. The ganglionic or organic (the sympathetic) system of nerves is the *substratum* of the vital senses, the *means* which they have formed and through which they act in the material world. The mesmeric influences find in the vital senses their similars, their responding forces, upon which they can act; just as light finds its corresponding forces in the sense of sight, or sound in the sense

of hearing. By this stimulation the system of vital forces, the sympathetic system, gains a preponderance over the higher senses and their organs, just as in the natural waking state the activity of the higher senses predominates over the vital senses. If we add to this (and we should remember here what has been explained in 72 and 73) that, although the vital senses have the lowest degree of conscious capabilities, the excitation of their modifications is nevertheless the same in kind as the excitation into consciousness of the modifications of the highest senses, and is governed, therefore, by the same laws, we gain a more intelligible basis whereupon to seek for an explanation of the remarkable phenomena of mesmerization.

Let us assume, first, then, that: *The mesmeric state consists of a predominant activity of the vital senses.* The vital senses are not a one power, but a system of psychic forces, comprising the respiratory, circulatory, digestive, generative and (by means of the protoplasts) the formative agents, which produce all *functiones vitales* (3, 72, 73, and 110).

Although they possess the lowest capabilities of developing conscious modifications, their actions in a normal state proceed unconsciously, yet when greatly agitated they may subdue even the strongest conscious modifications of the higher senses, which proves that the system of vital forces is closely connected with the systems of the higher senses and their products. In fact, together they constitute the human soul, or as we have expressed it in other places, the human soul is a system of diverse primitive forces, from sight and hearing, endowed with the highest capabilities for conscious development, down to the lowest in the scale of conscious development—the vital forces.

Now the case lies thus: When the mesmerizing influence is successful we find that the subject falls into a state of quietude, resembling very much that of sleep, in which, as we have seen in 103, the assimilating activities prevail over the higher activities, the activity of the higher senses; and, if allowed to continue for a time, the subject will lapse into general torpor. The eyes do not see, the ears do not hear, the nose does not smell, the tongue does not taste, the skin is insensible and the muscles are stiffened or relaxed.

What does this mean? Is this really a deadening of the sense-forces? Is it a profound change in the *organs* of sense, that is, an alteration in the formed materials which constitute the organs of sense? It cannot be either the one or the other; for a single stroke of the operator's hand, in a reverse direction, restores a mesmerized part in a moment to natural activity, or, according to Braid, extreme excitement of all the organs of sense, sight excepted, or great mobility and strength of the muscular system ensue from a puff of wind or a slight touch. (*Neurypn.*, pp. 62-66.) How is this to be explained? There remain for our consideration those vital forces which not only build all bodily organs, but also continually sustain their functions for us, that is, to our self-observation, unconsciously; but, nevertheless, their activity must be an excitation or consciousness of their own. If now the normal excitation is quieted down by the influence of a mesmerizer, their activity ceases, and the organ they animate loses its function, lapses into torpor, be it the organ of sight, of hearing, etc., or the nerves of general feeling, or of muscular action, or all conjoined. If, however, these vital forces are stimulated in one or the other of the sensory organs, that organ's function will be heightened in a degree which surpasses altogether its normal capabilities.

Now, as the vital forces consist of a whole system of forces, and are not a *one* force, we can easily understand how it is that one part of the body may become wholly insensible while another is highly agitated, or in a normal condition. "The remarkable fact," says Braid, "that the whole senses may have been in the state of profound torpor and the body in a state of rigidity, and yet, by very gentle pressure over the eyeballs, the patient shall be instantly roused to the waking condition as regards all the senses and mobility of the head and neck—in short, to all parts applied by nerves originating above the origin of the fifth pair and those inosculating with them, and will not be affected by simple mechanical appliance to other organs of sense, is a striking proof that there exists some remarkable connection between the state of the eyes and condition of the brain and spinal cord during the hypnotic state." (*Neurypn.*, p. 63) It further proves, I may add, that this sudden change

from "a very gentle pressure over the eyeballs," cannot denote a profound change in the nerves themselves as formed material, but must be a change only in the supply of mobile elements (vital forces), which govern that tract of nervous structure described by Braid; that, therefore, the vital forces act not as a whole, but may be excited or subdued in the single parts of the system they are destined to animate. This, it seems to me, is the true psychological explanation of partial insensibility and rigidity, and simultaneous agitation of the circulatory system, etc., or of the torpor of all the senses and rigidity of all voluntary muscles, and at the same time the possibility of instantaneous conversion of a part or the whole into a normal state by a few strokes in a reverse direction, or other manipulations of the operator. It is founded on the reciprocal relation of soul and body, or their oneness in their primitive forces, and the diffusion of mobile elements.

118. CONSCIOUSNESS DURING THE MESMERIC STATE.

Fred. Wells remained normally conscious while under severe experimentation. Of his ten fingers, which had been securely hidden by a screen from his sight, two of them, selected by one of the committee, were mesmerized by Mr. Smith, the operator, in his usual manner, by making a few passes over them without touching them, while at the same time another of the committee made exactly like passes over two other fingers. Those mesmerized by Mr. Smith proved entirely insensible to the most severe stabs with a carving fork.

"The stabs were on several occasions made with a violence which it required some nerve to apply, and which would have seemed barbarous to an ignorant bystander, unless he had chanced to note at the same instant the smiling silence or easy chatter of the victim." (Proc., Part I, p. 258.)

This, however, is the case only when peripheral parts are under the mesmeric influence. When mesmerization commences at the head and upper parts of the body, and the entire individual has succumbed to the mesmeric influence, the condition of consciousness undergoes remarkable changes. The best observations on this point I find in the excellent

article on the stages of hypnotism by Edmund Gurney (Proc., Part V, p. 61, etc.). He distinguishes two stages of the mesmeric state, the *alert* and the *deep* stage:

"The *alert* stage," he says, "is the state in which a 'subject' is when, after the usual preliminary period of gazing fixedly at some object held near the eye, or of having passes made over the upper part of his person, and after the usual involuntary closure of his eyes, the strain on his eyelids is released by a few touches and words, and he is restored to what may look quite like his natural waking condition. Sometimes he will sit with a vacant air, irresponsible to every voice except that of the operator, and be clearly not in possession of his ordinary faculties. He may be made to perform imitative actions and to obey commands in a mechanical way; but his consciousness may be at a very low ebb, or (as some have held) may have lapsed altogether. But even these cases will exhibit two characteristics of the alert stage which are also characteristics of normal waking—the 'subject's' eyes will be open and capable of seeing; and he will (almost invariably) prove sensitive to pain if he be pinched or pricked. Very often, however, the resemblance to normal wakefulness is far closer than this; for the 'subject' will be found to converse with perfect comprehension, memory and even humor, but he does not *originate* remarks. If not spoken to he will sit quietly, and if simply asked what he is thinking about he will almost always answer 'nothing.' If he be left completely to himself he will rapidly sink into the deeper state, and thence into hypnotic sleep, in either of which he will prove insensitive to any moderate amount of torture." "The passage into these deeper conditions, it should be observed, is often so rapid that the fact of their being reached *through the alert stage* may be wholly unnoticed. If the 'subject' is taken in hand during those few seconds before his eyes closed, and had been talked to or kept employed, this passage into the deeper state would have been prevented; but if he is allowed to follow the natural course without interference, he will simply be seen to go to sleep, and he must be awakened by the operator before any phenomena can be exhibited." "The 'subject' can be made to do, and to continue doing, any action which the operator commands, although he may be perfectly conscious of making a fool of himself, and may strongly desire to resist the command. He can also be put under the influence of delusions, can have his senses deceived, so that he mistakes salt for sugar, ammonia for eau-de-Cologne; or can even be made to

believe that he is in some distant place, or that his identity is changed."

"The *deep* stage is in turn liable to be confounded with the genuine hypnotic sleep. It resembles that condition in the fact that the eyelids are closed; that if one of them be forcibly raised the eyeball is found to be rolled upward; in the general insensibility to pain and to ordinary modes of stimulation. And there exists here precisely the same chance as we noted in the former case, that the particular stage will escape detection. If the 'subject' be left to himself he will have no opportunity to manifest its characteristics, but passing rapidly through the period during which these might be revoked, will soon lose consciousness and individuality in profound slumber. With some 'subjects,' moreover, the invasion of mental torpor is so rapid that it might be hard to fix and retain them in the genuine deep stage, even if the proper means were adopted. But many others, if taken in time, after their eyes are closed and they have become insensible to pain, but before sleep has intervened, will prove quite capable of rational conversation. They are mentally awake, even when their bodies are almost past movement, and when even a simple command is obeyed in the most languid and imperfect manner. This state is, however, harder to sustain at an even level than the alert one, owing to a stronger and more continuous tendency to lapse into a deeper condition. In the alert state the 'subject' can usually be kept going for an indefinite time; in the deep state he usually shows an increasing dislike to being questioned or meddled with."

As regards "*memory and recollection*," Mr. E. Gurney states, in the same paper, the following most interesting observations:

1. "The events of normal life are remembered in either of the mesmeric stages" (p. 69, *loco cit.*).

2. "Recollection on waking of what has happened in the mesmeric state is frequently observed in 'subjects' quite fresh to hypnotism, especially of such actions as are usually exhibited on platforms—imitative movements, sneezing, laughing, jumping and the like—also the effort to recall his name; and he perfectly recalls not only the actions, but the feelings of acquiescence or of surprise, or of repugnance with which he performed them. A not uncommon description is that he felt as if he had *two selves*, one which was looking on at the involuntary performances of the other without thinking it worth while to interfere. Of performances which have in-

volved more complex *mental ideas*, and where his mind has been at the mercy of some concrete form of delusion, his remembrance is dimmer. But still he will give some account of parts played by him in imaginary scenes, or even when under the impression that he was someone or something other than himself. After a very short course of hypnotization these illusory changes of scene or of identity, and even the simple mental operation of trying to recall some familiar fact, are found to have left no trace on waking; but the 'subject' can still perfectly recollect the imitative and other actions which he has performed *in propria persona*, and the sort of feeling which accompanied them" (p. 67, *loco cit.*).

3. "With a favorable 'subject,' something that has happened during one of the hypnotic states will often recur to the memory on the next occasion when that state is produced, though in the interval of normality—amounting, it may be, to several days and nights—which has intervened between the two occasions, it has been completely forgotten."

4. "The same phenomena will occur, and even much more certainly, when a deep state intervenes between two alert, or an alert between two deep states. I have then found that the ideas impressed in the one sort of state are invariably forgotten in the other, and are as invariably again remembered when the former state recurs. Thus the 'subject,' when in the alert state, is told something—some anecdote or piece of ordinary information—which we will call A. He is then thrown, or allowed to fall, into the deep state with closed eyes, and is asked, 'What were you told just now?' He is quite unaware what is meant, nor will the broadest hints recall the missing idea. He is now told something else, which we will call B, and is then reawakened into the alert state. Being asked the same question as before, he at once repeats not B, but A, and it is impossible to evoke in him any memory of B. Thrown again into the deep state, he in a similar way recalls B, and A has once more vanished. Finally he is completely awakened, informed that two things have been told within the last five minutes, and offered £10 to say what either of them was—with a result entirely satisfactory to the experimenter. Occasionally I have succeeded in hitting a transitional moment, at which *both* things were remembered; but it was a sort of knife-edge, and the slightest manipulation or pause tending to deepen the condition brought about the customary separation and oblivion of the thing told in the alert state" (p. 70).

5. *Exceptions.* "If the idea impressed in the alert state is a *delusion*, involving either a change of *scene* or a change of

identity, it is not remembered in the usual way." "Waking to the alert state by any *sudden* means always ensured forgetfulness, carrying the 'subject' at once over that low degree of the alert stage where recurrence of the delusion was possible. If brought back to the alert stage by gentle upward passes, or also if the same delusion be again suggested in a general way, the *details* of the former one will be remembered."

6. "If to one idea, *e. g.*, that he cannot move his arm, another action is added, *e. g.*, reading a newspaper, the 'subject' will, on returning again to the alert out of the deep stage, remember only one of the two."

7. "If the thing impressed on the 'subject's' mind in the deep state is a *command* which he is to execute '*on waking*,' he will execute it as soon as he returns to the *alert* state; or, if allowed to work off his trance in natural sleep, he will usually perform the act on *normal waking*; but if the act has been performed in the alert state, he will have no recollection of it when brought to his normal state." "A singular point in connection with this obedience is that it seems apt to fail in cases where a vivid and interesting idea is suggested at the same time as the command."

8. "Obedience also fails in the following case: If a command has been imposed in the deep state and the 'subject' is woke into the alert, and then, before he has time to perform it, is put under a delusion, this will *suspend* the performance of the act. Thus, a youth who had been told that he was to put on his hat and begin reading the newspaper, and had then been roused, was on the point of carrying out the command when he was suddenly told he was a chicken. He instantly went down on the floor and began to cluck. He was then allowed to lapse into the deep state, and again brought out of it; he now at once performed the order. In this particular instance the order was not *remembered* in the second deep state, though carried out on emergence from it. But this feature was not found to be constant" (p. 72, *loco cit.*).

The first question arising here is: Why are the events of normal life remembered in either of the mesmeric stages? One would suppose that if there be difficulty in carrying consciousness from the mesmeric into the waking state, there would exist a like difficulty the other way; but this is evidently not the case according to all experience. Why, then, are the events of normal life carried into consciousness in either of the mesmeric stages? Because the mesmeric condition

does not alter or change in any way the *contents* of the mind, that is, its acquired modifications. They remain unaffected, and will be made conscious whenever mobile elements excite them, be that during waking or in either of the mesmeric stages.

But, second question: Why are the events which happen during the mesmeric state forgotten in the waking state? Because these impressions are formed on an evanescent basis, under a transient condition which, when disappearing, withdraws also the basis of all that has been enacted upon it, and dissolves, not the modifications excited then and there, but the connection that existed between the single parts of these enactments. We have already, in 103, spoken of this singular phenomenon as it presents itself in the non-remembrance of some dreams. This evanescent basis or transient condition consists in the preponderating excitation of the sympathetic system (the system of vital forces) over the higher senses, which latter alone are endowed with capabilities for the development of clear, conscious and enduring modifications and combinations in consequence of their greater retentive power (7). The vital forces and lower senses lack this quality, and although their development produces the same forms of mental modifications—percepts, conations and feelings—these percepts only attain to vague sensations, the conations to vague desires, and the feelings to vague moods. Thus it is clear that mental enactments roused into consciousness upon such a basis must necessarily lose their connexion whenever this condition gives way to the preponderance of the higher senses, the “waking” state—that, in short, they are forgotten.

But they *are* not forgotten in many instances, as Gurney’s observations, cited above, clearly show. Recollection is carried into the waking state most frequently in *fresh* “subjects.” “A not uncommon description of the ‘subject’s’ observation is that he felt as if he had *two selves*—one which was looking on at the involuntary performances of the other without thinking it worth while to interfere.” This clearly confirms our position. In the fresh “subject” the transition into the mesmeric state is not a perfect one; it is still mixed to a certain

extent with the influence of the higher senses, is still connected with a partial consciousness of waking life. It is this remnant of waking life which forms the observing self, while the involuntary performances, pranks, etc., induced on the basis of excited vital forces, constitute the other self. Both belong to the same soul, both are, therefore, selves of the "subject," and, therefore, the comparison with two selves is not improperly chosen.

When, however, "the performances involve more complex *mental ideas*, and where the mind has been at the mercy of some concrete form of delusion, his remembrance is dimmer," because the mental ideas and concrete delusions conjoined by the transient condition of the mesmeric state will readily fall asunder when this condition ceases. But still some parts of the enactment will remain connected as far as the remnants of waking life have taken part in their formation. We should not wonder then "that after a very short course of hypnotization these illusory changes of scene or identity, etc., are found to have left no trace on waking;" for the frequent repetition of the mesmeric state makes that state more perfect, and separates it more sharply from the influence of the higher senses of the waking state, while the *imitative* and *other actions* which the "subject" has performed in *propria persona* cling still to the modifications of the muscular sense and its normal actions, so that they can be drawn over into the consciousness of normal waking; that is, the "subject" will recollect them and also the sort of feeling which accompanied them.

3. A still greater proof of the correctness of this view is the observation "that something that has happened during one of the hypnotic states will often recur to the memory on the next occasion when that state is produced, though in the interval of normality—amounting, it may be, to several days and nights—which has intervened between the two occasions, it has been completely forgotten." The reason why it is forgotten during the normal state is because the preponderance of the higher senses withdraws the basis upon which it was formed, and dissolves, therefore, the connection by which it was made a conscious "something," while this connection

will be re-established again when the same conditions of excitation during the preponderance of the vital forces are again in full activity. This same feature has been observed in persons who, during a state of intoxication, had put something in a certain place which, on getting sober, they had entirely forgotten, but is remembered readily on the next occasion in which they are in the same drunken condition. It is not the "something" that is lost or extinguished; but it is the changed condition which makes it possible or not to excite it again into consciousness. Even during the waking state we observe facts which approach to some extent this peculiar fitness or unfitness for reproducing things long gone by. A beautiful spring day, with its balmy air, may suddenly recall in us scenes and occurrences of our childhood, without having any similarity to them except the peculiar mood which it arouses in us, and which corresponds to that of the by-gone days; and so must the poet or philosopher be in a suitable mood for the successful operation of his mind, without which the necessary mental modifications will not rise into conscious excitation, although he may possess them.

4. "The same phenomena will occur, and even much more certainly, when a deep state intervenes between two alert, or an alert between two deep states." The reason is the same: The conditions of the two stages differ likewise from one another. While the alert stage still retains some elements of the waking state, the deep stage appears entirely void of them, and its enactments ensue, therefore, upon a still more dissimilar basis. With the change of this basis, either way, the connection between the single items, which is produced by the mobile elements of this very basis, is broken up also, and only upon a renewal of the same condition can this connection be re-established. It is not, to repeat it again, that the items of the enactments themselves cease to exist; it is only their connection and excitation, produced at the time by the then prevailing mobile elements (which fade away with the conditions then existing), and therefore their reproduction in consciousness whenever these conditions are re-established. This explains also why, as Gurney expresses it, "in hitting a transitional

moment," that is, a moment where the bases of the two states are intermingling, *both* things, one made conscious in the alert and the other in the deep stage, may be remembered, because at that moment the elements for the excitation of both things are present. We have yet to consider the, *exceptions* stated by E. Gurney, to these regular occurrences.

5. If the idea impressed in the alert state is a *delusion*, involving either a change of *scene* or a change of *identity*, it is not remembered when the waking from the deep to the alert stage is done by any *sudden* means; but when the "subject" is brought back by gentle upward passes the delusion may revive again. These delusory enactments (the "subject" being made to believe himself elsewhere than in the room where he actually is, or to assume the part of another person or an animal) are so foreign to the entire normal contents of the mind, and themselves such unreal and artificial combinations, that it requires a low degree of the alert stage to induce them as realities in the mind of the "subject." In the nature of delusions lies, therefore, their tendency to dissolution; and they can be brought about only when the "subject" is near the boundary of the deep stage, far away from any influence of the higher senses. "Waking to the alert state by any *sudden* means always ensured forgetfulness, carrying the 'subject' over that low degree of the alert stage where recurrence of the delusion was possible." Only broad hints may again renew the former delusory imaginations.

All this confirms the correctness of our view that remembrance even of delusions is possible only on the same basis, or the same mental condition upon which they were produced.

6. If to the one idea, *e. g.*, that he cannot move his arm, another action is added, *e. g.*, reading a newspaper, the "subject" will, on returning from the deep to the alert stage, remember only one of the two.

"A boy's arm was thus extended. He became unable to talk rationally, and, being set to read aloud, he did so in a stupid and mechanical way, and could not recollect what he had read. He was now passed into the deep state, during which his arm

dropped, and, on being recalled from this state, was asked what he had been doing just before he went to sleep. He replied that he was holding his arm out, but both forgot and utterly denied the fact of reading."

In this case evidently the reading of the newspaper ensued on a lower plane of the alert stage than the stiffening of his arm; for he became unable to talk rationally, he read in a stupid way and could not recollect what he had read, and then passed into the deep state. Each of the two actions was, therefore, enacted upon a different basis, which prevented their union into one conscious act; and, on being recalled from the following deep state, he was at once carried over that low degree of the alert stage where a recurrence of "his having been reading" was possible, and therefore remembered only what had been enacted on a higher degree of his alert stage, "the holding out of his arm." Mr. E. Gurney makes to these "exceptions" the following most appropriate remark: "There are thus sub-divisions of recollective power within the alert stage itself."

7. If a *command* is impressed on the subject in the deep stage, and a vivid and interesting idea is suggested at the same time, obedience will fail in such a case. "Thus, several subjects who were told in the deep state that a fire had broken out at home, and that they must go and help to put it out, on being recalled to the alert state, sat without moving, and denied any impulse to do anything." Here we have undoubtedly a different psychical process from that in the case above related. The command is, so to say, "swallowed up" by the vivid idea, or so intimately incorporated with the same, that its revival would be possible only with a revival of the same idea. As, however, on entering the alert stage the idea loses its excitation, the command is also forgotten; or, as Mr. Gurney correctly observes: "The idea produced a strong mental picture which, in disappearing with the change of state, involved the further disappearance of the sense of obligation" (p. 72, *loco cit.*).

Obedience in the waking state to a *command* impressed during the mesmeric state needs some further remarks. The "subject" brings no *recollection* into the normal state of a command given

to him while entranced. He merely feels an *impulse* to do so and so, and has no ease until it is done. But he absolutely knows nothing of who gave this order, or when and under what circumstances it was given. It is, therefore, not a "recollection," but a *reproduction of a conative modification*. (Compare 102.) A similar process, although in a reverse order, takes place when, before going to sleep, we determine to wake up at a certain hour.

In either case the conative modification (to do something) continues to exist, although its association with other modifications, then conscious, vanishes with the change of basis following. Only as a command and determination it survives these changes, and unfolds its activity when the condition for it arrives. Command, as well as determination, imply striving elements, and it is a fitting expression used by the "subject" when he describes the feeling as a mere *impulse* to do so. In the same way the sleeper is not conscious of anything. He merely commences to feel restless about the time he has determined to wake, and he wakes up.

8. That obedience should fail when its execution is interrupted by another lively delusion, is quite natural, the latter taking up the mobile elements necessary for the performance. It will be executed on the next waking, if nothing interferes. Such events happen to us every day in normal life. We are on the point of doing something when we are interrupted by the occurrence of something else, which makes us forget our first intention completely until the new excitement is over. That the command is sometimes not remembered when the "subject" is again put into the deep state, though carried out on emergence from it, depends on whether the association under which it was given is also renewed in the second deep stage. If this is the case, the command will be resuscitated into consciousness; if not, it will not be remembered. This is the reason why "this feature was not found to be constant" (p. 72, *loco cit.*).

We find still other and highly important experiments made by Mr. E. Gurney, in this very interesting state of consciousness during the post-hypnotic performance of a hypnotic com-

mand. They are ably presented by the author in Vol. IV of the Proc. S. P. R., from page 268-323, under the heading: "Peculiarities of Certain Post-hypnotic States."

The question has been raised: "Whether the mind of the 'subject,' during the post-hypnotic performance of a hypnotic command, is in its ordinary waking state, and the idea of performing the action presents itself just as scores of ideas whose immediate origin is not obvious, and is carried out just as any spontaneous whim might be carried out?" Mr. Gurney's answer is: "That the psychological condition of the 'subject' during the post-hypnotic performance of hypnotic commands, and also during the intermediate period after waking and prior to the performance, really admits of great variety." (Vol. IV, p. 269.)

"There are cases in which no reason whatever appears for regarding the state in which the action is performed as other than normal. The 'subject's' account of it afterward is as of something which it just occurred to him he would like to do, and which he did because he chose. While he does it he is in his usual relation to the external world, and can converse naturally and rationally, and both the performance itself and the surrounding circumstances are completely remembered afterward" (p. 270).

The only peculiarity in these cases is the absence of recollection of the fact that a command had been imposed. The conative modification alone was reproduced by means of a given signal, which had been enjoined upon the "subject" during the trance-state when the command was made, for instance, to do a certain thing after a certain action of Mr. Gurney's. In some cases even a faint recollection of the source from which the impulse originated was dimly resuscitated, so that the "subject" flatly refused to obey, saying: "I know you want me to do it, but I shall not do it; it is too absurd;" because she was wider awake in consequence of former experiences, and thus able to discriminate between her own normal impulses and such as were imposed upon her.

"There are cases where the *action*, though performed with every appearance of naturalness and without any impairment of the normal consciousness, *proves to be completely forgotten* within a few seconds of its performance' (p. 271). Yet even this was not a constant sign, as there were cases where the memory of the action remained intact.

"A still better test to prove the abnormality of mind during the performance of the action was the imposition of a *new command*, of a sort that the 'subject' would regard as a joke and would never carry out if he received it when in a normal state, but which would be fulfilled as a matter of course if impressed on him in a state of hypnotic sensibility" (p. 271); or by "imposing, while the execution was in progress, not the command of a future *action*, but the suggestion of a future *hallucination*;" for instance: "W—s was told that as soon as he came next day he was to take an umbrella from a corner of the room, open it and walk about the room with it. He arrives and at once fulfills the order; and while he is examining the umbrella, Mr. S. (the mesmerizer) tells him that when he (Mr. S.) asks him after his wife, I (Mr. Gurney) shall disappear. Immediately after this a change came over W—s' face, and he ceased fumbling with the umbrella, and asked in surprise how he came by it. Some other experiments ensue, and then, while he is talking quite naturally to me, Mr. S. says to him, 'How is your wife, Fred?' He instantly looks up and around, asks where Mr. Gurney has gone to, and shows much astonishment" (p. 272).

"Yet another test was suggested by the fact that things heard in the hypnotic state, though forgotten on waking, are *remembered when the hypnotic state again supervenes*. If the 'subject,' while post-hypnotically executing an order, showed remembrance of some quite different topic which had been suggested to him while entranced, it would be the strongest proof that the state of trance was to some extent renewed, especially when the idea was one that had been suggested on some quite different occasion, and so could not have been in any way associated with the command." This, too, was proved by experiments with the "subject" W—s, who remembered during his post-hypnotic performances things which had been suggested to him in former mesmerizations not at all connected with the present (pp. 273 and 274).

These various experiments show distinctly that the post-hypnotic state during the performance of a hypnotic command is a more or less abnormal state of the mind, whether the memory of the action vanishes or continues afterward. Mr. Gurney distinguishes this state by the term "*trance-waking*," and some French author has called it "*veille somnambulique*." The recognition of it and its proof by experiments is quite a progress toward a better knowledge of these obscure mental pro-

cesses, and may help us still further in deciphering them. Mr. Gurney carries his researches still farther, and examines also the mental state which lies *between* the hypnotic state and the time when a hypnotic command ripens into performance. We have stated already that a hypnotic command produces in the mind of the "subject" a conative modification, which is resuscitated as soon as the signal for its execution is given, either by the lapse of a certain time, or the entering into a certain room, or another sign made by someone and enjoined upon the "subject" during the hypnotic state. It runs parallel to the knot we bind in our handkerchief to remind us of something we want to do, which we might otherwise forget; or to the particular signs impressed during trance by van Ghert and Kieser in order to make the "subjects" remember their trance states when perceiving them on coming back to the normal state. No doubt this explanation will be sufficient in many cases, especially where the time after the hypnotic command is short, or the signal, *e. g.*, the entering of the same room where the hypnotization had taken place, might reinstate the same condition and set the impulse free, etc. Although this explanation does not rest upon a *physiological* basis, such as automatical action (which explains nothing and which has been spoken of on some former occasions as a mere play with words), yet even taken psychologically it is not fully sufficient for all the cases known. To these cases we must count those where a long time is set between the command and its performance, without the date of the day being mentioned, or marking the first day of the year, of a month or a week, etc., by any peculiarity, but where the command is simply that such or such a thing shall be performed by the "subject" after, say 69 or 119 days have elapsed. "The vital (physiological) process," Mr. Gurney remarks trenchantly to this, "will no more work out such a measurement as this than a school-boy's digestion will work out a proposition of Euclid." Nor will, we may add, any psychological process hit the date *without actually counting it out and watching its coming*, not even during normal consciousness. There must be something in activity deeper than a mere external signal to rouse the hypnotically implanted impulse

into action at the proper time, a time which not only requires to be accurately calculated, but which must also be watched as it approaches. The *normal* consciousness of the "subject" knows nothing of the command, consequently cannot calculate the date of its performance nor watch its coming. What then, in such cases, does count out the date and watch its approach?

To answer this question Mr. Gurney has made a series of experiments, the result of which he sums up in the following words (p. 293):

"They exhibit in a direct and conspicuous way a secondary memory and secondary play of mind in the post-hypnotic state, and the severance of the normal or primary from the latent or secondary consciousness." "The secondary 'self' took its own course in such complete independence of what passed during its latent period, while the primary 'self' was ostensibly in possession of the field, that external impressions then received passed unregarded, and there was no moment at which the doings of the two selves were juxtaposed or associated in normal consciousness." "Again, as regards the hidden processes of mentation during the period preceding the fulfillment of a command, our evidence so far has been derived from the statements made by the 'subject' when once more in a state of trance. But we shall now be able to ascertain the workings of this secondary consciousness in the reckoning of time and signals, without any previous calling of it to the front by rehypnotization; its work is not only done, but tested, while the normal self remains uninterruptedly in the ascendant, and shows absolutely no sign of change. Yet again, we shall now find manifestations of other sorts of reflection and calculation, which go considerably beyond mere temporal measurements in the degree of hidden psychical activity which they involve."

To make this clear, I shall copy the following experiments:

"P—ll (the 'subject') was told on March 26th, that on the 123d day from then he was to put a blank sheet of paper in an envelope and send it to a friend of mine, whose name and residence he knew, but whom he had never seen. The subject was not referred to again till April 18th, when he was hypnotized and asked if he remembered anything in connection with this gentleman. He at once repeated the order, and said: 'This is the 23d day; a hundred more.'

"Mr. S.—'How do you know? Have you noted each day?'

"P—ll.—'No; it seemed natural.'

"Mr. S.—'Have you thought of it often?'

"P—ll.—'It generally strikes me in the morning, early. Something seems to say, 'You have got to count.'

"Mr. S.—'Does that happen every day?'

"P—ll.—'No, not every day; perhaps more like every other day. It goes from my mind; I never think of it during the day. I only know it's got to be done.'

"Questioned further, he made it clear that the interval between these impressions was never long enough to be doubtful. He 'may not think of it for two or three days, then something seems to tell him.' He was questioned again on April 20th, and at once said: 'That is going on all right; twenty-five days;' and on April 22d, when in trance, he spontaneously recalled the subject and added, 'twenty-seven days.' After he was awakened, on April 18th, I asked him if he knew the gentleman in question or had been thinking about him. He was clearly surprised at the question, said he fancied he had once seen him in my room (which, however, was not the case), and that the idea of him had never since crossed his mind." (Proc., Vol. IV, p. 290.)

"On March 16th, I showed P—ll a planchette—he had never seen or touched one before—and got him to write his name with it. He was then hypnotized and told that it had been as dark as night in London on the previous day, and that he would be able to write what he had heard. He was awoke, and, as usual, offered a sovereign to say what it was that he had been told. He was then placed with his hand on the planchette, a large screen being held in front of his face, so that it was impossible for him to see the paper or instrument. In less than a minute the writing began. The words were: *It was a dark day in London yesterday.* He professed, as did all the 'subjects' on every occasion, complete ignorance as to what he had written, and, I believe, with perfect truth. I repeatedly expressed a desire to know, and offered the sovereign if they would tell me; but their account was always that the instrument took their hand with it, and that they could not detect what letters it formed. They showed no curiosity in the matter, and I did not urge them to try to interpret the movements, which, no doubt, could be done with practice" (p. 294).

"As this last experiment might prove only a mechanical repetition of the impression received during trance, the following will show processes of deliberate reckoning and reflection which it is almost impossible to conceive as having only a physiological existence."

"The 'subject,' W—s, was asked by Mr. S. during trance, 'What puts out fire?' and then instantly awakened. Set to the planchette, his hand at once wrote *water*" (p. 303).

"The 'subject,' S—t, was told during trance to add together 4, 7, 8, 11, 12, and was awakened on the instant. The written result was 42 (right). He was told to multiply 683 by 7, and was awakened on the instant. He was kept talking while his hand wrote 4681. On rehypnotization he remembered writing this, but said he believed it was wrong, the 6 should be a 7. He was told to multiply 534 by 3, and was awakened on the instant. The result, written with extraordinary rapidity, and concluded within three seconds of the giving of the order, was 1602 (right)" (p. 305).

"P—ll was told to write the names of three places beginning with L, and was instantly awakened. The planchette wrote *Lewes, Lanscalian, Lewisham*, the second name being interpreted as *Lancaster*, when he was rehypnotized. A similar trial with the letter H produced *Hastings, Hamsted, Hanover*; and a trial with the letter T, *Torque, Torrington, Tottinham Court*. During the first of these experiments he was engrossed during the writing with the hallucination of a wildcat (a hallucination can always be imposed for a short period after waking, though otherwise the 'subject' is to all appearance in a completely normal state), which, on rehypnotization, he said he 'hadn't liked the looks of—it looked half starved.' While writing the T names he was roaring with laughter the whole time at the hallucinatory spectacle of a pantomime, and describing the doings of the clown. On April 18th, a wider field of choice was given him, in the direction to write down anything that had happened in Brighton during the past year, after which he was instantly awakened. Set to the planchette he read aloud a description of a play from a newspaper; and meanwhile his hand wrote: *A horse ran away last Easter Monday along the King's Road*. This was a fact, and had caused considerable excitement. Again, he was told to write down the earliest thing he could remember, and was instantly awakened. He was made to count backward from a hundred, which he did slowly and with stumbles; meanwhile his hand wrote '*One day when I was going to school, I was going up the street, I picked up a shilling and I gave it to mother, and she was pleased with it.*' It turned out that this was a real event which had happened when he was about five years old. Still earlier memories were similarly evoked. '*When I had the scarlet fever some woman brought me in some bulls' eyes on a piece of paper.*' '*One day when I was rocking the cradle with my little*

brother Charley I turned the cradle over.' This last occurrence took place when he was about three. He overturned the cradle in a passion at the baby's peevishness.

"I think that the above simple and often imperfect writings afford an extremely strong presumption of an intelligent and not merely mechanical origin" (p. 307).

This is proved still more by experiments which show, not only a reckoning of time by executing an order at approximately the right moment, "but by writing produced during the period of waiting, *at some suddenly-selected moment*, which the 'subject' could not foresee when the process began, so that there could be no question of the 'setting of the organism' for a certain time ahead. A further novel point was the proof afforded, in some cases, that the order itself was remembered and realized by the secondary consciousness during the period throughout which the dominant primary consciousness was wholly without knowledge of it."

"W—s was hypnotized and told that in 6 minutes he was to blow a candle out, and that he would be required at some time before then to write the number of minutes that had passed and the number that had still to elapse. He was awakened, laughed and talked as usual, and of course knew nothing of the order. In about $3\frac{1}{2}$ minutes he was set down to the planchette, which wrote: $4\frac{1}{2}$ —1 more. About a minute passed, and then I requested Mr. S. to rehypnotize him; but just as his eyes were beginning to close he raised himself and blew out the candle, saying, 'It's beginning to smell.' Hypnotized and questioned he remembered all that he had done; and when it was pointed out to him that $4\frac{1}{2}$ and 1 do not make 6, he explained the discrepancy by saying, 'It took half a minute for you to tell me; I reckoned from the end of your telling me.' This of course does not explain his reckoning the time before he wrote as a minute longer than it was; but that is not a larger error than any one of us might commit in computing such a period" (p. 308).

The first point in this series of experiments that claims our attention psychologically is the result at which Mr. E. Gurney arrived: "These experiments exhibit in a direct and conspicuous way a *secondary memory* and a secondary play of mind in the post-hypnotic state, and the severance of the *normal* or *primary* from the *latent* or *secondary consciousness*." It appears as though there were two selves acting independently of each other at the same time.

Already Dr. Du Prel, in his *Philosophie der Mystik*, lays great stress on this duality of consciousness, and arrives finally at the conclusion: "*Das menschliche Subject besteht aus zwei Personen*" (p. 422, *Phil. d. Mystik*). In my opinion Du Prel here oversteps, in his speculative mood, the boundaries of cool and sober reasoning. All the arguments which he enlists in proof of this idea, and which he works out with great ability and ingenuity (pp. 420-442), demonstrate after all only that the soul is capable of assuming two different *states* or *conditions*—a *normal* one, in which the sense-organs are in full activity (waking life), and an *abnormal* one, in which this sensory activity is subdued or entirely arrested, varying from the condition of common sleep, with its dreams, to hypnotism or somnambulism, with its apparently wonderful phenomena. Mr. E. Gurney speaks much more advisedly of this dual state of the soul in a foot-note on page 295, where he says:

"The word '*self*' is too convenient to be dispensed with, but must not be misunderstood. In such cases as these the '*secondary self*' is a mere rudiment of a personality. It is no more than a short connected train of intelligence, of whose activities and products the normal self is unaware;" and he calls, therefore, one the *normal* or *primary*, and the other the *latent* or *secondary* consciousness. This is much more according to the facts than the assumption of a double personality. The whole question turns on what we understand by the concept "I," of which we have spoken in 105. We should bear in mind that with the word "I," as it is in use, we really signify four different kinds of self-perceptions. In using it we may think (1) of the whole man, consisting of soul and body, as when one says: I live, I dwell at Leipzig; or (2) we may think exclusively of the soul, as when we say: I increase in knowledge, I am immortal; or (3) we may think mainly of acquired permanent qualities by which we are distinguished both from others and from that which changes in ourselves, as when a man says: I am a musician, I am an astronomer; or (4) we may mean merely those activities of the soul which are *for the moment the strongest in consciousness*, as when we say: I am glad, I am angry. In all these cases it is not a *concept* that is directly

concerned, but a *percept*; for when self is expressed, as it is in the above examples, it is not as something universal and general, but as something particular and concrete. This is precisely the case when the "I" presents itself in dreams or during the trance-state. It does not denote a "second self" or second "person," but merely such mental activities as are, *for that time, the strongest in consciousness*. It is, as Mr. Gurney well remarks, "a mere rudiment of a personality," "a short connected train of intelligence, of whose activities and products the *normal self* is unaware." The "normal self," or the simple concept "I," which is characterized as the union of all the perceptions we make of ourselves and of all other mental modifications, have this one feature—they all belong to the one and the same being, and therefore constitute one and the same person. The normal self or *ego* in these trance-states is not in conscious activity, and, therefore, not in a condition to perceive or to regulate the sort of activities that are going on then and there. The conscious activities then prevalent are excited on the basis of the vital senses, whose actions, in the normal waking state, pass on unawares to our self-perception, but become prominent when the systems of the higher senses sink into inactivity, as in sleep, in trance, in apparent death; they then cause a consciousness on their own basis, by exciting as mobile elements into activity, from the stock of acquired mental modifications, whatever may be suggested to the "subject," or may otherwise stand in relation to the subject's being at that time. It is not, then, a "*second person*" that acts and thinks at such moments, but the very same person, the "I," which, however, is constituted of only those mental activities which are at *that time* the strongest in consciousness, and does not embrace the simple concept "I," that universal and general idea which is derived from the single feature, *that all that takes place in the soul belongs to one and the same being*.

This hypnotic consciousness is a partial activity of the same soul, "subject" or "person," induced upon the basis of the vital senses, in opposition to the recognized "five senses," which latter unfold their action during the "waking state." It may be called a "secondary" consciousness, but it is not less a con-

sciousness than that which is enacted upon the basis of the waking five senses. It is the same in *character*, namely, an excitation of certain acquired mental modifications, according to the same laws which govern all excitations into consciousness. (Compare especially 99.) Of a "second person" we can speak only figuratively, in the same sense as it is employed of one who changes his views and acts differently from what he might have been expected. We then say he seems to be quite a different person.

A greater difficulty presents itself in the fact that these two consciousnesses run parallel to, and independent of, each other; that "there was no moment at which the doings of the two selves were juxtaposed or associated in normal consciousness." But if we consider that the activity of the vital senses is *normally* a hidden one, governing and directing nevertheless and continuously all *functiones vitales* without begging leave of, or allowing interference from, the consciousness of the "five" senses, we need hardly be taken aback by the discovery of Gurney, that the consciousness on the basis of the vital senses actually continues to pursue its own course in counting and watching the time when a special impulse implanted during that state shall be executed unbeknown to the "waking" consciousness; nor is it surprising when we find that the "subject" during the performance falls partially back again to the same state (trance-waking) in which the command was given, because the fulfillment is essentially a continuance of that state, which merely comes to the surface as its last link. If it were not thus, foolish commands would not be executed at all, as we see in those cases where the "subject" by experience has learned to discriminate between an impulse imposed and a natural impulse to do something. In such cases the sense-waking preponderates over the trance-waking. Neither need we wonder that during this state of consciousness, on the basis of the vital senses, actual "mentation" is performed. The mobile elements of this basis do no more nor less than do the mobile elements during waking life. They excite into consciousness mental modifications according to the law of similars and acquired associations; and in some cases the mental activity on

this basis may succeed even better than on the basis of waking life, where so many external influences often prevent and break up a train of thought which, during the occlusion of the five senses, is easily and correctly brought to perfection, or where, during special excitement of the vital senses, whole systems of knowledge may be revived, which are absolutely inaccessible during the normal state of conscious mental activities.

There is still another subject which is closely related to the above, and which we must consider separately, namely: *The influence of suggestions* upon the "subject" while in the state of trance. The "subject" can be made the victim of any hallucination the fancy of those present may suggest: That he be somebody else than himself, or an animal, or a statue, or that one side of his body be a nurse and the other a windmill, and so on *ad infinitum*, associated with an astonishing power of representing these various suggestions by exact imitations of their characters. It does not appear to me to be a definite gain to accept as an explanation the common view: "That in certain states of the nervous centres suggested ideas may acquire a dominant and practically irresistible force," because it does not tell us the least as to the nature of those "certain states of the nervous centres," nor of the reasons why suggested ideas should acquire such power. Even if we admit, as we do, that nervous centres act their part in these strange phenomena, we do not feel justified in burdening them with the whole work, just as little as we would ascribe to the hand the whole action of writing a letter or playing a tune. This explanation is an easy way of hiding behind some scientifically sounding words, the meaning of which is still an undiscovered x. We must try to explain the phenomena better.

Suggestions take effect fully only when the "subject" has succumbed completely to the mesmeric influence; that is, when the vital forces have gained the predominance over the activity of the higher senses so far that the consciousness of the *ego* has lost its controlling power.

"I"—What is it? To repeat once more: *It is the union in one concept of all perceptions we have made of ourselves.* That they all belong to us, to one and the same being, is the dis-

tinctive feature by which they are united in the one concept "I" (105).

The *ego* is, therefore, a very strong mental modification, and, if fully conscious, controls our actions. However, this is not always the case. In sleep, even in deep thought, sometimes we forget ourselves; that is, the concept of our *ego* remains unexcited, and the mental modifications then excited roll off without the *ego's* controlling influence. A "subject" in trance is in the same condition. His *ego* is likewise unconscious, and the ideas *suggested* to him rule supremely. To believe that he is a "fish" or a "bird" his *conscious* "I" would never admit, but during the unconsciousness of his *ego* anything of the kind is possible, if *suggested* to him; that is, if the modifications are excited in him *ab extra*; for without such external influence they would not be excited, or, as Mr. E. Gurney very truly remarks, "the 'subject' does not *originate* remarks."

But how is it possible that the "subject" in this partially conscious state can perform such astounding mimicry? Because a lively excited mental modification will always excite such other modifications which have been more or less intimately associated with it on former occasions. (Compare 98 and 99.)

So far as such associations exist, so far will his mimicry extend, and no farther; and the mimicry will always be of this individual character. Suggest to some four or five "subjects" in a trance that they are in church, and one will kneel down, another commence praying, a third appear to be attentively listening, and a fourth perform some ritualistic ceremony, etc., every one according to his individuality, that is, according to the associations which exist in *him* from former excitations and habits.

In this class of phenomena also belong Dr. Braid's phrenological experiments. By stimulating a phrenological organ he was able to excite such mental modifications as are located by phrenologists in those organs. He says on p. 99 of his *Neurypnology*: "Touching the patient's scalp with a knobbed glass rod, three feet long, has produced the phenomena (of exciting phrenological organs) with my patients as certainly as per-

sonal contact, so that if there is anything of *vital* magnetism in it, it is subject to different laws from that of *ordinary* magnetism or electricity.

"Mere pointing I have myself found sufficient to excite the manifestations in several patients, after previous excitement of the organs; but this arises from feeling, as I know the sensibility of the skin in those cases enables them to feel *without actual contact*.

"The following experiment seems to me to prove clearly that the manifestations were entirely attributable to the mechanical pressure operating on an excited state of the nervous system. I placed a cork endways over the organ of veneration, and bound it in that position by a bandage passing under the chin. After hypnotizing the patient, after a minute and a half had elapsed, an altered expression of countenance took place, and a movement of the arms and hands, which latter became clasped as if in adoration, and the patient now arose from the seat and knelt down as if engaged in prayer, etc."

I do not believe that the conclusions Dr. Braid draws from these experiments are correct ones. If he supposed that vital effluence was subject to the same laws as ordinary magnetism and electricity, he mistook the nature of vital magnetic influence altogether. The effluence of a magnetizer cannot be barred by a glass rod.

If he saw manifestations excited by merely pointing, after previous excitement of the organs, and ascribed this effect to the sensibility of the skin to feel without actual contact, he confounded the sense of touch with the sensitiveness of the subject to mesmeric influence.

And finally:

If he saw a clear proof in exciting these phenomena by the pressure of a cork, that they were entirely attributable to mechanical pressure operating on an excited state of the nervous system, he did not know that the handling of the cork by himself would so impregnate it with his own effluence, that pressure of the cork or of his own finger would amount to the same thing as a direct contact.

The difference, however, between this mode of exciting certain mental manifestations and that of verbal suggestion is this: Verbal suggestion rouses directly certain ideas into consciousness, while the application of gentle pressure with the

finger or otherwise upon certain phrenological organs, excites into activity the vital forces which govern these organs, as we have seen above. How far also verbal and mental suggestions might have helped in these experiments, is not quite clearly seen from Dr. Braid's description of the mode of operating for phrenological manifestations. Dr. Braid says: "If from gentle pressure upon a certain phrenological organ no change of countenance or bodily movement is evinced, use gentle friction, and then in a soft voice ask what he is thinking of, what he would like or wish to do, or what he sees, *as the function of the organ may indicate.*" This rather looks like suggestion, though only in gentle hints. Still it is possible that the mere excitation of certain groups of granules in the gray matter, or rather of certain vital forces which govern these groups as organs, for the manifestation of certain mental activities, is alone sufficient to produce these phenomena.

119. HALLUCINATIONS.—DELUSIONS.

Hallucination (*alucinatio*) denoted originally a "wandering of mind, fickleness, dreaminess, reverie." In later times it has been applied especially to sensory delusions. Mr. Gurney, in his article on *Hallucinations*, in *Proc.*, Vol. III, p. 151, etc., also in *Phantasms of the Living*, Vol. I, Chapter X, pp. 457-495, defines sensory hallucination as "*a percept which lacks, but which can only by distinct reflection be recognized as lacking, the objective basis which it suggests*—where the *objective basis* is to be taken as a short way of naming the possibility of being shared by all persons with normal senses." He then discusses the question of central or peripheral origin, and the difference between creation and excitation, and comes to the conclusion that in some cases the excitation is external, in others doubtful, and in still others absent; but "*wherever initiated, hallucinations are assuredly created by the brain from its own resources.*"

MM. Binet and Féré, in their interesting book on "*Animal Magnetism*," state that "*hallucination consists in the vivid external projection of an image*" (p. 222); that "one image provokes

another by virtue of the bond which unites them, and in the same way the second suggests the third" (p. 223).

"What is meant by external projection? We answer *that it is the belief in the reality of a thing*. The external projection of an image is, therefore, the belief in its reality" (p. 223).

MM. Binet and Féré go on to prove their proposition that a hallucination is produced by an excitement of the sensory senses, by very interesting experiments in regard to the phenomena of contrast (pp. 249-252); in regard to subjective sensations (pp. 252-255); in regard to the mixture of imaginary colors (pp. 255 and 256), and in regard to phenomena observed with reference to the eye (pp. 256-262), all of which deserve a very careful perusal. In Part IV they show the influence of æsthesiogens, especially of the magnet, upon hallucinations; and wind up in Part V by demonstrating that a hallucination may be destroyed by three different processes: By suggestion, by physical excitement and by the magnet (pp. 262-276).

All these researches into the phenomena of hallucination are undoubtedly very interesting, but do they really explain the nature of these strange psychic occurrences? If hallucinations "are assuredly created by the brain from its own resources," we would like to know how the brain can create percepts which lack the objective basis which they suggest? Or if hallucination consists in the vivid external projection of an image, and this external projection of an image is the belief in its reality, we wish to know why such an external projection takes place, and by what process the belief in the reality of an image is established?

I cannot see how the nature of hallucinations as a *psychic* problem can ever be solved by applying our researches to the *bodily* organs, which only furnish the conditions and means under and by which the soul externalizes its own activities. Neither the brain as a whole, nor special centres in it, can ever *create* hallucinations. They are *psychic* actions. We must examine them *psychologically*, and for this purpose let us first inquire into the question: Why do we believe our external perceptions based upon some external reality, or consider them as derived from and representing real objects?

Actually *existing for us* only are the images or representations *in us* of the external world. The things outside remain outside and foreign to us. We can never penetrate into their actual being or be *the like of them*, and, for aught we know, they may exist only in our imagination. This has been the view of Idealism for centuries, and, although always combatted by Realism, nevertheless culminated in Kant and Fichte in its extremest point: That a comprehension of existence altogether lies outside the pale of human capabilities. This, no doubt, overshoots the mark. For *we ourselves* are an *existence*, which manifests itself undeniably in our *self-consciousness*. This self-consciousness, this immediate knowledge of any and all our psychic actions as *our* actions, as not only *belonging* to us, but as being *existences* in us, is the basis without which we could not even have the *idea* or *notion* of "existence," for each notion or concept requires concrete sensations and perceptions, out of which, by the fusion of their like constituents, the concept-forms arise (15).

But, beside this immediate perception of our psychic activities, we also perceive ourselves *bodily* by means of our external senses. The perceptions of our body differ in no way from the perceptions we have of any other external things. They consist in perceptions of form, color, stature, size, sound, motion, etc., but do not reveal in the least what and how these various parts are in themselves (*an sich*). Our body is, indeed, quite as external to the soul as are other bodies of the external world.

Why is it, then, that we nevertheless conceive our body as belonging to *us*, and other things as not? *Because our body is invariably present to us, and all changes which it undergoes run parallel with our self-consciousness, thus forming by degrees a bond of union so strong that we conceive body and soul as one, or at least as linked together seemingly inseparably.*

This is not the case with the things of the external world. They are not invariably present to our consciousness. They change without particular relation to our mental states. They may grow, burn or rot, and we would not be conscious thereof, except under certain circumstances, while any change in our

body at once effects our primitive forces and makes itself known to us. This constant association of bodily and mental actions, this reciprocal relation between the two, gradually segregates the perceptions of our body from all other external perceptions as something *specifically belonging to us*.

But this process of association does not end here. It extends further, although at first only to similar objects closely connected with us. The child hears its mother's voice, sees or feels her face, breast or hand. With these external perceptions associate at the same time the feelings of the child's own existence, which, no matter how faint and obscure at first, has nevertheless taken a start into being with the child's first psychic activities. It is this faint feeling of its own existence that the child transfers instinctively to its mother as being of a like existence.

Still later these associations extend to surroundings, and finally draw into their net of connections the entire external world, so far as it can be grasped by finite capabilities, and in this way the human mind gradually becomes habituated to attribute or ascribe an existence which it carries in itself as an immediate experience, as a knowledge, "*an sich*," to all other things, and to recognize them as existing like itself, not as belonging to itself, but as external objects. This whole subject has been elaborated much more fully than it can here be given, by Beneke, in his "*System der Metaphysik und Religions-Philosophie*" (Berlin, Ferdinand Dümmler, 1840), from page 43-136.

After this digression we again return to the subject of "Hallucinations."

As our own sensations and perceptions, being the only immediate existences for us, are gradually transferred (first to our body as an existence belonging to us), so our perceptions of outside things by constant associations are gradually converted (for us) to external existences or objects. The belief in the reality of any external thing is, therefore, founded in the reality of our own mental modifications, which underlie and are transferred to outside things, from which certain stimuli are derived. Now then, if certain external stimuli which are faint and indistinct, should excite only similar mental modi-

fications, *e. g.*, an indistinct object in the dark, the idea of a ghostly figure, this mental modification will be ascribed or referred to the external thing, and will appear to us what we conceive it to be, a ghost, although it may be nothing but the stump of an old tree. Nevertheless, we have in this case a real existence, the mental modification of a ghost in us is transferred outside of us to an object which is not anything like a ghost, but one which, merely on account of its faint stimuli, has aroused in us the image or mental modification of a ghost. We think or *believe* it to be a ghost merely because the idea of a ghost is roused in us into consciousness, and thus a present conscious existence in our mind is referred to something external (which is something entirely different). Such mistakes we call *sensory delusions*, and they stand in very near relation to "hallucinations," and the one may taper indefinitely into the other. But hallucination is considered generally as a "percept which lacks the objective basis which it suggests," yet presupposes some kind of stimulus which excites some mental existence, that is, some mental modification, percept, idea, image, etc., however we may call it, into consciousness, without which neither a delusion, hallucination, nor even a correct normal perception could take place. For this reason Mr. Gurney discriminates very properly between the *creation* and *excitation* of a hallucination. We have spoken of exciting stimuli at length in former chapters. (Compare 3, 12, 13, 32 and others.) We may here restate briefly that they are either external or internal mobile elements. It is quite likely, therefore, that in some cases external stimuli, in other cases entirely internal stimuli, may initiate hallucinations. The first would approach more or less to sensory delusions, the latter to hallucinations proper. But, as both fuse indefinitely into one another, there is no reason to raise a quarrel on that account. Neither is it my purpose to draw a definite line between the two, particularly as there exists none in nature. In all cases of hallucination there must be an exciting element which "initiates" them; that is, which raises one or some certain mental modifications into consciousness, as in the well-known case of Nicolai, as well as in those witnessed in hysterical patients in Paris.

Without an excitation into consciousness of a mental modification there is no hallucination. I hold it, therefore, misapplied labor, no matter how ingeniously conducted, to attempt to find out whether this excitation should be placed in the sensory organs, or in higher or lower brain organs. They may be initiated by any of the different systems of senses, higher, lower, or vital senses. At any place in the body, therefore, they may be initiated alone by the diffusion of mobile *psychic* elements (void primitive forces and partially modified primitive forces, as shown in 13). They are *psychic* activities, and no amount of research will ever elucidate anything further than that certain corporeal organs take a certain parallel action when the soul externalizes its own activities.

The conditions under which hallucinations take place are quite varied. We find them in the conditions of sleep, drunkenness, of poisoning with opium, hashish and other narcotics, especially belladonna, hyoscyamus and stramonium, and also under the action of numerous other drugs, such as petroleum, platina, sulphur, etc. We find them in hypnosis, in somnambulism, in fevers and many mental diseases. Wherever hallucination is found, it is a mental modification, or a group of mental modifications, which, being in lively excitation, transfer their own existence to external things as objects with which they are connected by previous association.

We have still to apply this psychological explanation to some of the Parisian experiments.

The authors of the book mentioned above say:

"One of the most striking characteristics of hypnotic hallucination is *the permanence of its location*. If, by means of suggestion, a portrait is caused to appear on a sheet of card-board, both sides of which are alike, the picture will always be seen on the same side of the card-board it occupied at the moment of suggestion, so that the picture may not be inverted, nor even inclined. If the card-board is turned upside down the portrait is seen with its head downward. 'The subject' never makes a mistake. If his eyes are covered, or if the experimenter stands behind him while changing the position of the object, his answers are always in conformity with its original localization" (p. 224).

"All these experiments seem to imply that the hallucinatory

image produced in the 'subject' by verbal suggestion does not remain in his brain in a vague and floating state. It is probable, as M. Ch. Féré has shown, that this image is associated with some external mark—a dot for instance, or a raised spot—some distinctive feature of the blank card which was shown to him when the suggestion was made, and this association of the cerebral image with an external mark would explain the series of facts of which we have given an account" (p. 225).

"If instead of putting the pack of cards into the 'subject's' hands we show him the imaginary portrait while holding it two yards from his eyes, the card still appears to him to be white, although a real photograph would appear to be gray. If the card is gradually brought nearer to his eyes, the imaginary portrait becomes visible, but it must be brought much nearer than the ordinary photograph before the 'subject' can say for whom it is meant. This peculiarity can be explained on the assumption that the hallucinatory image is evoked by distinctive marks (*points de repère*) on the card, which are only visible at a short distance. The imaginary object presented by hallucination is perceived under the same conditions as if it were real" (p. 226).

It appears to me that this explanation is perfectly correct, and it is further strengthened by the following observation: "Repeated attempts have convinced us that the microscope enlarges the hallucinatory image—that a spider's foot becomes enormous—but we have not observed that hypnotic subjects discover details invisible to the naked eye" (p. 232).

This shows clearly that the "subject" cannot "see," *i. e.*, become conscious of anything but what his mental modification consists of. Details invisible to the naked eye, the "subject" has not acquired as mental modifications, and, therefore, cannot reproduce them. The microscope enlarges the distinctive marks, and consequently also all the dimensions to which the imaginary picture is applied.

Further: "Since the imaginary object created by hallucination acts in all respects as if it were real, it may be asked whether that object is concealed by the interposition of a screen. This depends upon the 'subject,' and the results are extremely varied. In the simplest case the hallucination is destroyed by the screen, and the 'subject' declares that he has ceased to see anything. In the case of other 'subjects' the screen has not this effect. The hallucination persists without any change of

place, and if the subject is ordered to seize the object of suggestion, his hand goes to the other side of the screen in search of it. In other 'subjects,' again, the imaginary vision is not interrupted by an opaque body, but the object is transferred to that body. We are unable to assign a cause for these variations, which may be noted in different 'subjects,' and sometimes in the same 'subject,' in the course of a series of experiments" (p. 234).

Considered psychologically there does not seem to be any difficulty in explaining these variations. On the contrary, to our view they appear as confirmations. It depends entirely upon what *other* mental modifications are aroused simultaneously with the interposition of a screen. As a usual thing the interposed screen will rouse the supposition in the "subject" that the thing before in view is now covered from view, and this, if strong enough, will at once wipe out the imaginary picture. If not strong enough to cancel entirely the suggested idea of the picture, and the other idea is roused, that it is merely covered and still behind the interposed screen (an occurrence frequently observed in normal life), the "subject" will search for it on the other side of the screen. But, if the excitation of the suggested picture is so great that it does not allow any of these suppositions to arise in consciousness, the imaginary vision will simply be carried upon the interposed screen. That these variations may happen even in one and the same "subject" in the course of a series of experiments is natural enough, because even the same "subject" will not always be in the same condition.

Furthermore: "Paul Richer was the first to show that in the case of most hysterical 'subjects' it is impossible for their visions to accept hallucinations of color. Since the eye has lost its chromatic sensitiveness, it cannot see the colors of an imaginary object" (p. 247). "For instance, if the eye of a 'subject' which is open has lost the perception of violet, it is impossible for that color to enter into any of her hallucinations, unless the other eye, which retains the sense of that color, is opened." "It is now almost certain that hysterical achromatopsia results from a functional disturbance of the cerebral cortex, and not from any lesion of the retina, or of the media of visual perception" (p. 248). "This belief leads to the conclusion that, if this functional disturbance is the same hin-

derance to the hallucination as to the perception of a given color, it is probably because these two phenomena, perception and hallucination, employ the same class of nervous elements. In other words, hallucination occurs in the centres in which the impressions of the senses are received, and it results from an excitement of the sensory centres" (p. 249).

What could be plainer and prove more satisfactorily our position, that hallucinations are possible only on the basis of existing mental modifications, than these quotations from Richer. Before imaginary pictures, etc., can be "seen or heard outside," they must first exist and be excited into consciousness in the mind. If not there, no amount of suggestion or other excitement will ever produce a hallucination either of color or anything else. And it does not make any difference at all to which organ or part of an organ physiologists may agree or disagree to ascribe the presence or absence of such mental modifications and their excitation.

We have yet to consider MM. Binet and Féré's so-called *negative hallucinations*. They give samples of this kind in their book on *Animal Magnetism*:

"On awaking you will be unable to see, or hear, or in any way perceive M. X—, who is now present. He will have completely disappeared.' Accordingly, when the 'subject' awoke she saw all the persons who surrounded her with the exception of M. X—. When he spoke she did not answer his questions, and when he laid his hand on her shoulder, she was unconscious of the contact. He put himself in her way, and she walked on and was alarmed to encounter an invisible object. We are ignorant how this phenomenon is produced, and can only accept the external fact; namely, that when a 'subject' is assured that an object present has no existence, the suggestion has the direct or indirect effect of establishing in his brain an anæsthesia corresponding to the object selected. But it is still a question what occurs between the spoken affirmation, which is the means, and the systematic anæsthesia, which is the end. We cannot, as in the case of hallucination, assume that the word spoken to the 'subject' and the phenomenon produced are connected by association. If it is true that the image of a serpent is associated with the words: 'There is a serpent,' it cannot be said that the incapacity for seeing M. X—, who is present at the time, is also associated with the words: 'M. X— is non-existent.' In this case the law of association,

which is so useful in resolving psychological problems, is altogether unavailing" (p. 205).

We have not here, as in many cases cited in former places, a withdrawal of the vital forces which govern sense-organs (whereby they become incapable of perceiving altogether, neither is there any anæsthesia of the brain corresponding to the object selected), but an *isolation* of a certain single mental modification against the accession of external stimuli (which under ordinary circumstances would necessarily excite it into consciousness) by the command "you will not perceive M. X—."

We must not forget that the "subject," on being awakened, is not fully awake. He is still, as Mr. Gurney has it, in a trance-waking state. The command given during his sleep is now in full operation and swallows up, so to say, all opposing excitations, therefore isolating the mental modifications of M. X— completely from being reached by the stimuli of sight, sound, etc., which emanate from him, thus preventing his being seen, heard or felt by the subject. It is not, as MM. Binet and Féré correctly observe, the result of a particular association, but of a lively post-hypnotic excitation of a command which intercepts the external stimuli from reaching the *special mental modification of M. X—* in the "subject's" mind. (A similar phenomenon occurs when we do not see a person entering the room, or do not hear him speak to us, while we are deeply engaged with an active train of thought.) Neither is it a partial anæsthesia of the brain corresponding to the object selected, because a full removal of the hypnotic command would at once restore the perception of M. X—, that is, the external stimuli which emanate from that person would at once, by the law of similars, excite into consciousness the vestiges of previous excitations by the same person, and the special mental modification of M. X—, as it exists in the "subject's" mind, would at once be resuscitated—that is, would be seen, heard and felt by the "subject" as before.

120. RAPPORT BETWEEN THE OPERATOR AND THE
"SUBJECT."

We come now to the consideration of a still more obscure subject, "the community of sensation between operator and 'subject,' or transference of sensation without suggestion from operator to subject." The reality of this community has been proved so thoroughly and abundantly by the Committee of the S. P. R. on Mesmerism, and by all mesmerizers before and since their researches, that it ceases to be virtue to take notice any longer of the stupid denials of these phenomena, still brought forward in "scientific" works and treatises. These are the facts: That a "subject," insensible to any torture inflicted upon his own person, will feel the pinching applied to any part of the operator's person, and indicate the spot; that he will hear the whisper of the operator at a distance, although deaf to any one else's voice, and even amid the loudest noises made about him; that he will smell and taste what the operator smells and tastes; that he will sense what the operator has touched with his hands or only made passes over, and that he will respond to the unexpressed will of the operator. (Compare Proc., Part III, p. 225, and Part IV, pp. 255 and 260.)

Strange as all this appears at first sight, it is not stranger than what we have explained thus far. Why is a "subject" insensible to tortures inflicted upon his own person? It is not, as we have already explained, because his nerves of touch and feeling are altered or changed, but because the vital forces which engender the functions of these nerves and organs are so engaged by the influence of the operator that this function cannot go on, that is, the nerves or organs cannot respond because the psychic forces that cause these functions are differently employed. The same is the case when the "subject" is deaf to all noises about him. It is not because the nerves and organs of hearing are deadened, but it is because the vital forces that are the psychic cause of that particular functional activity are engaged by the influence of the operator.

Neither are the olfactory nerves at fault when the strongest

and most irritating substances applied to the mucous membrane of the nose cause no response. Here again the cause lies in the withdrawal, by the operator's influence, of the vital forces which qualify the organs for action.

But then, why does the "subject," insensible to pains inflicted upon his own person, feel pains inflicted upon the operator? Why does he hear the slightest whisper of the operator even at a distance, although completely deaf to the most "unearthly bellowing" around him? Why does he smell and taste what the operator smells or tastes, although the most irritating substances applied to his own organs of smell or taste have no effect upon him?

This we can only comprehend by considering the fact that the primitive forces of seeing, hearing, smelling, tasting and feeling may be acted upon by other means than the material organs of these senses. In 114 we have shown that a transference of thought is possible by psychic mobile elements alone, without a communication through the usual means of perception. There the "subject" was in a normal condition, in the full use of all his sense-organs. In our case the "subject" is deprived of the use of his sense-organs, because the vital forces which engender their activity are subdued by the influence of the operator. This influence, or rather effluence, from the operator appears, then, as the only means by which the "subject" is capable of responding to external stimulation. If we found, in 114, that the means to excite the similar mental modifications in a "subject" fully awake consisted of mobile elements of the higher primitive forces partially modified by external stimuli, we must now, in the case of mesmerized individuals, look for mobile elements of the operator from the sphere of the vital forces; that is, of elements which are connected with the "sympathetic" system, or of which the sympathetic system is the material expression. The sympathetic system has been traced by anatomists from both sides of the spine up into the brain and down to the coccygeal ganglion. The rami communicantes connect it with the spinal marrow, and thus a distribution of the sympathetic action down to the fingers' ends and the tips of the toes is explained, even in its material (anatomical) relation.

This system of vital forces (pervading the entire human frame, creating and building all the material forms of which it is the psychic prototype, by means of the bioplasts), instilling the formed material with its own functional activity, and, on the other side, standing in closest communion with the organic senses (the special primitive forces of seeing, hearing, touching, smelling, etc.), with which it constitutes the soul of man—this system of vital forces is thus the mediating link between the conscious psychic development, the mind, and the material organs, the body. Its forces diffuse on all sides, stimulate or withdraw stimulation, not only from psychic modifications and material organs of the same subject, but diffuse also from an operator over the sympathetic system of a “subject,” and subdue his vital forces to complete subjection and harmonious or sympathetic vibration with that of the operator. Consequently the “subject” will perceive no external stimulation of his sense-organs, even not painful ones, etc., but will readily respond to whatever happens to the operator by means of these connecting elements. Herein consists the *rapport* between the operator and his “subject.” It is entirely of a psychic nature. The vital forces of the operator so entirely subjugate, by their greater energy, the sympathetic system, *i. e.*, the vital forces of the “subject,” that the first regulate the activity of the latter, and thus establish a connecting link which fastens the “subject” to the operator, but not the operator to the “subject.” *Rapport* is, therefore, not reciprocal, but a one-sided dependence of the “subject,” and for this reason alone no one should allow himself to be mesmerized unless for a good and noble end, and not for mere play to pass time, and under no consideration without the presence of a reliable witness. This explanatory digression will enable us to answer the questions above stated.

Why does the “subject” under full influence feel only such pain as is inflicted upon the operator? Because the sensation of the operator is immediately transferred by means of the connecting link of mobile elements to the corresponding vital forces of the “subject.” Why does he hear the slightest whisper of the operator, even at a distance, where

normal conditions of the hearing organs would perceive no sound? Again, because the whisper of the operator affects immediately, by means of the established link of mobile elements, the *hearing forces*, and not the *organs* of hearing, of the "subject." Why does he smell or taste what the operator smells and tastes? Because the sensations of the operator immediately excite similar sensations by the same means in the corresponding olfactory and gustatory primitive *forces*, without the intermediation of the corresponding *organs* of the "subject." The experiments made by the committee on this point are very characteristic. If the operator takes a certain substance into the mouth or smells it, the "subject" does not always say positively it is sugar, or salt, or pepper, or cologne, etc., but describes it as something sweet, or hot, or like this or that, etc., showing clearly that these senses, as explained already in 8, are of a lower order in the capacity of forming clear conscious modifications; and when, as it often happened in these experiments, the operator had tasted several things in quick succession, the answer came still more confusedly, it proved that mixed-up and indistinct sensations create corresponding undefined sensations in the "subject."

The "subject" will also sense out of a number of similar things those objects which the operator has touched, or over which he has made a few passes, or will distinguish at once, by tasting or smelling, mesmerized water from other water. In these cases we have not so much an immediate excitation of corresponding primitive forces as a rather heightened sensitivity of certain senses for stimulations coming from the operator, because these stimulations are in greater harmony with the "subject's" condition. That the "subject" should respond to the unexpressed will of the operator is explainable on the same grounds as above stated. The conative modifications of the operator immediately excite, by means of the existing link of mobile elements, similar conative modifications (volitions), which, in the absence of the conscious *ego*, will surely take the ruling power as the most potent modifications then conscious in the mind.

We have thus, by the application of Beneke's *New Psychology*,

which is the outgrowth of close observation of mental activities and not of general concepts (the meaning of which has always been disputed), and which takes for its object the whole man, soul and body, as subjected to the same laws—as a system of diverse forces united in one grand organism—been able to explain these obscure phenomena, or at least to bring them nearer to our understanding, than either the old method of psychological speculation, or the now fashionable materialistic physiology, with all its vivisections, nerve-centres, inhibition, cerebration and similar “scientific” phrases, have succeeded in doing. But we have not yet finished.

121. SOMNAMBULISM.

Although this state of the human organism finds an explanation of many of its phenomena in the foregoing analysis, it still presents features that need further consideration.

The somnambulic state may be induced *unintentionally* by disease, by deep and violent emotions, religious excitement, by the influence of vegetable or mineral substances, and, when so caused, it is called *natural somnambulism*. The state may be brought about by the *intentional* influence one person exerts upon another in the act of mesmerization, or by the exertion of one's own will (Fahnestock's *statuvolism*). Under the latter circumstances it is called *artificial somnambulism*.

The additional features of the somnambulic state which need our attention are the following:

1. A gradually developing capability of the subject of perceiving the internal parts of his own body, and sensing what will cure disorganized functions and organs.

2. A perceiving of the functions and organs in *other* persons, and what will cure their morbid conditions.

3. A perceiving at a distance without the use of the sense-organs, and a sensing of what will happen at a future time.

These several peculiarities we shall now consider separately.

1. *During the induced somnambulic state the patient learns gradually to discern the internal parts of his own body.*

Instances of this kind are very numerous in the literature

of somnambulism. Kieser observes, in the second volume of his *Tellurismus*, page 162: "The somnambulist discerns first only obscurely and indistinctly the objects nearest around him. At a higher stage his interior becomes partially or wholly, more or less, lighted up and transparent to him, so that he is able to point out the position and form of the several organs of his body, and sometimes with the greatest accuracy."

Persons in the somnambulic state perceive at first more or less clearly their *diseased* organs, and describe them more or less accurately, but always according to their own capacity and knowledge, as any one would describe an object according to the amount of knowledge he has of it.

Matthew Schurr, a boy 13 years old and a patient of Dr. Tritschler (Kieser's *Archiv*, Vol. I, Part I, pp. 133 and 134), answers the question: "Are you internally sound?" as follows: "My lungs are sound; my heart is somewhat large; my liver is sound, that I know surely, although I cannot see it, because it is covered by something." "My heart is pale, flesh-colored, almost round, but pointed on its lower portion" (delineating at the same time with his hand on the chest the position of the heart within); "there are two big vessels coming near together from the heart in which the blood runs from the heart." This is surely no very accurate description of the heart, but good enough for an untutored boy.

P. G. van Ghert's somnambulist, Demoiselle B. (Kieser's *Archiv*, Vol. II, Part I, p. 69), says: "Now I see to what my stomach is attached. There goes from the stomach, so it appears to me, toward the arm (but I cannot see high enough yet) a crooked thing. On the lower part of the stomach I see a gut which bends upward, and also a number of other intestines. The meal which I took lies still undigested in my stomach."

This may suffice to show the character of the internal somnambulic "seeing," although a great many similar cases might be cited from Kieser's *Archiv* alone, not to speak of other works on somnambulism. The "seeing," or perceiving, of internal organs during the somnambulic state, is a fact which has been attested by a great number of the best observers, their observations being independent of one another, at different times and upon different subjects. This seeing corresponds entirely with the knowledge of the "subjects," as the

above-cited cases clearly show. The ignorant cannot be expected to give a scientific description of what they see. When, however, the "subject" is an educated physician, we may expect also a scientific description. Such a case is recorded by Deleuze, in his *Histoire Critique*, etc., Vol. I, p. 168, where he states that a colleague, whom he had mesmerized, during the somnambulic state described his disease in correct technical terms.

We have under such circumstances a "seeing" or perceiving of objects without the ordinary sense-organs, and without the means of ordinary light, that is, without any of the media absolutely necessary for seeing in the normal state. We cannot conceive how this is possible, and yet the facts show that it is.

In order to gain an approximate insight into this obscure process, we must first remind the reader of the fact that perceiving may take place without any of the ordinary means of communication, solely by means of primitive forces and partially modified primitive forces, as shown in 114 on mind-reading. But this explanation does not wholly cover such cases. It shows merely that a psychic discernment is possible by other means than the ordinary *organs* of senses and their ordinary stimulations. In the somnambulic state the activity of the sight *organs* is totally subdued, inoperative, and to call such perceptions "seeing" is not exactly an appropriate term; it is merely a becoming conscious of certain organs, especially diseased organs, and their conditions within the body. This is a process of not infrequent occurrence even in normal life. One who is accustomed to self-observation will readily discern any functional disorder that takes place in any part of his body. Though we do not, as a rule, mind *the normal workings* of our physical frame, any *disorder* therein makes itself quickly felt by the corresponding percipient forces—the vital senses. Although we do not call this a "seeing" of what goes on within us, it is nevertheless a consciousness of the process, and sometimes a pretty marked and painful one. If we now add to this fact that in the mesmeric (and consequently still more in the deeper somnambulic) state the higher senses are completely subdued, and the vital

senses correspondingly exalted, it is not difficult to see that the perceptions by these lower senses must likewise be exalted, approaching in acuteness and power the normal activity of the higher senses, with which they form a whole—the human soul. The perceptions by these lower senses then becomes “seeing,” comparatively speaking; that is, a becoming conscious of certain states of the organs within the body, as if they were seen, which knowledge will necessarily correspond to the knowledge the “subject” has acquired in his normal life, but which may be cultivated gradually by continued exercise to higher concepts, which, in the course of time, may become very clear conscious mental modifications. Even here, then, we need not go beyond the natural capabilities of the human soul. What appears a wonder at first sight, is nothing but a natural development of man’s primitive psychic forces.

A very remarkable case in point, showing to what high degree of conscious development a human being may be raised by the cultivation of the senses of touch, smell and taste alone, is that of Laura Dewy Bridgeman, of Boston, who can neither see, speak nor hear, and to whom a reception was given in commemoration of the fiftieth anniversary of her entrance into the Perkin’s Institution for the Blind, in South Boston. “She entered this institution when she was eight years old. Dr. Samuel G. Howe, now dead, took charge of the girl. She was taught to write, read, spell, knit, and to converse with her teachers and those who knew the language of the blind and the mute. She is now as proficient in the ordinary branches of learning as the average person not handicapped by the loss of actual powers.”

The same holds good as to the sensing of what will cure the disorganized functions and organs of the somnambulist. We touched upon this subject when we spoke of *dreams* (103) and *instinct* (107).

It cannot be my purpose to criticise here all the various prescriptions which somnambulists have made for themselves; neither can I scan all those which appear to be merely a reflex from the attending magnetizer’s mind. There is no doubt that many of these prescriptions were the consequence of a

genuine want and craving of the organism for certain drugs, and, on the other hand, that many of the same were so irrational that only superstition, existing in the higher knowledge of the "subject," could yield to them. When a mesmerist bled his "subject" nearly to death, because a mesmerized patient ordered it, the consequences of which she could scarcely overcome in the following two years, it shows merely the utter want of sound judgment on the part of the mesmerizer and the erroneous impressions the "subject" had of her own state. Kieser remarks, in a note to a case in which the "subject" prescribed enormous doses of a certain drug for amenorrhœa, from which notion, however, he successfully dissuaded his patient: "That there are cases in which even the determined claims of the 'subject' must not be heeded, and where the intelligent judgment of the waking mesmerist should regulate the views of the sleeping 'subject.' Even the highest degree of clairvoyant somnambulism is inferior to the clear-sighted waking man, and should be governed by him." (*Archiv für den thierischen Magnetismus*, Vol. XI, Part I, p. 30).

But how is it possible that persons in the somnambolic state can have any knowledge of remedies that will cure them, or at least will have a beneficial influence upon the morbid state of their systems? We have stated before how this may occur. During the somnambolic state the activity of the vital senses is so much heightened, and so entirely undisturbed by the action of the higher senses, that the peculiar kind of influence which a certain diseased organ is in need of, to bring about a healthful stimulation, becomes conscious, or is *felt*. It is the same as when we crave a particular food or drink, or turn in disgust from particular viands in the summer season, or in the winter, or under other conditions. The vital forces are the tale-tellers (see 107, on instinct), because they are so nearly related to, and therefore so readily influenced by, external nature (telluric and physical changes), that a discernment of these changes is as natural to them as a discernment of the changes of light, color, or figure to the eye, or a change of sound to the ear, etc. This discernment of the suitableness or disagreement

of certain things is the resulting *feeling*, that is, the becoming conscious of the differences of these influences during their actions upon the vital forces (47). This at once gives us the clue as to why somnambulists desire certain things and abhor others; why they crave (prescribe) certain drugs and forbid others; why they regulate their diet, and know what is good for them and what is not. Nevertheless, it would be folly to rely on such dictations. These feelings may indicate, in certain instances, unmistakably the true remedy, while in others they may be very far from the mark. The entire literature on somnambulism teaches this fact. How often do somnambulists change the remedy, its dose and combination with other drugs! Although this may in a great measure depend upon the influence of the mesmerizer, it nevertheless shows that their *feelings*, as regards their own ailments and the means to cure them, are often quite hazy and confused. This is not to be wondered at. The vital forces cannot attain to greater clearness than the higher senses, and as the feelings, even of the latter, are often obscure, we must not expect perspicuity and perfect clearness in feelings arising from processes of the vital senses. Thus the whole capability of the somnambulist of prescribing for himself, and sometimes successfully, amounts to nothing more or less than to the feelings in the domain of the vital senses, by which the need and suitableness of certain agents for the then present state become conscious.

2. *During the somnambulic state the patient learns gradually to discern the internal organs and their functions in other persons, and often knows what will cure their ailments.*

This is obviously a different feature from the foregoing. It is, it seems, a becoming conscious of things at a distance, outside of the "subject." The "subject" gradually recognizes in this way, first the magnetizer, and later also persons who enter into communication with the "subject," either directly (by contact) or through the intervention of the magnetizer. In either case a psychic connection is established between the "subject" and such person, which consists of an immediate transference of the vital forces from the person concerned to the "subject," and which we have described in 119 as *rap-*

port between the two. In this way any morbid action, in fact, any prominent action of any organ of the person concerned, is transferred immediately to the corresponding vital forces of the "subject," and is there *felt* as such action. In other words, a prominent action (healthy or morbid) of certain vital forces in the other person rouses corresponding modifications of vital forces of the "subject" into consciousness, which form the basis upon which this new excitation is measured or *felt* as either agreeable or disagreeable, and thus a knowing, or "seeing," arises of certain organs and their functions existing in the person concerned. Whether this "feeling," or "seeing," or "knowing" be clear or obscure, depends partly upon the frequency and thoroughness with which such processes are repeated, and partly upon the sensitivity of the "subject's" vital forces. Mrs. Hauff could, even during her normal state (which, it appears, was scarcely ever a normal one), sense at once the ailments of persons who came in contact with her. A number of such instances are reported by Justinus Kerner, in his work: *Die Seherin von Prevorst*, p. 160, etc. The seeing of the "subject" into another person during trance is, therefore, not an actual "seeing," but a *feeling* of another's state and condition, engendered by its transference to the corresponding modifications of the "subject's" own development, upon which it is measured or *felt* with greater or less clearness of consciousness.

If now, with this internal perception or feeling of another's state, there associates a longing for, or an aversion to certain things which either would benefit or aggravate that state, we see at once that it is possible for the "subject" to prescribe for the morbid state of another person. It is true these prescriptions sometimes sound very oddly and savor strongly of superstition, as in the case of Mrs. Hauff, who prescribed that the Countess von Maldeghem carry around her neck an amulet made of three times three laurel leaves, and to take three times daily three tablespoonfuls of St. John's wort tea, which was to be made of five flowers and nine teaspoonfuls of water, etc. (See *Seherin von Prevorst*, p. 167). The strangeness of the prescription, however, does not of itself invalidate the fact

that the prescription had its effect, as the Countess was cured after years of suffering. It merely shows that the personal peculiarities of the "subject" will always tinge and sometimes disfigure the natural impression of the wants which the disorder of another person engenders in the sensitive "subject."

3. *During the induced somnambulic state the "subject" learns gradually to discern things at a distance without the use of his ordinary sense-organs.*

Instances of this kind are likewise very numerous. The "*Facts in Mesmerism, with Reasons for a Dispassionate Inquiry Into It,*" by the Rev. Chauncey Hare Townshend, M.A., late of Trinity Hall, Cambridge, 1839, are, by the way, an effort involving much deeper research into the nature of mesmerism than Braid's mechanical explanation of the same, made public some two or three years later. From this book (reprint, New York: Harper & Brothers, 1841) I shall quote the following:

"E. A—, a boy, aged fifteen, manifested all the characteristic symptoms of mesmeric sleep-waking; was able to move about with tolerable ease, and began to display extraordinary phenomena of vision. There was exactly the progress in their development which attends the education of a new faculty. At first the patient could only descry the larger objects around him, or such as most interested him, or to which he was the most habituated. Thus, though able, in the early stages of his sleep-waking, to discriminate between the persons present in an apartment, and though testifying, in all that related to music, great powers of sight (for from the first he could, while mesmerized, write out music with precision), yet for a long period he found considerable difficulty in reading from a book, always complained of the smallness of the type, and could rarely be prevailed upon to look at more than two or three words at a time. Subsequently, his eyes being always firmly shut, he was able to read any number of words in the minutest type with perfect ease, and to discern small and large objects near or distant with exactly the same facility of vision which is possessed by a waking person. This power of perception, analogous to sight, seemed principally to reside in the forehead. Whatever objects he took up to examine he immediately carried to the forehead. Once, in the presence of Dr. Foissac, at Paris, the boy being given a set of eyeglasses (which he had never seen when awake) of eight different

colors, shut up in a tortoise-shell case, he unfolded them, and applying one at hazard to his forehead and without pressing it down to the level of his eyes, exclaimed, 'Everything appears blue to me!' at the same time, boy-like, imitating the gestures of a Parisian dandy, and observing that he should like to show off his pretty *lorgnette* in the street. The glass which he had accidentally chosen was, in fact, blue. Subsequently he, at various times, named the principal tints of the eight glasses correctly when presented to his forehead in any order. The same result took place when his eyes were bandaged. It was, however, remarkable that a powerful magnifying glass placed before his forehead was not perceived by him to enlarge objects, though he read in a book through the glass with perfect ease.

"Though the power of vision was greatest in the forehead, yet at times, and especially when he was excited, and not in any way called upon to exhibit (for such requisitions often seemed to fetter his faculties), he seemed to see on every side of him, as if his head were one organ of visual perception. This is no exaggeration, as the following instance will show: He was once sitting on a sofa, in the mesmeric state, when a gentleman, with whom he was well acquainted, came behind the sofa and made all kinds of antics. On this the sleep-waker exclaimed: 'Oh, Mr. D—! Do not suppose I cannot see you. You are now doing so and so' (describing all Mr. D—'s gestures). 'You have now taken a paper-cutter into your hand, and now a knife. Indeed, you had better go away and not make yourself so ridiculous.' Another time he was sitting at a table, writing music, with his back to the door, when a servant entered the apartment: 'Oh, Mademoiselle L—, is that you?' he said. 'How quietly you stand there with your arms folded.' He was quite correct in all he said. Directly after this I took up a bottle from a table behind the patient, and held it up to the back of his head, asking him if he knew what I held. He instantly replied: 'A bottle, to be sure'" (pp.165-167).

"The same youth, who, on his father's testimony had, in natural sleep-waking, seemed to perceive objects in total darkness, was now put to the test, whether in mesmeric sleep-waking he would manifest a similar phenomenon of sensation." The Rev. Mr. Townshend procured, therefore, a closet, perfectly dark, in which the mesmerized boy distinguished and named correctly cards which were given to him. The author continues: "This peculiar development of vision was, like the other faculties of the sleep-waker, capable of improve-

ment through exercise. At first he seemed unable to read in the dark. Then, like a person learning the alphabet, he came to distinguish large single letters which I had printed for him on a card, and at length he could make out whole sentences of even small print. While thus engaged in deciphering letters or in ascertaining cards, the patient always held one of my hands, or sometimes laid it on his brow, affirming that it increased his *clairvoyance*. He would also beg me to breathe upon the objects which he desired to see. He used to declare that the more complete the darkness was the better he could exercise his new mode of perception, asserting that when in the dark he did not come to the knowledge of objects in the same manner as when he was in the light: '*Quand je suis dans l'obscurité,*' he said, '*il y a lumière qui sort de mon cerveau, et qui tappe justement sur l'objet; tandis que, dans la lumière, l'impression monte depuis l'objet jusqu'à mon cerveau.*' Often when I could not see a ray of light, he used to complain that the closet was not dark enough; and, in order to thicken the obscurity, he would wrap his head up in a dressing-gown that hung in the closet. At other times he would thrust his head into the remotest corner of the press. His perception of colors, when exercised in obscurity, sustained but little alteration. He has named correctly the different tints of a set of colored glasses. It was, however, worthy of remark, that he was apt to mistake the harmonic colors green and red, not only when he was in the dark, but when his eyes were bandaged" (p. 174, etc.).

To this belongs also the well-authenticated case of the boy Anton Arst, who, under the immediate observation of Dr. Kieser, gradually developed the faculty of seeing through his fingers, knuckles, elbows, point of nose, etc. As, however, the entire history of this remarkable case is too long for recapitulation, I can merely direct the attention of the reader to the book in which it can be found: Kieser's *Archiv*, Vol. III, Part II, p. 50, and Vol. V, Part II, p. 25.

A remarkable case, proving the ability, in the sleep-waking state, of seeing *at a distance*, is Dr. J. C. Valentin's case, reported by him in Kieser's *Archiv*, Vol. VII, Part III, p. 49, etc.:

"The patient, Caroline Ramer, a poor girl of Cassel, had been suffering with headache for a long time, and Dr. Valentin had treated her for 10 months *lege artis* without success. He therefore concluded to try what mesmerizing would do. After a few successful mesmerizations the patient commenced talking

in her mesmeric sleep of other persons who suffered with severe headache like herself. However, as she could not name these persons, her sayings could not be verified. On the 14th of December, 1818, during a mesmeric sleep, she said: "Just now an old man in Breitenbach fell from the loft of a barn, and knocked three holes in his head." Breitenbach is four hours' walk from Cassel, and she had never been in the place. This occurrence was a few days later confirmed by the clergyman in Hof, which is near Breitenbach, and who had made inquiries about the case, as perfectly correct, except that the man did not receive *three*, but only one wound from the fall."

Still more to the point are Dr. Fahnestock's experiments, which he made before the year 1843, and which cover not only observations on *seeing* at a distance (clairvoyance), but also on perceiving by hearing, smelling, tasting and feeling (touch) at a distance. In 1871 he published his experiences in book-form under the title "*Statuolism*," Chicago: Religio-Philosophical Publishing House. His mode of inducing the somnambulic state I have described in his own words in 115. From this book I shall cite the following cases:

1. *Appertaining to seeing at a distance.* "It was agreed, between a gentleman and myself, to test clairvoyance at a distance of sixty miles, and, when in Philadelphia, he was to visit a certain house known to me and there to do certain things, which he was to determine upon and note. I, being in Lancaster, was to have one of my subjects, who had never been in Philadelphia, say what he was doing there at a certain time. He departed from the city on the morning train, and in the evening of the same day Miss L— entered this state for the twelfth time, and when taken in thought to the appointed place, she declared that he was not there; that the house was closed and not occupied.

"This seemed strange, as it was the time we had set, and I could not think that he had forgotten his engagement, nor could I tell why the house should be closed. Under these circumstances I was at a loss to know what I should do; and, although I had the greatest confidence in her powers, having sufficiently tested them before, I was not yet prepared to believe that she could find him in a city where she had never been herself. But as I could lose nothing but the time spent in the experiment, I desired her to see whether she could find him. After three or four minutes had elapsed she said she had found him, and that he was in the third story of a house,

in a room alone, containing one bed, several chairs, a bureau, and a wash-stand, etc., and that he was *standing up at a covered bureau*, with a parcel of papers spread before him, and that he was figuring with his pencil. After a few minutes she remarked: 'He is now gathering up his papers; now he is going down-stairs; now into the street; now down the street; he is now about to enter a large building; he is speaking to some one at the door; it is Mr. L—, I know him; he is now inside. This must be the theatre,' and, as if speaking to Mr. —, she said: 'Take a seat, Mr. —.' She then described the house, and said it was crowded.

"The following is Mr. —'s account, which I received just after he had stepped out of the cars, where I had gone to meet him upon his return to Lancaster: 'I arrived in the city of Philadelphia about the usual hour, and while on — Street that afternoon, attending to some business, I ascertained that the house I intended visiting in the evening, for the purpose of performing my part in the experiment, was closed. I therefore, of course, could not go there, but went to my boarding-house, and as I thought that I had lost ten dollars in one of my transactions that afternoon, I retired to my room, in the third story of the house, for the purpose of finding where the mistake lay; and at the time appointed for the experiment I was standing at a covered bureau, with my papers spread out before me, and figuring with my pencil to find out the error. Finding all correct, however, I concluded to go to the theatre, and gathering up my papers, I went there, met and spoke to Mr. L— at the door, and then entered the theatre, which I found very crowded. My chamber contained but one bed, a bureau, a wash-stand and two or three chairs'" (p. 227, etc.).

2. *Appertaining to hearing at a distance:*

"'Subject,' a lady in the country. She was requested to state what they were speaking about in the next house, the doors of both being closed, and the distance between them about one hundred yards. She said they were speaking about a Mr. M—, who lived at a distance. Her statement was ascertained to be correct. This experiment was performed at the request of a skeptic, on the spur of the moment, without any previous arrangement, and therefore puts the possibility of collusion out of question" (p. 237).

3. *Appertaining to smelling and tasting at a distance:*

"'Subject,' Mrs. H—. Having tried quite a number of experiments at short distances, I was curious to try this lady's powers, which are extraordinary, at a greater distance. Consequently, I obtained three vials, as nearly alike as possible.

I filled the first with spirits of camphor, the second with essence of peppermint, and the third with pure water. All were white and colorless. The vials were then corked, securely sealed, and thoroughly mixed, so that it was impossible to tell the one from the other. In this condition they were given to my wife, with instructions that after I left home she (my wife) was to place the vials promiscuously upon a certain shelf in my office, four or five feet apart, and to leave them in the same position until I returned home the next day. The 'subject,' Mrs. H—, was being treated for a nervous affection which rendered her both blind and lame, but was at this time almost entirely restored through somnambulism. My visits to her at this time were made every third day, and as I usually remained all night on these occasions, we had plenty of time for experiments during the evening. I arrived there early, and supper being over, as usual, she entered the condition, and after some experiments in clairvoyance which were very satisfactory, I directed her mind to the vials which I had requested my wife to place upon the shelf agreed upon. She stated at once that she saw them, and described their position. I then directed her to cast her mind into the first vial, which stood to the left as she faced the shelf, and then to taste and to smell what it contained. After she had done so, she stated, the first bottle to the left 'tastes and smells like camphor.' I then remarked that I wanted her to be certain in regard to the contents of the vials, as the experiment was an important one, and would settle a great question in my mind. Upon which she again stated that the first vial to the left contained spirits of camphor; the second or middle one, on the right of the first, she examined for some time, and then stated that she saw there was something in it, but that it had no taste or smell. The third, without any hesitation, she declared contained essence of peppermint.

"Upon my return home the next morning, to my great surprise I found that her answers were correct, viz.: That the first vial to the left contained the spirits of camphor, the second or middle one, the water, and the third, to the right, the essence of peppermint.

"The distance between the subject and the vials was about seven miles; and as no one knew how the vials were placed in regard to their contents, or whether they had been placed there or not, the case was as strong a test of her ability to taste and smell at a distance as could be desired (pp. 248 and 249).

4. *Appertaining to feeling (touch) at a distance:*

"Persons in this state have told the quality, size, shape, roughness or smoothness, etc., of articles placed at a distance,

or the temperature of solids, liquids, or of the atmosphere in different rooms or places, independent of any previous knowledge on our part, to the perfect satisfaction of those who at different times were engaged in the experiments" (p. 252).

In this series of observations we have two distinct kinds of perceiving. Kieser's and Townshend's "subjects" perceived objects without the use of their eyes, in a manner that did not differ much from sight when effected by means of the sight-organs—the eyes—as regards the *distance* of those objects. They could have seen them as well by the use of their natural organs, if they had applied them for that purpose. The difference from normal seeing consisted in receiving impressions by *other* than the ordinary sight-organs, in Mr. Townshend's "subject," even in the absence of light. In the remaining cases, however, the objects perceived were at such a distance that cognizance of the same by the ordinary sense-organs was clearly impossible.

We will now consider these processes psychologically. If, as in the first cases, external stimuli, which ordinarily affect the primitive forces of sight only by means of the *sight-organs*, are nevertheless transmitted to the soul without the use of the eyes, it follows that there must be other ways through which a communication between sight forces and light stimuli can be established. In the case of the boy Arst, the seeing process was carried on by means of his hands, feet, nose, elbows, etc. Townshend's "subject" saw with the front, as well as with the back part, of his head. It seems then that the primitive forces of sight may, under certain conditions, be excited also by a stimulation of nerves which, under ordinary conditions, transmit only *tactual* stimuli, the nearest analogues to visual stimulations. However, Mr. Townshend's "subject" could also discern objects in a dark closet, and the darker it was the better; and consequently he perceived without light stimuli, which are ordinarily absolutely necessary for the process of seeing. The boy himself explains this strange process in the following manner. He says: "*Quand je suis dans l'obscurité il y a lumière qui sort de mon cerveau, et qui tappe justement sur l'objet; tandis que, dans la lumière, l'impression monte depuis*

l'objet jusqu'à mon cerveau." There is, then, to his feeling a difference between seeing things in the "dark" and seeing things in the "light." In the first case light seems to emanate from his brain, striking exactly upon the object; in the second case the impression rises from the object to the brain. This appears to me very characteristic and to the point. For, if we bring to mind the many cases of somnambulic persons who act in total darkness and with closed eyelids as accurately and unerringly as if in the brightest daylight, we cannot help thinking that there must be means other than ordinary light which reveals things and their nature to the somnambulist; that, in fact, the psychic forces must be capable of perceiving, not only without the ordinary sense *organs*, but also without the ordinary sense *stimuli*; or, in other words, that the psychic forces, under certain conditions, can act independently of their bodily encasement. This peculiarity of the psychic forces shows itself still more clearly in Dr. Fahnestock's cases of *perceiving at a distance*. When in that state the "subject" finds and sees the doctor's friend, who is at the time in Philadelphia, sixty miles from Lancaster, where the experiment takes place, and she observes all the friend does; when another knows what persons are talking of in a neighbor's house, with closed doors and windows, a hundred yards distant from the spot where she hears it; when another tastes and smells the contents of three different bottles, placed by the wife of the doctor, during his absence, in different places on a shelf, some six miles away from the residence of the "subject," and she states, not only the contents of the different bottles, but also the location of each on the shelf, etc., we certainly cannot say that any of these "subjects" derived information from the doctor's mind, because he absolutely did not and could not know anything about it; nor can we say that the "subject's" souls had left their bodies to see and hear and smell, etc., in those distant places for themselves, because there was no sign of such departure. They were conversing all the while with the doctor. They tell him exactly what they *see, hear, etc., at the time*, and not what they *have* seen during their absence. This is the main point: They relate what they *now* see, etc., al-

though the objects which they perceive are at a distance. There is no possibility of explaining these occult processes so long as we cling to the materialistic views still tenderly fondled and caressed as the highest intellectual achievement of our day. It is impossible for a material brain to be at two different places at one and the same time; but it is easy enough for *psychic* (immaterial) forces to perceive at any place, no matter how far away, if properly directed to and connected by psychical relation; for there exists no space nor corporeal environment for psychic forces. We have spoken of this subject under "thought-transference" in 114, and have seen it proven by the S. P. R. that psychic forces can and do *excite* mental modifications in the minds of "subjects" independent of space. Here we have to deal with the phenomenon that "subjects" can and do *perceive* things and persons at a distance. The difference between the two processes is this: In the one they appear to be *passive*, that is, they receive from a distance; in the other they appear to be *active*, that is, they perceive at a distance; yet in both cases it is an action of spaceless psychic forces—forces for which there exists no space.

"And mind," says Beneke in his *Metaphysik*, p. 234, "we do not deny the objectivity of the *beside-one-another*, or in general of the orderliness in which the world in its spacious extension represents itself to us. For inasmuch as to each single perception of a thing must be a corresponding *thing per se* (even if the nature of this *thing per se* be forever an undefinable x for us), there must undoubtedly for the several *things per se* exist a connection, which is reflected as from a mirror, of their being together in space. But the question is, whether we should consider this being or appearing together of the *things per se* as a *spacious extension*, or not rather otherwise: perhaps as an analogy of the beside-each-other of our conceptions, volitions and feelings, which contains not the least of spacious extension."

("Man merke wohl," says Beneke in his *Metaphysik*, p. 234, "wir leugnen nicht die Objectivität des *Nebeneinander*, so wie überhaupt der *Ordnung*, in welcher sich die räumliche Welt uns darstellt. Denn da jedem einzelnen, durch die äusseren Sinne wahrgenommenen, ein Ding-an-sich entsprechen muss (mag auch seine Beschaffenheit für uns immerhin ein unbestimmbares x sein), so muss ja unstreitig für die mehreren

Dinge-an-sich ein Zusammenhang stattfinden, welcher in dem räumlichen Zusammen abgespiegelt wird. Aber die Frage ist, ob wir das Zusammen der *Dinge-an-sich* als ein *räumliches* zu denken haben, oder nicht vielmehr in anderer Art: etwa nach Analogie des Nebeneinander der Vorstellungen, Bestrebungen, Gefühle, etc., welches ja nicht das mindeste vom Räumlichen enthält.")

In all his experiments Dr. Fahnestock directs the mind of his "subjects" to the object he wants them to investigate, and, when in a proper mood, they soon come into a proper psychic relation to the object, and then perceive it wherever it may be. This *psychic connection* between the "subject's" mind and the object to be perceived determines the *nearness* between the two, in spite of the *material distance* that lies between them, and explains the possibility of mental perceptions at a distance.

The necessity for this psychical connection or nearness between the "subject's" mind and the object to be perceived has also been shown by Dr. Fahnestock's negative successes in cases where the "subject" was disinclined, or not in a mood, to make the investigation asked for. Her answers would then be "evasive, inadvertent and unsatisfactory" (pp. 245-247). Is such psychical nearness between a "subject" and a distant object conceivable to our common understanding, even if deepened by introspection? Scarcely! It is because our waking state differs entirely from that of the somnambulist. We are, when awake, so completely under the influence of external stimuli by means of our sense *organs* (through long habit and use), that we cannot divest ourselves of the idea of perceiving without the aid of sense *organs*. Herein lies the foundation of our idea of *space*. This is wholly different with the somnambulist. His sense *organs* are shut off from the influence of external stimuli (116), and what he sees, hears, etc., he perceives immediately by his primitive psychic forces, and not through his sense *organs*. For him, therefore, space does not exist. All he needs is a direction to the object, which establishes the psychic connection and nearness between his primitive psychic forces and the object to be investigated.

4. *Appertaining to perceiving what will happen at a future time, or what has happened at a time past.* This we will examine in the following section.

122. PROPHECIES, SECOND SIGHT AND RETROSPECTION.

Predictions are made by almost all persons when in a somnambulic state. In most cases, however, they relate to the time when the next sleep will occur and how long it will last. It is quite probable that there is no particular foresight in this. They make up their minds, consciously or unconsciously, that at a future certain hour they will fall asleep again, and remain in that state just so long. This tacit resolve acts in them as effectually as a determination to do a certain thing at a given time in any one would. (Compare what has been said about suggestions.) A great many other predictions regarding the somnambulist's own self may be classed in this category, which classification clearly strips them of all miraculousness, simply because the fulfillment, even to the letter, is simply a necessary consequence of their own mind's action, preconceived, knowingly or unknowingly. We cannot class these predictions under what has been termed *prophecies*.

There is another kind of predictions, the fulfillment of which cannot possibly be ascribed to any resolve or influence of the "subject." These we are used to call *prophecies*, divinations, etc. Their number is legion, and are known from the most ancient times to the present. The scope of this work, however, does not allow of the detail of particular cases; and, although many of them may be considered as resting upon an unsafe basis, being either faultily observed, or underlaid later with a meaning they did not originally possess, there are, nevertheless, cases so well attested that they cannot be excluded as evidence of the fact that the human mind, under certain conditions, is capable of predicting the future, either allegorically or positively. Many of such cases have been diligently collected by Dr. Perty, in his "*Die mystischen Erscheinungen der menschlichen Natur*, Vol. II, pp. 257-312. Many of these cases of undoubted prophecy are allied closely to what is popularly known under the name of "*second sight*."

It is a peculiar faculty of certain persons (observed in Scotland, some British islands, Westphalia, Switzerland and

many other countries) who are thrown suddenly, without premonition, wish or will, into a state of mind, in which they have visions of certain occurrences which either shortly or after a longer period come to pass. This peculiar state of mind, and what is seen in it, is always remembered afterward, and the objects of its previsions are mostly related to the sphere of common life, such as cases of death, funerals, births, marriages, war, arrival of friends or acquaintances, and similar social events. The persons for whom the prediction is made are usually unknown to the seer, and what shall happen to them is frequently represented in a symbolic picture.

In exceptional cases this peculiar gift manifests itself in the sense of hearing or smelling. Numerous cases of these different modes of prescience have been collected by Dr. Perty, in his *Die mystischen Erscheinungen der menschlichen Natur*, Vol. II, p. 281, etc. We find also many cases of second sight recorded in Kiefer's *Archiv*, Vol. VIII, Part III, p. 62, etc., Vol. XI, Part III, p. 60, etc., and quite recently several cases that happened in Westphalia have been critically analyzed and described by Dr. jur. L. Kühlenbeck, in the *Sphinx*, Vol. IV, pp. 278 and 361. Indeed, this subject has also been treated of largely in English literature, and it would be labor lost if I were to attempt here a proof of the reality of these occult phenomena, even for the sake of the "innocents" who can't see it.

These proofs we shall accept as facts, but how can we bring them nearer to our comprehension? That we are able to form a prescience of many events, if we are fully informed of all the present conditions and laws by which certain evolutions take place, is a daily experience of ordinary conscious life. The astronomer, the physicist, the chemist, the physician, the psychologist—all can do it more or less accurately. It is simply calculating from cause to effect. But this does not fit our cases. The seer does *not* calculate. In most cases he is entirely ignorant of the persons and things of whom and of which he foresees the future. Yet even here we must assume the relation of cause and effect as the necessary basis, for the future is the sequence of the present, as the present grew out of the past. The future lies *in* the present, as the present was

already a part of the past; so that, indeed, what we call present, past and future is in reality one continuous whole. In our ordinary state we are as little capable of overlooking this whole as an entirety (save in the few exceptions of partial piercing into it by calculation and science), as above mentioned, as we can override the spacious extensions around us. But the seers *are* not in an ordinary mental condition. They are not seeing or hearing, etc., through the instrumentality of their sense *organs*. Theirs is an immediate perceiving by the primitive psychic forces themselves, and, therefore, a perceiving which is not dependent either on sense organs or external stimuli, or, in other words, on the manner in which things *appear* to the *organs* of sense. It is a perceiving of the things as they *are*, of the things "*an sich*;" and how far this may disrobe them of what we call "*time*," we, in our ordinary conscious state, have no means of estimating. Nevertheless, the possibility of such previsions, upon the basis of cause and effect, is clearly probable in many cases. When, for instance, as recorded in Moritz's *Magazin*, Vol. II, Part I, p. 16, a reputable man observes the face of a person apparently healthy, yet already stricken by death, as appearing as though that person had been laying for days in his grave, it is surely a deeper insight into that person's real condition than an ordinary conscious and searching examination of even an expert would perhaps have been able to accomplish. A woman in Bommel, in Holland, saw the face of a person who soon afterward died, surrounded by dark smoke; and the servant of a friend of L. v. Voss saw persons who were near their end attended by a dark figure that tried to destroy them. (Perty, Vol. II, p. 279.) The two last instances are obviously of a symbolic nature, showing, nevertheless, the end in its beginning. But there are other cases in which the occurrence of future events is so clearly detailed and described, with all the attending circumstances, that there must have been a real perception of the events days and sometimes weeks before it happened. Even here we must assume a connection between cause and effect, although a supposition of calculation on the part of the seer is entirely out of the question. Such a case we find recorded

in Kieser's *Archiv*, Vol. XI, Part III, p. 62, etc., where a seer in Niebüll predicts that the next funeral would take place in a house which he designated, that the bier would stand in such and such a place, that such and such people (all named) would pass in and out of the house. He told what hymns would be sung, who the carriers of the dead, and who the preacher would be, and from what text he would preach. The funeral procession would come to a halt at a certain place, because the second carrier would break his wax candle, which a woman would mend again with paper and thread. The preacher, having been informed of all this, determined to choose another text, in order to avert the fulfillment of the prophecy; but when he entered the pulpit he was suddenly seized with a spell of unconsciousness, and, coming to again, was driven irresistibly to preach on the text which the seer had named, although he had not prepared himself for it. This was surely not a seeing by sense-organs, nor a perceiving of external stimuli, but clearly a perception by psychic forces of a psychic picture of effects which were contained and preformed already in the then present causes, and certainly impossible to be reached by a calculating process.

There remains yet to be considered the "*seeing*" of *what has passed*, and which we may call *retrospection*. This appears, at first sight, more readily comprehensible, for we are able to review what has passed whenever we choose, to quite a considerable extent, during our normal conscious state; but to a certain extent on, for all that has originated in our soul can not be reproduced by our wish or will (though under certain conditions even that which seemed entirely lost can be resuscitated into consciousness again, proving that any act of perceiving causes a lasting effect, an objective development of the percipient primitive forces of the soul), such instances have frequently been observed in fevers, and other abnormal states where whole systems of knowledge, though in the normal state they had faded into absolute oblivion, flashed out again into luminous consciousness (6).

To this belong also those remarkable cases which we read of some persons nearly drowned, who, after being resuscitated,

declared that when their normal consciousness had left them, in an instant, like a flash, their whole lives passed before them, even in the minutest details, as if it were a panorama.

Now, it is true this kind of retrospection belongs to a class which we call reproduction of mental modifications, originated in the same mind at a former time; but it nevertheless proves the endurance in existence of psychic modifications once formed and as formed, and the possibility of their re-excitation into consciousness in their full integrity under certain conditions.

This leads us to the consideration of another kind of retrospection, in which the objects reviewed are not remembrances belonging to the events of one's own life, but to those of another. The best known instance of this kind is that of Zschokke, who relates it himself in his "*Selbstschau*."

He says: "It has happened to me sometimes on my first meeting with strangers, as I listened silently to their discourse, that their former life, with many trifling circumstances therewith connected, or frequently some particular scene in that life has passed quite involuntarily, and as it were, dreamlike, yet perfectly distinct, before me. During this time I usually feel so entirely absorbed in the contemplation of the stranger's life, that at last I no longer see clearly the stranger's face, wherein I undesignedly read, nor distinctly hear the voices of the speakers, which before served as a commentary to the text of their features. For a long time I held such visions as delusions of the fancy, and the more so as they showed me even the dress and motions of the actors, rooms, furniture and other accessories. By way of jest, I once, in a familiar family circle at Kirchberg, related the secret history of a seamstress who had just left the room and the house. I had never seen her before in my life. The people were astonished and laughed, but were not to be persuaded that I did not previously know that of which I spoke; for what I uttered was the *literal* truth. I, on my part, was not less astonished that my dream-pictures were confirmed by the reality. I became more attentive to the subject, and when propriety admitted it, I would relate to those whose life thus passed before me, the subject of my vision, that I might thereby obtain confirmation or refutation of it. It was invariably ratified, not without consternation on my part." "I can aver, this strange seer-gift was of no use to me in a single instance. It manifested itself occasionally

only, and quite independently of any volition, and often in relation to persons in whose history I took not the slightest interest. Nor am I the only one in possession of this faculty. In a journey with two of my sons, I fell in with an old Tyrolese, who traveled about selling lemons and oranges, at the inn at Unterhauerstein, in one of the Jura passes. He fixed his eyes for some time upon me, joined in our conversation, observed that though I did not know him, he knew me, and began to describe my acts and deeds, to the no little amusement of my children, whom it interested to learn that another possessed the same gift as their father. How the old lemon-merchant acquired his knowledge he was not able to explain to himself nor to me; but he seemed to attach great importance to his hidden wisdom."

Here again we have a perceiving *not* of external stimuli by means of the ordinary sense organs, but a perceiving of psychic data of the past, by means of psychic forces appearing to Zschokke like a dream-picture, yet perfectly distinct. But during this "seeing" he no longer saw clearly the stranger's face wherein he undesignedly read, nor did he hear any longer distinctly the voice of the speaker in whose company he was, showing clearly that at such moments his sense organs were inactive, giving way to the action of his primitive psychic forces, which, without intermediation, alone could review the past of another's life as enduring still in psychic vestiges, or as psychic objects just as substantial as any so-called material object could be, and which, if belonging to ourselves, could pass review as reproductions at our bidding, or at times uncalled and even against our wish.

The most remarkable instances, however, of such retrospections, or views of the past, are found detailed in a book entitled, "*The Soul of Things; or, Psychometric Researches and Discoveries*," by William and Elizabeth M. F. Denton, Boston, 158 Washington Street, 1871. According to the statements in that book, it appears that impressions are retained by all things of their surroundings, which can be read and seen by a sensitive person, a "*psychometer*," even should these things have been buried in the earth for thousands of years. The "sensitives" were the wife of the experimenter, his sister and a few other ladies with whom he became acquainted. The process of

proceeding is usually this: The "sensitive" takes the object to be examined into the hand and presses it on the forehead, or keeps it in the hand, at the same time shutting the eyes and waiting for the mental impressions that will follow. The object is usually taken from a heap of packages all similarly wrapped up, so that the "sensitive," as well as the experimenter, may be kept in ignorance of its nature. Out of the one hundred and eleven experiments described in the book I shall give only the following as a sample:

(Experiment IV, p. 39).—"I wrapped a number of specimens of various kinds in separate papers, and Mrs. Denton took one, neither of us knowing anything respecting it. She said: 'The first thing I see is a volcano, or what I take to be one. An elevation of considerable height appears before me, and down its side flows a torrent of melted matter, though torrent does not convey the idea; it is broad and shallow, and moves not rapidly like water, but creeps slowly along. Now I see another stream pour over the top of the first, and the whole side of the mountain is covered. This second flow moves much more rapidly than the first. This specimen must be lava.' On examination it proved to be a piece of brick-colored lava, picked up on the banks of the Upper Missouri, where it is common, having been washed down probably from the Rocky Mountain region."

The incentive Mr. Denton had to make these experiments was an article he read in Dr. Buchanan's *Journal of Man*, Vol. I, p. 51, in which the latter speaks of his discoveries made by experiments with "sensitives":

"On reading the statements of Dr. Buchanan," Mr. Denton says in his book, p. 35, "I resolved to see what portion of these experiments I could verify by my own experiments. My sister, Anna Denton Cridge, being highly impressionable, was able, in a short time, to read character from letters readily; and what was still more wonderful to us, and at the same time inexplicable, was that at times she *saw and described the writers* of letters she was examining, and their surroundings, telling, at times, even the color of hair and eyes correctly."

"After testing this thoroughly by numerous experiments, being intensely interested in geology and paleontology, it occurred to me that perhaps something might be done by psychometry—the term given by Dr. Buchanan to the power by which character was described by contact with persons, or

from letters—in these departments of science. If there could be impressed upon a letter the image of the writer and his surroundings during the brief space of time that the paper was subjected to their influence—and this was the conclusion I eventually arrived at—why could not rocks receive impressions of surrounding objects, some of which they have been in the immediate neighborhood of for years, and why could they not communicate these in a similar manner to sensitive persons, thus giving us the clew to the conditions of the earth and its inhabitants during the vast eras of the past?”

“I accordingly commenced, some ten years ago, a series of experiments with mineral and fossil specimens and archæological remains, and was delighted to find that without possessing any previous knowledge of the specimen, or even seeing it, the history of its time passed before the gaze of the seer like a grand panoramic view; sometimes almost with the rapidity of lightning, and at other times so slowly and distinctly that it could be described as readily as an ordinary scene. The specimen to be examined was generally placed upon the forehead and held during the examination; but this was not absolutely necessary, some psychometers being able to see when holding a specimen in the hand.”

“The result of some of the experiments, made at various times, I give in the words of the psychometer at the time. In some cases the phraseology has been slightly changed, the idea never; and generally the exact words are given.”

In regard to the very clever observations which Mrs. Denton gives of her own “psychometric” state, from page 312 on, I shall mention briefly the following:

“In many respects the sensations of the psychometer, when in the presence of any strong light, whether natural or artificial, and when vision only is required, one is often compelled to wait, not only until the organs become adjusted to the new or changed condition, *but until the eye has been wholly relieved from any sensible impression made by ordinary light*, before the objects become distinctly visible, or the brain is capable of taking cognizance of their peculiarities” (p. 322).

“The psychometer is able to give more accurate descriptions with closed than with open eyes. When the object of the experiment is not vision, but the exercise of some other sense, there may be less necessity for shutting from sight the objects by which we are surrounded. Still I find that whatever serves to disturb the mind, or in any way to call it from the recognition of phenomena for which the experiment is being con-

ducted, just so far serves to render it a fruitless effort. In my own case, this rule applies to any unhappy condition of the mind, whether induced by any outward unpleasant circumstance, or by thoughts having a tendency to produce dissatisfaction, or even unrest" (p. 327).

"There are times when the closed eyes of the psychometer cannot see, and yet perhaps the true condition of that with which he is in communication is as accurately perceived as if the eye took cognizance of all connected with it. In such instances the impression appears to be made directly upon the brain, and when the individual has learned to discriminate between these direct impressions and the creations of fancy, they may be considered equally as reliable as true vision" (p. 329).

"There is no mesmeric influence needful to induce the required degree of sensitiveness of the brain, and of those organs which convey these impressions to the brain" (p. 333).

"The light seen by the psychometer appears to be either direct or reflected, or generally diffused, and that it is overpowered, dissipated, or rendered imperceptible by the presence of ordinary light if strong. Especially is this the case when the rays are permitted to fall directly in the face of the psychometer, unless, as is sometimes the case, he can render himself positive to ordinary light, and passive to that under consideration" (pp. 341 and 342).

"Usually, in my own case at least, when I *hear* sounds in that state, these sounds are *perceived* rather than *heard*. Sometimes they are as clearly and distinctly to the internal sense of hearing as are common sounds to the outward ear; and there have been times when I could not, and cannot yet tell, whether they were heard by the external or only by the internal ear, so like were they in all respects to sounds produced by outward, tangible forms. In respect to the inability, in some instances, to distinguish between recognition by the external and recognition by the internal senses, hearing and sight stand, I believe, alone. I do not remember that smelling, taste, or feeling—though when in the psychometric condition they may be as acute as are hearing or sight—have ever so closely approached the boundary between these external and internal realms as to render it impossible for me to say by which they were really addressed" (p. 355).

It is worth while to read the whole of these interesting statements regarding the "psychometric" condition. They are valuable observations, because Mrs. Denton could speak of

what she had so frequently experienced herself, and it is rare to find sensitives of this kind who can at the same time describe and judge their condition as clearly and objectively as she does. The cited passages, however, must suffice for our purpose.

We have before us a still stranger phenomenon than that by which the past in another's *mind* is perceived. The psychometer perceives also what has happened to so-called "matter," even centuries ago. How can this be explained? Has matter a memory like mind? Here the question arises again: "What is matter?" We have spoken of it several times before. We know "matter" ordinarily only as it *appears* to our different senses. We have no insight into its real nature, and that may, for all we know, be actually and in its way, of a similar kind as are the primitive psychic forces of all souls in their way. It would then be feasible to assume that every material thing, too, would be a retainer of the impressions it has received from its surroundings, which again would be perceived not by means of the ordinary sense organs, but by the immediate action of the primitive psychic forces of the "sensitive." For here, too, the "psychometer," as is apparent from Mrs. Denton's description, must come first into the required condition—a sort of withdrawal of the ordinary action of mind through the sense organs—before she can apprehend these finer traces stored up in material things in times past. The light, too, which emanates from and surrounds these things does not appear like ordinary light, although just as clear and bright, and still more distinctly the better the ordinary light is excluded from the sense organs. It is not a seeing with the eye, but a perceiving with the brain, an observation quite similar to that of the boy whom Mr. Townshend used to mesmerize. But the brain as brain could not see any better than the eyes as eyes, if it were not associated and actuated by the primary psychic forces which govern the whole material frame—a frame which in turn must be related in some way to these immaterial forces. Such corresponding experiences independently made at different times and places cannot be without a meaning. They show the

possibility of perceiving not only without the ordinary sense *organs*, but also without the ordinary sense *stimuli*, proving the fact from another side, that so-called material things must be capable of affecting or acting upon psychic forces in still other ways than they do when they accost the sense *organs*. We come more and more to the conviction that the common way of looking at the world as a mere material compound, that can be measured and weighed, and that exists only so far as we are capable of perceiving it by means of our outward senses, is a faulty one, is a view altogether too narrow for the comprehension of this wonderful world, with its life phenomena and mental evolutions.

We must divest ourselves of these materialistic views if we intend at all to penetrate into the occult phenomena presenting themselves wherever we turn. Even the perceiving of the past, invisible to the acutest eyesight, aided by the strongest lenses, will then become approximately comprehensible. The primitive psychic forces are capable of perceiving what is their like, the things as they are "*an sich*," or from their psychical side, as immaterial forces acting upon immaterial forces. (Compare 109.)

123. PSYCHIC ACTION AT A DISTANCE; TELEPATHY, TELERGY, THE DOUBLE, APPARITIONS.

Thus far we have mainly considered "the receiving (or perceiving) of impressions at a distance without the normal operation of the recognized sense *organs*," for which psychic process the Committee of S. P. R. propose the designation "*Telepathy* or *Telæsthesia*." However, these terms specify only the *effect* of an action, leaving untouched its *cause*. If something is received (seen, heard, felt, etc.), there must be *something* that *is* received, something by which the impression is made—in short, there must be a *starting* point, as well as a *landing* point. The latter fits well under the designation of *telepathy*, that is, a becoming aware of something that is conveyed or has arrived *from* a distance, but does not indicate nor include at all the *sender of the message*. This distinction should be well

borne in mind, otherwise things will become mixed. In German there is a word, "*Fernwirkung*," which signifies precisely an *action at a distance*, while the word "*Fernfühlen*" means a *sensing at a distance*. While, then, the term telepathy correctly specifies the German expression "*Fernfühlen*," it does not by any means indicate the meaning of "*Fernwirkung*." "*Fernwirken*" and "*Fernfühlen*" are as different as cause and effect; and if we use for "*Fernfühlen*" the word telepathy, we are still in want of a word which expresses "*Fernwirkung*." Mr. F. W. H. Myers speaks of this cause or agency as *telergy*, in *Phantasms of the Living*, Vol. II, p. 283, and we shall accept this term for "*Fernwirkung*," or *action at a distance*.

As already observed, we have thus far mainly considered the *sensing* at a distance in regard to space and time, and this without the normal operation of the recognized sense *organs*, and without the mediation of the ordinary sense *stimuli*; still even then we frequently had to touch upon the acting at a distance, because a sensing is impossible without a preceding action. When in thought-transference the mental action of the agent excites the similar mental modifications in the "subject," when the mesmerizer puts his "subject" into sleep from afar off, when Mr. Hansen willed Mr. Ehrenwerth to select for him diamond rings in another room and hand them over to him, etc., it denotes clearly a psychic *action at a distance*; and such instances of telergy might be multiplied *ad infinitum*.

But I wish to mention here a class of phenomena which show more markedly psychic action at a distance.

"One Sunday night last winter, at 1 A.M., I wished strongly to communicate the idea of my presence to two friends, who resided about three miles from the house where I was staying. When I next saw them, a few days afterward, I expressly refrained from mentioning my experiment; but in the course of conversation one of them said: 'You would not believe what a strange night we spent last Sunday,' and then recounted that both the friends had believed they saw my figure standing in their room. The experience was vivid enough to wake them completely, and they both looked at their watches, and found it to be exactly 1 o'clock." (Proc. of S. P. R., Vol. I, p. 120.)

"The late pastor Renaud, of Berne, relates the following:

In 1826 lived a certain Daniel Kieffer, at Berne, who had consumption. I used to visit him two or three times every week. Once I was prevented from seeing him for several days, when a voice like his woke me out of sleep and called me to come to him. I stood up, lit the candle, but as it appeared to me rather odd to visit a church member about midnight, I laid down again. One hour later the same thing happened again, and again I fell asleep. At 2 o'clock the same voice called again, but urgently and reproachfully. I got up and went to the patient. As I knocked softly at his door he cried out: "Please walk in, I am calling you these two hours." His nurse had left him for twelve hours, and he was very hungry and thirsty." (Perty, Vol. II, p. 124.)

The following case was first published in the "*Spiritualistische Blätter*," No. 16, Leipzig, April 19th, 1883. It has been thoroughly investigated by Dr. Hübbe-Schleiden, editor of the *Sphinx*. I take the following account from the fourth volume of the *Sphinx*, p. 417. "In the summer of 1882 four persons, Mr. Zenker, his wife, Mr. Marbach and Miss A. N., were sitting at the supper table in the dining-room of Mr. Zenker's house, which faced a garden on one side and the street on the other. Suddenly all four persons present heard a loud call 'Zenker! Zenker!' and all recognized it as the voice of Mr. W—z, a colleague of Mr. Zenker. Mr. Zenker, being of the impression that the call came from the street, hurried to the window to invite Mr. W—z to come in. To his astonishment, however, there was nobody there. Now Miss N. went to the door to find out whether some one had called through the front door, but nobody could be seen. They again sat down to the table, when in about 10 minutes later the same call of the same voice, 'Zenker! Zenker!' was heard. 'There he calls again,' cried all four simultaneously, 'and the call comes from the garden.' This time it was no false alarm, for Mr. W—z stood in *persona propria* on the street, and had come to invite Mr. Zenker to a walk. On being asked where he had been a while ago, Mr. W—z assured them that he had come directly from his house, that he had there taken his supper ten minutes ago, and remembered also that he had at that time *resolved* to call on Mr. Zenker, and invite him to a walk."

Such cases might be cited in great numbers; but the largest contingent is furnished by cases of "*apparitions and phantasms of the living*." These actions at a distance usually take place when a person is in *articulo mortis*, or when he is in great

danger, or otherwise mentally agitated, and his mind fixed upon a distant person. They may produce a life-like image of the person, and sometimes present the exact condition in which that person is at the moment (apparition), or may produce the agent's own voice, calling the absent person, or other sounds and noises by which this person is reminded of the agent; or they may evoke a mere general, undefined feeling in the percipient, which, nevertheless, calls attention to the person from whom it is derived; and all this may happen whether the person to whom the action is addressed be in a normally waking state, or in sleep, or in trance. We find all these shades of action at a distance largely exemplified in an article of the Committee of S. P. R., in Vol. I, p. 116, etc., and also in the work, *Phantasms of the Living*, in two volumes, by E. Gurney, F. W. H. Myers and F. Padmore, London, Trübner & Co.

Still another series of phenomena are the so-called "double," *doppelgänger*, which is likewise a psychic action at a distance. We find such cases detailed in Perty's work, *Die mystischen Erscheinungen der menschlichen Natur*, 2d edition, Vol. II, p. 130, etc.; in an article, *Der Doppelgänger*, by Carl du Prel, in the *Sphinx*, Vol. II, p. 1, etc.; and also in the work, *Phantasms of the Living*, Vol. II, p. 77, etc.

The term *doppelgänger* is especially applied to persons who at times are seen in two places simultaneously; that is, while their *propria persona* is in one place an exact counterfeit of the same is seen at another place. In its widest sense all apparitions, whether visible or audible, may be counted in this class; and the first trace of this action of mind upon mind we find in the seemingly spontaneous flitting into consciousness of an absent person whom one has not seen nor thought of for a long time, and who shortly after makes his personal appearance.

This sudden coming into consciousness of an absent person who personally turns up soon after, appears to have been potentized to an objective apparition in the following case, related by Dr. Meier, in Kieser's *Archiv*, Vol. VI, Part I, p. 35:

"A clergyman of unprejudiced mind had a sister living in

a distant country, from whom he had not heard anything for ten years. Once on an early morning, while lying awake in bed, the curtains of his bed parted suddenly, and before him stood, with extended arms, his sister, saying: 'Good morning, dear brother,' and vanished. He related this occurrence at once to his wife, giving even the details of the dress which the apparition wore. The conversation about this subject was kept up during breakfast, when suddenly the clatter of horses' hoofs interrupted their discourse, and the sister, with extended arms, rushed into the room, embracing her brother with the same words of greeting, and in the same attire as he had observed a few hours before. In the course of conversation it became manifest that she, on her journey to visit her brother, unbeknown to him, had been detained at a neighboring village, several miles distant, by the sudden outbreak of a storm, and had felt the greatest anxiety to see him at the time when the apparition appeared to him."

It is not only recorded that the double appears to other persons, and is seen by them, but there are also cases on record where a person sees himself outside of himself. The first trace of this peculiar phenomenon we observe occasionally in sickness, where a patient sees or feels another self lying beside himself in bed. Sometimes this feeling of being double is limited to one limb only. This, however, does not strictly belong to what we call "doppelgänger." It is a morbid sensation, one of the subjective symptoms which arises in the vital senses from bodily irregularities. As sensations, or psychic perceptions, if lively and persistent, may transfer their own existence to an existence outside of the body, the hallucination of a second self or part of a second self can easily be explained. Yet, where this appearance of oneself outside of oneself is also perceived by another person, as in the case of a pregnant woman who sees her double sitting on a chair, while her little girl who is present at the time does the same (Du Prel, in *Sphynx*, on "Der Doppelgänger"), we have a more complicated case. We must assume either an objective projection of the mother's being, or a psychic infection of the child by the mother's own hallucination, a psychically transferred hallucination, or must object to the whole story. Whatever the rationale might have been would certainly be difficult to decide

now. Du Prel ascribed the cause of the apparition of an absent person to the "*psyche*" itself, which, moved by various emotions, directs its thoughts to a distant place and produces there, by virtue of its organizing capacity, its own likeness, and makes the astral body become visible. ("Die Ursache einer solchen Erscheinung ist die Pysche selbst, die, von verschiedenen Empfindungen bewegt, ihre Gedanken nach entfernten Orten lenkt und vermöge ihrer organisirenden Fähigkeit dort ihr Bild erzeugt, den Astralleib sichtbar werden lässt." *Sphynx*, Vol. II, p. 370.) Allan Kardec calls the astral-leib "perispit," Hellenbach calls it "meta-organism." However, we have not advanced far enough in our investigations on this subject, to be ready for a psychological solution of the same, especially if we admit into the scope of the "double" *apparitions* or *phantasms of the living* as belonging to the class of phenomena which are *actions of the soul at a distance*. Here I must again refer to that classical work of Gurney, Myers and Padmore, on *Phantasms of the Living*.

Mr. Gurney gives us a number of *visual* cases occurring to a single percipient in Vol. II, Chapter XIV, pp. 29-100; in Chapter XV, pp. 101-132, he brings *auditory* cases occurring to a single percipient; in Chapter XVI, pp. 133-152, *tactile* cases, and cases affecting more than one of the percipients' senses; in Chapter XVII, pp. 153-167, *reciprocal* cases; and in Chapter XVIII, pp. 168-270, *collective* cases, or phantasms which have affected the senses of more than one percipient.

He naturally refers the solution of these strange occurrences to telepathy, and tries to explain the collective cases by *thought-transference* from the one person originally impressed to the other person or persons present at the time, "the hallucination itself being, so to speak, infectious."

These exceedingly well-selected cases, verified so far as it was possible by the independent testimony of all persons concerned in each particular case, are followed by notes "on a suggested mode of psychical interaction" by Mr. F. W. H. Myers, M.A., in the same volume, from page 277-316.

Mr. Myers disapproves of the popular theory that phantasms are material ghosts, or "meta-organisms." He agrees with

Gurney that phantasms to single persons are best explained by thought-transference; but that in *collective* cases where the phantom appears to the several persons present at the time, Gurney's theory of a communication of hallucination from the one originally affected to the bystanders, does not seem to explain all the facts, and "it may be better to fall back upon observation of the experimental cases, and note that in them the *percipient* exercises a species of super-normal activity (pp. 284-286). Such activity, if pushed far, might become first telepathic clairvoyance, and then independent clairvoyance (pp. 286-287). Clairvoyant perception seems to be exercised in inverse ratio to the activity of the normal faculties, and to be stimulated by influence from another mind (p. 287). If this be so, we have an analogy that throws light on cases in this book where a dreaming, or even a waking, percipient becomes conscious of a distant scene (pp. 287-289); and, furthermore, our cases suggest that, corresponding with clairvoyant perception, there may be phantasmogenetic efficacy (p. 289); so that all the persons present together may be equally likely to discern the phantasmal correlate of the dying man's clairvoyant perception; and *collective* cases will no longer present an unique difficulty" (pp. 289-290).

It is delightful to discover occasionally on a lonely path footprints that point in the same direction we are going. The above attempts at a purely psychological explanation of these occult phenomena are, indeed, very gratifying. The futility of explaining *psychical* activities by *material* processes—brain-waves and the like—has at last become so thoroughly transparent, that it becomes a positive necessity to seek the solution by a different road. To this road we welcome heartily two of the most clear-headed and indefatigable investigators, Gurney and Myers, as the above extracts clearly show. We now resume our own track of investigation, one pursued all along throughout this work, and we must first set aright the meaning of the terms *telepathy* and *telergy*, the *sensing* and *acting at a distance*. It is obvious that, when applied to psychical activities, these terms do not cover the case. They are merely borrowed from external appearances, are expres-

sions derived from sensory perceptions of daily life, but do not in any way explain the nature of these mental processes. Deeply rooted in the experience of the outward senses, it will be a great difficulty for one unaccustomed to the observation of psychic life, to dislodge these outward sense opinions from their dominant position. They will be unconsciously applied to psychic processes, as if psychic forces were of the same nature as material forces, and, if thus applied, such opinions will certainly obscure the entire subject. We must constantly bear in mind that *psychic* activities never show any movements in *space*. *Sensing or acting at a distance, telepathy, as well as telergy*, are, therefore, expressions which do not at all describe the real nature of these mental processes, but merely attribute what appears to the outward senses as likely to be applicable also to mental activities. It is here that the translation misses the sense of the original. The terms telepathy and telergy, are not congruous to the mental process which they are meant to describe, because their origin lies in perceptions of the outer world, and in our discussion we have solely to deal with psychic actions.

This subject has been spoken of fully in the chapter on thought-transference (114), and also in the two foregoing chapters. I need, therefore, merely apply to the apparitions explanations that have been detailed when considering other psychic relations.

To repeat briefly: For psychic forces there exists no space. The nearness for psychic operation does not depend on nearness in space, but *on the psychic relation and connection between the agent's and the percipient's mind*. (Compare 121.)

Is this psychological view borne out by recorded cases? Let us see.

One important point, which I nowhere find particularly emphasized, is this: That the agent never seems to have any difficulty in *finding* the percipient, no matter where the latter may be at the time, whether on the street, in a house, near, or thousands of miles away, by day or by night, and this without the least knowledge of the whereabouts, in many cases, of the person he seeks. There is no trace in all the cases of *hunting* for

a locality. It is clearly a spaceless action of mind upon mind, as in the case where one mental modification rouses into consciousness another in the same mind; or as in the thoroughly proved cases of thought-transference, where the agent excites the percepts existing in him in the percipient's mind also, by means of partially modified primitive forces. (Compare 113.) In either case *space* does not claim consideration, but telepathy as well as telergy signify the external or material fact that the two *persons* or *bodies* are separated in space, yet give no insight into the psychic fact that there is no distance in *space* between the two *minds*. There is a willing, a strong desire and concentration of mind in the agent directed toward the recipient, but there is no moving in and through space in search for the person; and the percipient will be the better conditioned to sense and perceive this action of the agent, the less he is occupied in his normal sensory activity, or as Mr. Myers correctly puts it: "Clairvoyant perception seems to be exercised in inverse ratio to the activity of the normal faculties, and to be stimulated by the influence from another mind" (p. 287). We have shown this to hold good not only in thought-transference, and in the process of mesmerizing, but also in those singular cases of second sight, of reading the past history of another's mind (Zschokke), and in sensing the history of material things (Mrs. Denton). All this proves clearly that the success of these phenomena rests on conditions of the *mind*, and is entirely independent of *space*, which is an attribute of the corporeal world. We may also take into consideration the simultaneousness of the two events—the sending and receiving of the message. As far as this could be ascertained in the cases published, this could not have been accomplished more speedily, even by means of the telegraph (allowing all latest contrivances), than in some of the cases which show an immediate action of mind on mind. Yet as most of the apparitions could be made out only as happening "about the time" when the event of "danger," "death," etc., that caused it, was supposed to have taken place (and it can easily be seen how great the difficulties must be in the way of arriving at an exact account of the two occurrences), we should not attempt to prove too much

from facts that cannot exactly be ascertained. We may, however, use this simultaneousness of action and perception, so far as it has been ascertained, with full propriety as an auxiliary proof of our position that we have in all these phenomena, not actions in space, but immediate actions of mind upon mind. The so-called "collective" cases, where the phantasm is perceived by a whole group of persons present at the time, or only by some of them, while one or more of the bystanders perceive nothing, can, I believe, be easily explained upon this psychological basis. The agent's mind on stimulating one particular mind, with whom he is in close psychic connection, into a perception of himself, will diffuse this influence readily and effectively to all those present in whom he finds a similar sympathetic connection. Where such relation is wanting, the diffusion of mobile elements will not find anything to rouse to a corresponding excitation. Such persons will not perceive anything of this influence, *i. e.*, of the phantasm. The influence may produce in one a visual, in another an auditory, in a third a tactual perception, while in a fourth merely an undefined feeling of a certain influence, all in accordance with the disposition which the one or the other has to either of these forms of stimulation, which undoubtedly depends on the nature of the reciprocal relation between the two, and on the sensitivity of the one or the other system of primitive forces. Even where an entire stranger to the agent perceives this influence of the one or the other kind, we must assume that there exists a psychic bond between the two, as without it the diffused psychic elements could not find anything to rouse into a corresponding excitation.

The following case of a dream (case 142, p. 381, in Vol. I of *Phantasms of the Living*) is quite remarkable and has some bearing on this question. "One Monday night, in December, 1836, Dr. Young had the following dream, or, as he would prefer to call it, revelation. He found himself suddenly at the gate of Major N. M.'s avenue, many miles from his home. Close to him were a group of persons, one of them a woman with a basket on her arm, the rest men, four of whom were tenants of his own, while the others were unknown to him. Some of the strangers seemed to be murderously assaulting H. W., one of his tenants, and the doctor interfered.

"I struck violently at the man on my left and then with greater violence at the man's face to my right. Finding to my surprise that I did not knock him down, I struck again and again, with all the violence of a man frenzied at the sight of my poor friend's murder. To my great amazement I saw that my arms, although visible to my eye, were without substance; and the bodies of the men I struck at and my own came close together after each blow through the shadowy arms I struck with. My blows were delivered with more extreme violence than I think I ever exerted; but I became painfully convinced of my incompetency. I have no consciousness of what happened after this feeling of unsubstantiality came upon me.

"Next morning Dr. Young experienced the stiffness and soreness following violent bodily exercise, and was informed by his wife that in the course of the night he had much alarmed her by striking out again and again with his arms in a terrific manner, 'as if fighting for his life.' He in turn informed her of his dream, and begged her to remember the names of those actors in it who were known to him. On the morning of the following day, Wednesday, he received a letter from his agent, who resided in the town close to the scene of the dream, informing him that his tenant, H. W., had been found on Tuesday morning at Major N. M.'s gate, speechless and apparently dying from a fracture of the skull, and that there was no trace of the murderers. That night Dr. Young started for the town, and arrived there on Thursday morning. On his way to a meeting of magistrates he met the senior magistrate of that part of the country, and requested him to give orders for the arrest of the three men whom, besides H. W., he had recognized in his dream, and to have them examined separately. (Dr. Young has given us in confidence the names of these four men, and says that to the time of their deaths they never knew the ground of their arrest.) This was at once done. The three men gave identical accounts of the occurrence, and all named the woman who was with them. She was then arrested, and gave precisely similar testimony. They said that between 11 and 12 o'clock on Monday night they had been walking homeward together along the road, when they were overtaken by three strangers, two of whom savagely assaulted H. W., while the other prevented his friends from interfering."

We see here a man, while sleeping quietly in his bed, all at once become terribly agitated by a scene which actually occurred at that time many miles away. He not only saw all

the participants in the action, but also recognized those whom he knew—the rest were strangers to him—and engages at once with terrible earnestness in a fight for the protection of his tenant. His exertions, although most violent, proved fruitless. He observed that the blows he dealt out were dealt by arms without substance, and, becoming painfully convinced of his incompetency, there remained no further consciousness of what happened afterward. His dream had an end. We know that sleep is a particularly fit condition for psychic impressions. In this case the impression came most probably from his tenant, as a call for help, to which the doctor responded at once, and was thus drawn to the scene of the attack, that is, he became clairvoyant, as we say. In other words, his primitive sight forces witnessed the scene without the mediation of sensory organs. He was there psychically as really and substantially as his body remained in bed corporeally, and, without the necessity of assuming a separation of soul and body, his psychic actions there were naturally carried out in the body here. Had he been capable of affecting those excited minds, or rather, if these excited minds had been capable of being affected, he would have appeared to them visibly and they might even have felt his blows. Psychic forces are not confined in and by space. They act wherever and whenever they find corresponding psychic forces to be acted upon. This apparent action at a distance, though true as far as matter is concerned, is, therefore, in reality an immediate action of psychic forces upon psychic forces, the nearness of which is conditioned by the existing psychic links which connect them, and by their sensitivity or capability of being affected, regardless of space, because psychic forces are in their very nature without corporeal extension.

We come now to the consideration of the other question: *Are phantasms objective or subjective developments?*

Mr. Myers does not believe in material ghosts, and Du Prel is inclined to consider them as the astral-body of the soul. Both of these opposite views seem to rest on plausible grounds. If, as we have shown through this entire work, the primitive psychic forces constitute the soul, it is difficult to see how they,

as immaterial forces, could be converted into material agencies, acting like material things upon the sense-organs of a distant person. It is much more reasonable to suppose that as psychic forces they arouse merely in the percipient the corresponding mental modifications which are objectified, that is, transferred and felt as an external object, although in truth they are merely a vivid excitation *in* the mind. (Compare chapter on Hallucinations, 119.)

I do not doubt that the majority of apparitions belong in this category. But in the vast domain of occult phenomena we find cases which are not fully covered by this theory. It appears that in certain cases lasting objective changes in material things have been produced. I shall merely refer to those in which during their occurrence suddenly the light was blown out, in some cases repeatedly (Du Prel, "Der Doppelgänger," in *Sphinx*, Vol. II, p. 91, etc.), that strings or the sounding-board of musical instruments suddenly broke (Perty, Vol. II, p. 121), and that the apparition executed actual writings on paper or on a slate. Of these latter I find two cases recorded:

One evening Mr. v. S. had quietly arrived at home when, on lighting the candle, he heard a peculiar noise, and at the same time saw a hand rapidly writing on a piece of paper the word "Godefroy" and then disappeared. Some time after this v. S. received the news that his friend Godefroy had died in Canada about the same time (Perty, Vol. II, p. 128). The other case is recorded by Dale Owen, in his *Footfalls*, p. 333, etc., under the title "The Rescue," where Mr. Bruce, in midsea, saw a stranger sitting at the captain's desk and writing upon the slate the words: "Steer to the Nor'west." None of the officers or crew had been in the cabin. None of them could produce a similar handwriting. The captain steered to the nor'west and ordered a "look-out aloft." After some time they discovered a vessel from Quebec bound to Liverpool, with passengers on board, entangled in ice and frozen fast. As one of the men who had been brought away in the third boat from the wreck was ascending the ship's side, Mr. Bruce recognized him as the man whom he had seen at the captain's desk, writing on the slate. He was made to write the same words over, and it proved to be the identical handwriting; but he knew nothing of having written these words before, yet everything on board appeared to him quite familiar. The captain of the wreck gave

the following account: "This gentleman" (pointing to the passenger) "being much exhausted, fell into a heavy sleep, or what seemed to be a heavy sleep, some time before noon. After an hour or more he awoke and said to me, 'Captain, we shall be relieved this very day.' When I asked him what reason he had for saying so, he replied that he had dreamed that he was on board a bark, and that she was coming to our rescue. He described her appearance, and, to our utter astonishment, when your vessel hove in sight, she corresponded exactly to his description of her."

The passenger being asked whether he did not dream of writing on a slate, answered: "No, sir. I have no recollection whatever of doing so. I received the impression that the bark I saw in my dream was coming to rescue us; but how this impression came I cannot tell."

These and similar cases can absolutely not be arraigned under thought-transference, and it is not at all out of place when Dr. du Prel takes refuge, for the sake of explanation, in the theory of an astral body. The difficulty of this supposition, however, lies in the proof of an actual separation of soul and body during that state (trance), which is by no means proven. The experiments of Dr. Fahnestock above stated, on the contrary, seem to disprove it. And then, of what does this "Astralleib" consist? What is it?

Is it a mere cover of the soul or spirit? What could the cover do without the soul? If the soul travels along with it, what sustains the body in the mean time? We become entangled into all kinds of difficulties, and simply because this theory assumes an "Astralleib" which it cannot define, and then admits by means of this imaginary thing a spacial dislocation of soul and body, which even in the deepest trance cannot exist—for separation of soul and body means death—and this is all done because the dominant idea of material space crowds forward and is unconsciously applied to things that are not material, but spaceless entities.

Yet, there surely must exist reasons why the belief in the existence of an "astral body, perisprit or meta-organism" should have originated and been so deeply rooted in the human mind for ages. I must here refer to what has been detailed in 110, and shall repeat what concerns us here: "We

are forced to the conclusion that back of the protoplasts exists a complete, organized system of immaterial forces, which is the exact prototype of the material human body. We may call it an immaterial body, if that expression is rightly understood; or, according to Paul, a spiritual body. *It is the human soul*—that being of which most men have but a shadowy idea, because they have never been accustomed to self-observation. The soul consists, on the one hand, of that organized system of immaterial forces, the vital senses, by which it projects itself into the material world. It is composed, therefore, of an immaterial nervous, respiratory, circulatory, generative, muscular, bony and cutaneous system; has eyes, ears, nose, mouth, and all the organs in every particular as expressed materially in the human body. On the other hand, by its higher immaterial forces, the higher senses, it develops into all those conscious modifications of which we have been treating in this work as cognitions, conations and feelings and all their wonderful combinations."

It is this nature of the human soul that unconsciously has given rise to the assumption of an "astral body," "perisprit," or "meta-organism," of which the last undoubtedly best designates our subject; for the soul *is an organism of psychic* forces, externalizing itself in the organism of material forces which constitute the body. They both stand in the same relation to each other as thought and the expression of thought. Now, if we apply this psychological view to our present subject, we may reason thus: The psychic forces are spaceless, and therefore entirely independent of external extension. They act where they are, and yet apparently on objects far away in space, because for them there exists no space. Theirs is an immediate action upon forces, no matter where these forces are stationed in material space; for even material forces should be considered in the light of psychic forces (which underlie and regulate all forces of the universe), so that the entire visible universe is but the expression of a psychic universe; which may, therefore, be alike co-ordinated in its single parts as the several psychic forces and their modifications are related and connected among themselves. When, now, by strong desires and deep emotions

the soul, *id est*, the entire psychic organism, becomes so intensely agitated, that the ordinary way of perceiving through the normal sense organs is for the time interrupted and an independent action of the psychic forces (clairvoyance or clairaudience) takes place instead, we can understand, on the one hand, why in that state (trance) the body appears almost lifeless, or as if in deep sleep; and on the other hand, why this psychic activity intensely concentrated upon its object should also be capable of effecting objective changes, there being an immediate action of forces upon forces, and not, as the common view takes for granted, of mind upon matter. (See 110 on Soul and Body). Certainly the *modus operandi* of these occult phenomena has yet to be discovered, as in so many other purely material processes—catalysis, for instance. Dr. Du Prel is certainly right when he says: "Natural science, which still refuses to acknowledge mystic phenomena, will soon find itself in the same predicament as the Church once found itself. Some centuries ago the Church condemned the belief in the antipodes with scorn as heretical and absurd. Later she could not procure missionaries enough to convert the antipodes, the existence of which she had at first peremptorily denied. It will be the fate of our natural philosophers that, even before this century comes to an end, they will take up these occult phenomena, now disavowed, as their special studies, and work at them with the assiduity of bees, diving even into the hog-leather-bound volumes of the dark ages." (*Sphynx*, Vol. II, p. 379.) I willingly admit that I do not expect this kind of investigation to be performed by those who now lead the crowd with their materialistic wisdom, but it is certainly true that the age of denial, "because they can't see it," is rapidly approaching its end.

The "reality of the phantom" should not be dismissed with a contemptuous wave of the hand, "because a 'spirit' can't be seen, even if it existed;" "because such belief belongs to the dark ages, or can arise only in the vulgar and uneducated, and is entirely discarded by all science of to-day," etc. Horatio, Horatio! What is accepted as science to-day, may be laughed at to-morrow, and what is laughed at to-day, may be acknowl-

edged as science to-morrow. What we contend for is this: The soul is a system of diverse psychic forces, united into one whole organism. These forces are spaceless; they have no corporeal extension, and therefore are not encumbered by space. Their action is spaceless and conditioned only by psychic relations. Telepathy and telergy are designations contradictory to the nature of psychic forces, and signify merely the external *appearance* of their actions as reaching and affecting distant bodies in space, without intimating their real and immediate action as forces upon forces, which is neither facilitated nor encumbered by any apparent, external space.

Now, as the nature of these primitive forces as living forces is conative, they not only receive and perceive, but also act and externalize themselves, express their own being materially in the material world by building gradually in a mysterious way a corresponding body, which lasts for a given number of years. Why, then, we may ask, should that same soul on the spur of the moment not be capable of producing an evanescent externalization of itself by its action upon other forces? Why should it not be capable of tearing a string or breaking the sounding-board of a musical instrument, or building an evanescent body of its own and then using part of it as an instrument to write? There is no cogent reason for denying this, especially as we know so little about the nature of any and all the material forces. Is it more wonderful than that the soul builds itself a relatively permanent body for the purpose of living and thriving in this material world? But the old, old objections confront us again and again, which consider the soul either as an unsubstantial shadowy nondescript, or assume psychic action to be the result of bodily organization. So long as we do not rise above this low grade of intelligence and fail to consider the soul what it is, an organism of diverse psychic forces, which are as substantial and real as any of the coarsest material forces, we shall never be in a fit condition to deal with this problem, or be able to conceive of the possibility, much less of the reality, either of telepathy or telergy, or any other "supra-normal" phenomena.

This leads us naturally to the consideration of phantasms of the dead.

124. PHANTASMS OF THE DEAD.—HAUNTED HOUSES.

This subject has been dealt with in the most cautious and skeptical spirit by Mrs. H. Sidgwick, in the Proceedings of the Society for Psychical Research, Vol. III, from page 69, etc.:

"Mrs. Sidgwick considers the evidence which the society has hitherto collected for *Phantasms of the Dead* (a collection of about 370 narratives), including under this term all kinds of impressions on human minds which there seems any reason to refer to the action, in some way or other, of deceased persons" (p. 69).

"The possible non-ghostly explanations of what pass as ghostly phenomena may be conveniently classified with reference to the various sorts of error by which the evidence to such phenomena is liable to be affected: (1) As hoaxing, (2) as exaggeration or inadequate description, (3) illusion, (4) mistaken identity, (5) hallucination" (p. 71).

"And in testing the value of this testimony we are bound, I think, to strain to the utmost all possible suppositions of recognized causes, before we can regard the narrative in question as even tending to prove the operation of this novel agency" (p. 70).

"Under 'hoaxing' Mrs. Sidgwick does not think 'that the number of cases in which this explanation is applicable can be more than half a dozen.' Under 'unintentional exaggeration or otherwise seriously defective' she sets aside about one-third of the printed stories. In those that remain we have to consider whether any known physical explanations will apply even, as I have said, with some straining" (p. 73).

And thus, after applying all possible non-ghostly explanations on the following 76 pages upon the stories collected by the Society, she comes to the following conclusions:

"1. There are a large number of instances recorded of appearances of the dead shortly after their death, but generally there is nothing by which we can distinguish these from simple subjective hallucinations. In a few cases, however, information conveyed seems to afford the required test, but these are at present too few, I think, for us to feel sure that the coincidence may not have been due to chance.

"2. There are cases of single appearances at an interval of months or years after death, but at present none which we have adequate grounds for attributing to the agency of the dead.

"3. There are numerous cases of seemingly similar apparitions seen in particular houses, without apparently any possibility of the similarity being the result of suggestion or expectation; but the evidence connecting such haunting with any definite dead person is, on the whole, very small; and the evidence for the operation of any intelligent agency in the haunting, at present absolutely *nil*; and until we can discover more about the laws that seem to govern such haunting, we are hardly justified in forming any theory as to its cause, except as a provisional hypothesis" (pp. 149 and 150).

Whatever we may think of the conclusions drawn, it is certain that this lady has performed a remarkably good work from her standpoint, and we must not haggle with her, even where she applies, for the sake of physical explanations, "some straining." From her standpoint this is all right and proper. However, the task is not to explain *psychical* phenomena on a *physical* basis, which can never be done, not even by "straining to the utmost all possible suppositions of recognized causes," simply because psychic forces are not physical or material forces. The difference between the two has been explained at the end of 110. In dealing with psychic forces we rise into the higher realm of spaceless forces, and it makes no difference whether the one or the other of the recorded cases may be explained as hoaxing, unintentional exaggeration, illusion, mistaken identity, or hallucination; for eventually all come down to this point: Who shall decide upon it—the man who experiences such an occurrence, or the man who hears or reads of it and, according to his mood, throws it into the class of the one or the other of possible errors or believes it as a truth? It is impossible that everything could be cooked under our own eyes in our own kitchen, and it is equally clear that different tastes, wants and habits cannot be satisfied by the same fare. We stand here obviously on the *subjective* side of the question. What one might find delicious, palatable, refreshing, another might detest; what for one might be easily digestible, for another might work like an emetic. The question is not: Do such occurrences suit accepted notions and preconceived ideas by which *physical* science now believes to explain this or that; but, are such occurrences consistent with

the nature of *psychic forces* and *psychical laws*? And here I must emphatically assert that they do not run counter to the nature of psychic forces, nor to any of the psychical laws we have thus far diligently explained throughout this work. The last chapter should decide in which direction we should look for a solution of this question. So long as we consider psychic forces as real substances, as real as any of the material substances, there is no valid reason to deny that psychic forces should be capable of acting as well as physical forces; and as psychic forces are spaceless, their action cannot be measured by the behavior of material forces which, in their very nature, are confined to the development in the three dimensions of length, breadth and depth, neither of which is an attribute of psychic forces. Theirs is an immediate action of force upon force, and they, in conjunction with matter, acting as higher forces upon lower, which they govern, mold and shape, are seen throughout the grand living realm of nature. (Compare 109.) Although these psychic forces, in their various degrees and kinds, do not all develop into self-consciousness as in man (the highest psychic product on this earth), yet all act in strict accordance with the same psychical laws which govern the highest and clearest self-consciousness, so that Mr. Samuel Butler could very properly speak in his book on *Life and Habit* of "conscious and unconscious knowers."

In the last chapter we have shown that psychical action, apparently at great distances, is not only possible, but undoubtedly proven and explained by the unspacious nature of the psychic forces. Here we have to extend this action to psychic forces *no more* in organic connection with material forces; and the question narrows down to this point: Can psychic forces, when severed from their organic connection with material forces, still act in this material world? In other words: Can a departed spirit, that is, a psychic organism separated from its former material partner, still influence other spirits yet organically united with material bodies? And the answer is another question: Why should it not? Because it is severed from its organic connection with matter? But matter in all its forms is also force (109). Psychic and material forces

are, therefore, related in their inner nature, and should not be considered as absolutely opposite to each other, but as *forces* which gradate from the highest psychic forces (capable of a self-conscious development), down to forces which do not attain this self-consciousness, but gradually assume extension in space, that is, take on material forms. As such they ordinarily influence psychic forces only when the latter have built avenues for their reception in the shape of corresponding sense organs. But the psychic forces, as we have seen, do not always need these corporeal instruments to perceive material forces. Under a supranormal condition, the psychic forces, even while in their organic connection with the material body, may and do perceive not only psychic modifications in other subjects, but also material states and conditions, without the means of normal sensory organs (compare former chapters). It is then an immediate, non-spacious becoming aware of a thing "*an sich*." If this can take place in a condition where psychic forces are still organically connected with material forces, there remains no reason to assume that such relation could not exist between a psychic organism severed from its organic connection with a material body, and other psychic organisms and material bodies, because the conditions remain, in the main, the same.

We should not trouble ourselves in speculations about the *place* where spirits dwell. There is no place—a space confined by length, breadth or depth—for psychic forces and psychic organisms. Their presence or absence, their nearness or distance, cannot be determined by measuring-rods, but depend entirely on the *psychical relation* which they bear to other forces. These may be spirits in or out of the body, or they may be particular localities to which the psychic organisms have become attached during their development in earth life. Any locality may become a part of their psychic life, and the more so the more deeply this connection is grounded on lifelong habits or strong passions, which keep the connection in constant nearness to consciousness, or, in other words, fasten the mind to a particular place. Why? Do we not observe a number of similar states in normal life? Do not our thoughts

turn back again and again to the places of our childhood after we have been transplanted into other regions and relations of life, until the influence of these gradually effaces the first to a certain degree? Is not homesickness grounded upon these very psychic relations and ties? These and thousand other similar experiences we make daily, and think nothing of them because they seem so natural. Why natural? Because they are as common as the falling apple, although as little understood as the falling of the apple was for ages. Let us now take a little step aside from these common occurrences, and think of the farmer who, while in church, was seen at the same time at home among his cattle, and, becoming alarmed when being told so, asked his pastor about it. The latter quietly responded to his parishioner: "Why, man, were you not really in your thoughts among your cattle while I was preaching?" This the man did not deny. We have considered such cases under the head of the "double," and given our psychological explanation of the same in the last chapter.

The difference between these uncommoner phenomena and the natural occurrences during normal life is, that in the latter the mobile psychic elements excite into consciousness mental modifications of the *same* psychic organism, while in the uncommoner cases this excitation extends to another psychic organism by virtue of the same psychical law, the diffusion of mobile elements, the attraction of similars, and the unspacious nature of psychic forces.

From this point another little step in our investigation brings us face to face with the question of the phantasms of the dead, and haunted houses. No one can take this step unless he has learned to understand that psychic forces are real substances, and that the soul of man is an organism of such psychic substances, of substances as eternal and indestructible as any of the most material kind. Yet this is the point that is not understood. We all agree when we talk of material forces being indestructible. But when we venture to speak of *psychic forces as substantial things, or essences*, there arises a general shaking of heads, a derisive smile, a scientific "we know better." Who know better? "We." Who are "We?" "Bodies

with big brains, in which there never was found a trace of a psychic substance. And that settles the question."

But we have found in our investigations, that psychic modifications endure long after the brain-tissue, in the presence of which they were formed, has been changed and renewed many a time since that event, even in cases where they had never been recalled into consciousness for many years. It has been proved that by mere psychic influence certain mental modifications may be excited into consciousness (thought-transference) without the usual means of communication; and it has been shown that a sensing, as well as actions, at great distances are facts which material brain-waves or any other material contrivances will never explain. Consequently we do not lay much stress upon the assumptions of these learned bodies with big brains minus souls; and contend, as we have done throughout this work, that the human soul is an organism of diverse *psychic* forces, which are as substantial as any of the material forces that make up the body and the external world.

This admitted, our path is clear of obstacles. The reality of phantasms of the *living* cannot be doubted any longer after the great and careful labor bestowed upon this subject by Messrs. Gurney, Myers and Padmore. These phantasms are clearly actions of a purely psychic nature, of one psychic organism upon another, and usually take place, as said before, "when a person is in *articulo mortis*, or when he is in great danger, or otherwise mentally agitated, and his mind is fixed upon a distant person," etc.

What, now, is the difference between such psychic action of a soul at the point of leaving the body, and the action of a soul that has left the body? It is this: In the first case the soul is still in connection with the body, in the other not. But what has the *body* to do with that action? As *body* it cannot act at a distance, so we must consider it entirely as the work of the soul; and as the soul is a substantial psychic organism, it must surely be able to do the same thing after it has severed from a body which had nothing to do with the action while still united with the soul. The substantiality of the soul ensures its continuance, and, consequently, the possibility of the

same activity after its separation from the body. The soul after leaving the body, to repeat it again, is still the same psychic organism which it was *in* the body, and there is no reason to assume that its activity and capability should not go on all the same, provided its desire to influence another psychic organism still in the body is bent to do it, or a particular locality is rooted deep enough in its psychical composition, that it is kept in constant nearness to consciousness, like a fixed idea. These states of departed spirits would explain the phenomena of the phantasms of the dead as well as of haunted houses. For whether these noises, apparitions, etc., are created in the mind of the observer only (which they probably are in many cases, because on examination the most terrible noises have never been found to have left any traces of objective effects in the localities where they were heard; or whether they consist of genuine objective effects, like throwing of stones, etc.), it makes no difference as to the cause. The creation of noises or apparitions within the mind of another person, or persons, requires no less an influence *ab extra*, which excites these mental modifications before they can be objectified by the mind (see Hallucinations), than objective changes in material things require an adequate influence upon the material forces constituting these things. The one thing necessary in the first case is a fit condition of the recipient to be acted upon; a certain sensitivity for psychic influences, without which, as we have seen, no effect can be produced. This explains the fact that a number of people live and die without ever having had a single apparition during their whole life. The other case, however, the production of genuine objective effects in the material things around us, seems to require still other conditions under which these phenomena can come to pass; and this leads us to the last chapter of our inquiries into the occult phenomena of psychic life.

125. SPIRITUALISTIC PHENOMENA.

It is characteristic of these phenomena that they usually occur only when there is a person present who mediates, as it were,

between spirit and man. Such a *medium* (man, woman or child) is thought to be used as a means or instrument in the hands of disembodied spirits for communication with the corporeal world. There are millions of people who believe in the reality of such communications, and other millions who do not. But a mere belief either way does not prove the truth or falsity of either view. We must have something more than belief. We must inquire further.

Since 1848, more regular methods of investigation into these alleged communications than before have been introduced, although traces and insular eruptions of similar phenomena have been observed in all ages and among all kinds of people and races. The novelty of the present development consists in the newly gained experience, that these phenomena occur in the presence of certain persons or media. This discovery is undoubtedly of great value, and is of especial service in a methodical research into the nature of these phenomena. It enables us to bring the phenomena within the reach of repeated observations. However, this seeming advantage is, by virtue of its own peculiarity, fraught with great perplexities and uncertainties. The medium is a new element added, which likewise has to be taken into account, so that, indeed, it does not really simplify, but rather multiplies, the difficulties by which we are surrounded. Frequently we will be at sea when we come to decide what part, if any, of the resulting phenomena should be considered as a natural psychic result of the medium's own peculiar condition, or the medium's fraudulent manœuvring, or as the result of an influence foreign to the medium, and if foreign, if an influence emanating from the persons around the medium, or from an independent spiritual existence. These possibilities we will consider separately.

1. *Phenomena which may be the natural result of the medium's own peculiar condition.*

Suppose a medium be endowed, like Zschokke for instance, with the peculiar gift of perceiving events of the past or present in another person's mind as clearly as though these events passed before his eyes as in a panorama, he would not need special spirits to do the perceiving work for him. He

would simply perceive the psychic modifications existing in another mind by the direct action of his own psychic forces, without the intermediation of corporeal sense-organs, or the need of disembodied spirits. This possible peculiarity of the human soul alone would, indeed, do away with a large class of so-called spiritualistic phenomena, so far as they are meant to prove the interaction of departed spirits. This is also in conformity with the expressions used by an honest medium thus endowed, when he says: I see a person (spirit) that looks thus and so, and hear him say thus and so (that person may be alive or dead). He then frequently gives a more or less correct description of that person or spirit, because he actually sees and hears what he describes, and exactly as it exists in more or less perfect *vestiges in the mind of the inquirer*. It is not even necessary to assume that the inquirer should *think* of such a person at the time; for all that *exists* in the form of vestiges in the mind of the inquirer may be perceived during the trance-state by the immediate action of the medium's freed primitive psychic forces.

If we now run over the vast array of so-called test cases, in which the trance-mediums name and describe relatives, friends, acquaintances, etc., of the inquirer, we certainly find a very large number among them which can be explained by ascribing them to this singular gift of some persons (media) to be able to perceive in trance (without the use of the sense-organs) the psychic modifications which exist as vestiges in another person's mind, with whom the medium comes into *rapport* showing clearly the necessity for cautious discrimination, when such narratives as proofs of spirit communications are considered.

If, however, the medium would give revelations of which there were no vestiges whatever, either in the mind of the inquirer or of the medium, or in the mind of another person present, this explanation would fail to be applicable. And such cases also exist in considerable numbers dispersed through the voluminous literature of Spiritualism. For instance, Judge Edmonds relates the following, in his work on Spiritualism: "When I was absent last winter in Central America, my

friends in town (New York) heard of my whereabouts and of the state of my health seven times, and on my return, by comparing their information with the entries in my journal, it was found to be invariably correct. So in my recent visit to the West, my whereabouts and my condition were told by a medium in this city while I was traveling on the railroad between Cleveland and Toledo" (p. 75).

Even this, however, does not necessarily imply that "spirits" were the intercarriers between Judge Edmonds and his friends. A medium sufficiently clairvoyant could do it precisely as well (compare the experiments of Dr. Fahnestock in 120), for the reason that there exists no space for psychic forces, and that the nearness or distance between mind and mind consists in the degree of their psychic relation.

We may go still further and even say, that a revelation which is not included in, and may be even contrary to, the normal every-day consciousness of the medium and inquirer, does not necessarily prove the interaction of "spirits," because the "secondary" consciousness of a medium may be so predominantly aroused, that it reveals things which are absolutely out of the reach of normal excitation, and opposed to the views of normal consciousness. We can see this in many cases of somnambulists, who flatly contradict in their waking state what they have ordered or said in their trance state, and *vice versa*. We can find examples of this kind in hypnotized persons, and the Rev. Mr. Newnham shows the same by his experiments with his wife in planchette-writing, which Mr. F. W. H. Myers has so ably elucidated in his articles on "Automatic Writing" (Proceedings S. P. R., Vol. II, p. 277, etc., and Vol. III, p. 1, etc.)

Thus far we have considered certain gifts and abilities with which a medium *may* possibly be endowed, and by reason of which gifts phenomena *may* be produced which appear very much like spirit-communications. In these transactions there is no fraud on the part of the media. They themselves believe what happens during their supernormal state, because what they describe they actually see and hear by means of their primitive psychic forces, without the intermediation of their normal sense-organs. Fraud it would be if they simulated

trance and then told their sitters what they accidentally might have heard, or become otherwise cognizant of, in regard to the inquirers.

2. Next we come to *a class of phenomena which the medium may produce by fraudulent means.*

These phenomena comprise that large class of so-called *physical manifestations*, and because they are physical they have been investigated by a large number of persons. It is astonishing to see with what ingenuity and tenacity this labor has been pursued, and for what various reasons. By some it has evidently been done with the noble purpose of settling the uncertainties in their own minds, and to rid mankind, if possible, of superstitious beliefs; others seem intent to prove absolutely that they were right from the first and that "the whole thing" is a miserable fraud; while still others, creatures of the lowest plane, are obviously moved by mere mercenary purposes. It cannot be my purpose to exemplify here these different classes of investigators, but I would be amiss if I were to leave unmentioned Mr. S. J. Davey, who evidently belongs to the first class. Being first a believer in Spiritualism he was prompted, by attending several sittings of a slate-writing medium, to try to find out for himself whether such phenomena could be produced by jugglery or not—and finally arrived at the following conclusions:

"The results of my investigation as to the possibilities of conjuring in relation to 'psychography' have been a revelation to myself, no less than to others. I am aware that in addition to the methods which I have employed for producing 'slate-writing,' there are other methods which I know to be conjuring, but which have not yet been shown to me; and I should certainly not be convinced of the genuineness of spiritualistic phenomena of this kind by any testimony, such as I have seen recently published in great abundance, which presents so many close analogies to the reports of my own conjuring performances." (Proc. S. P. R., Part XI, p. 487.)

He has published in the same volume, pp. 416-486, his investigations, with the reports of his sitters, none of whom had succeeded in detecting the *modus operandi* which Mr. Davey

pursued; and he ascribes the success of his conjuring art principally to mal-observation on the part of the sitters. To this exposition Mr. Richard Hodgson has given an introduction, entitled, "The Possibilities of Mal-observation and Lapse of Memory from a Practical Point of View," in which he very carefully and clearly handles his subject. We may unreservedly grant all he says. But what follows from it? This, and nothing more—that so-called Spiritualists should be very cautious and discriminating, especially in cases of "slate-writing," as there is no doubt that the *possibilities* of mal-observation and lapse of memory are real obstacles to getting at the bottom of these phenomena. These possibilities are undoubtedly clearly stated and at the same time practically proved by Mr. S. J. Davey. But do possibilities on one side prove the *impossibilities* of another side? Like slate-writing, so also "tying knots in an endless string," "loosening of a medium from his bonds," "ballot-tests," "raised letters made to appear on the medium's arm," "materializing hands or feet in paraffine," "spirit-photographs," etc., etc., have been successfully imitated; and "*The Bottom Facts of the Science of Spiritualism*," by John W. Truesdell, is a most entertaining little book in which these feats are delightfully described, showing clearly the *possibility* of imitating so-called physical manifestations. But, I ask again, do possibilities on one side prove the *impossibility* of another side? . So long as we have the testimony of men like Hare, Crookes, Wallace, Zöllner, Baron von Hellenbach, and many other scientists who have experimented, and carefully and scientifically experimented, and have come to the conclusion that there is still another side than a mere physical one to the question, it would be rash to assume that by all these possible imitations of "physical manifestations" we had reached the "bottom facts" of Spiritualism.

It will take a long time before superstition and prejudice will settle to the bottom and allow a clear view of these occult psychic phenomena; and I fear that the present generation, notwithstanding all the splendid discoveries in *physical* science, will pass away before the perturbed and darkened

waters of intellectual evolution shall have so far cleared up as to admit of a quiet and impartial decision in this matter.

This leads us to the last point, the possibilities of another view, as considered from a psychological standpoint.

3. *These strange phenomena may be the result of an influence foreign to the medium.*

That psychic action at a distance (telergy) is an actual fact, has been shown in 123. It is a psychic influence upon a mind that receives it.

Consequently the *possibility* cannot be doubted that a mind (always taking for granted its fitness for receiving) *may* be influenced by purely psychic forces *foreign* to itself. From whence do these forces arise? Of psychic forces we know but two sources that concern us here: *Another mind still in the body, and spirits out of the body.* The "Unconscious" of Hartmann, and the undefined middle class of elementary spirits of the Theosophists, hardly belong in the sphere of our considerations.

The first source, the mind of man, is the only existence of which we have a positive knowledge, and its influence upon other minds I have abundantly proved in the foregoing chapters. The second source may be stated as hypothetical. We may infer it when its action shows an intelligence which the first fails to explain. Yet if we consider the second as a continuance of the first—which we are forced to do if we believe in the indestructibility of forces—the difference between the two is not so very great, because both must then be considered as actual, living organisms of psychic forces.

This being so, it is clear that we cannot deny the *possibility* of departed spirits acting upon material, as well as upon immaterial forces, in this wonderful world, which consists of material and immaterial forces combined (109). This possibility becomes greater when we think of the thousands of strong ties which fasten the departed to what he left behind, and which assure his nearness, presence and willingness to act upon what he loved or hated. Give him the means and he will do it. These means he may find (another possibility) in the so-called *media*. That media possess an organization easily

influenced by foreign psychic forces no one will deny who has had the opportunity of observing such persons. They belong to the class of sensitives, and are nearly related to somnambulic and other persons who yield readily to mesmeric influences.

It appears that under certain conditions the normal activity of the outer senses is arrested. We find this especially to take place in sleep, and during mesmeric, somnambulic and trance states. In 103, 120, and other places, we have shown that the cause of these conditions lies in the predominant activity of the vital forces, those psychic forces which not only control all *functiones vitales*, but also build and sustain every part of the human frame, unbeknown to the self-consciousness of the higher senses. The vital forces are, therefore, a most important element, which thus far has been entirely overlooked in the consideration of occult psychic phenomena. Natural *sleep* is induced by the expenditure of bodily and mental primitive forces during the waking state, which must be replenished by new acquisitions, and this work is done by the assimilating activity of the vital forces (103). The trance-state of a mesmerized or a somnambulistic person may be induced in different ways, as has been shown above; but its cause is likewise the heightened and predominant activity of the vital forces. (Compare 120 and other chapters.) A medium's trance-state may be either self-induced or brought about by an agency foreign to the medium; and it consists likewise of a predominance of the vital forces over the higher. The medium falls asleep; that is, the activity of his higher *sense-organs* is arrested. He neither sees nor hears at that time, nor does he remember anything afterward that has happened during this state. (See 117 and others.) Yet he may have been psychically very active all the while; may have seen things which in a normal state he could not have seen; may have answered questions which in a normal condition he could not have answered. This proves clearly that not his *primitive forces*, but his *sense-organs*, were inactive. The primitive psychic forces, on the contrary, appear under such conditions to be liberated from the bondage which, in a normal state, fetters them to the *bodily organs*. How came this independence about? If we compare 120 we shall find

that the vital forces in a normal condition engender the activity of the *sense-organs*. When withdrawn from this office, because differently applied as mobile elements to the excitation of other psychic actions, the activity of the bodily *organs* must cease; and the primitive higher forces, thus set free, can then act independently of the sense-organs and perceive what an intercession of *sense-organs* would have frustrated, because bodily organs can be acted upon only by corresponding bodily stimuli. There is, then, considered from a psychological standpoint, nothing in the way to an acceptance of the *possibility* of a purely psychic interaction between psychic forces; and its reality, so far as it concerns the living, has been sufficiently demonstrated in the foregoing chapters. But when we come to extend this possibility also to an intercourse between the *dead* and the living, we meet the general outcry: "Impossible! for the dead are dead!"

Surely, if the dead are dead, they are dead, and it would betray an utter want of judgment to assume an intercourse with the dead. But who does so foolish a thing? We have here again an example of that mental infirmity where preconceived ideas dim the judgment of otherwise clear-sighted minds. Dead! It is poor logic to apply the term "dead" even to things which are entirely under the control of chemical decomposition, because these things really are not dead, they are merely changing their composition. In this sense we may apply "dead" to the body, after the soul has left it; for the body is a compound of material forces, which are subject to such changes. The soul, however, is, as I have shown throughout this work, an organism of *psychic* and *not* of material forces, and as such lies absolutely out of the range of mechanical and chemical analysis, and consequently also beyond the grasp of the physical laws of dissolution.

What, now, follows after death, that is, after the separation of soul and body? Answer: *Continued evolution*.

The *bodily forces* having lost their master, yield to what their nature coerces them—to the sole influence of chemism, forming new compounds, or entering again into communion

with higher forces, and thus into the composition of new *living* bodies. That is *their evolution*. The *soul*, being an organism of *psychic forces*, lies, by virtue of its nature, entirely out of the range of chemical action, and consequently cannot fall victim to chemical decomposition; and yet, as surely as the body, the soul continues to be subjected to the laws of *evolution*.

Having shed its material companion, it is true the soul can no longer use material organs for seeing, hearing, etc. But what of that? Have we not in our investigations clearly found that the soul, even while yet organically combined with the body, is, under certain conditions, capable of perceiving without the use of the sense-organs, and also without the ordinary sense-stimuli? Granted, then, that with death the soul loses the means (bodily organs) for perceiving mundane stimuli, would it follow that then it could not perceive at all? Would such an inference not be the common error of confounding condition with cause? Sense-organs and mundane stimuli are the *condition* of perceiving in this corporeal world, but not the *cause* of perceiving. The real cause of perceiving is the primitive psychic forces. When, therefore, the soul abandons these corporeal means, it merely changes a *condition* which is no longer of use for its further evolution. The *cause* remains all the same. The primitive forces continue in their action, which is now an immediate perceiving of things as they exist in their very nature, and not as they appear through mediating sense-organs. Death, then, being a change in the *conditions* of existence, does not affect in the least the *cause* of this existence. Therefore, we may assert that departed spirits, the souls of men, real men, continue to exist after so-called death.

This assertion is certainly an hypothesis, because the existence of spirits cannot be proved by *physical* means, as spirits lie out of the reach of physical means of detection; but it is an hypothesis which we are not only warranted but necessitated by the existing psychical facts to establish. We shall have to submit to these facts; and, consequently, the *possibility* of an intercourse between departed spirits and this corporeal world is likewise established.

Here ends my task. I cannot be expected to prove how far, and in what particular cases, this possibility has been actually realized in the millions of spiritualistic experiments with the thousands of public and private media, for I am not writing a work on Spiritualism. In the elucidation of this subject it was my part to state, and to state fairly, that on the one side there exist *possibilities* by which an appearance of communication between man and spirit may be produced, and yet be only the effect of natural psychical action of mind upon mind ; that imitation may and does succeed in taking the appearance of spirit interaction, and yet be only the result of cleverly construed physical contrivances. On the other side, I had to show that the assumption of a like possibility of an intercourse between man and departed spirits is not only warranted but necessitated by the existing psychical facts, because this assumption is in accord with the nature of the soul of man, and the laws by which the psychic organism is governed throughout its existence in this wonderful world of psychic and material forces combined.

THE END.

522

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