DAMAGE BOOK

SOME PAGES ARE TEXT CUT
P.NO 192 TO 207

UNIVERSAL
LIBRARY

OU_152517

UNIVERSAL
LIBRARY

RICHARD CLAY AND SONS, LIMITED,
BRUNSWICK STREET, STAMFORD STREET, S.E.
AND BUNGAY, SUFFOLK.

COPYRIGHT.

First Edition, February 1891.
Reprinted, November 1891, 1893, 1896, 1901, 1904, 1908, 1912

TRANSLATOR'S NOTE.

THIS translation is not from the original Danish, but from the German. The German edition is however accepted by Dr. Höffding as adequately representing the original, and I hope therefore the present version has not suffered by being at secondhand. I am glad to have this opportunity of thanking Dr. Höffding for his cordial interest in the preparation of the English edition and for his kindness in sending corrections and notes where later discoveries made it necessary; and also of thanking Dr. Ward and Prof. Croom Robertson for their very kind help with difficult passages and expressions, and Mr. James Sime for preparing the index and for his careful revision of the translation as it passed through the press.

MARY E. LOWNDES.

CONTENTS

PAGE

I. SUBJECT AND METHOD OF PSYCHOLOGY 1

1. Provisional description of psychology as the science of mind.—2. External perception precedes internal.—3. Evidence of language.—4. Psychological development of the distinction between self and not-self.—5. The mythological conception of the mind.—6. Direct and indirect apprehension of mental life.—7. Pyschology and metaphysics.—8. Method of psychology. *a.* The difficulty of introspection. *b.* Influence of individual differences. *c.* Psychological analysis. *d.* Experimental psychology. *e.* Subjective and objective psychology. *f.* The mutual relation of the different methods. —9. The relation of psychology to logic and ethics.

II. MIND AND BODY 29

1. The empirical (phenomenological) standpoint.—2. The law of the persistence of energy.—3. Organic life and the persistence of energy.—4. *a.* The importance of the nervous system. *b.* Reflex movement. *c.* Subordinate nerve-centres. *d.* The cerebrum. *e.* The cerebrum and the lower centres. —5. Provisional account of consciousness.—6. Parallel features in consciousness and the nervous system.—7. Proportionality between conscious life and cerebral activity.— 8. *a.* Dualistic-spiritualistic hypothesis. *b.* Monistic-materialistic hypothesis. *c.* Monistic-spiritualistic hypothesis. *d.* The hypothesis of identity (monism).

III. THE CONSCIOUS AND THE UNCONSCIOUS 71

1. Definition of the unconscious.—2. Conscious thought resulting from previous unconscious work.—3. Conscious

PAGE

sensuous perception resulting from previous unconscious work.—4. Unconscious connecting links.—5. Instinct and habit.—6. Unconscious and conscious activity simultaneous.—7. Unconscious growth of feeling.—8. The dream state.—9. Awakening through the psychical relation of the impression.—10. Hypothesis as to the extension of mental life.—11. Psychology and physical mechanics.—12. Laws common to mind and matter.

IV. CLASSIFICATION OF THE PSYCHOLOGICAL ELEMENTS 87

1. Classification of elements, not states.—2. The psychological tripartite division.—3. The tripartite division not original.—4. Evolution of the individual consciousness.—5. Psychological differentiation during the evolution of the race.—6. Conditions of differentiation.—7. *a*. No cognition without feeling. *b*. No cognition without will. *c*. No feeling without cognition. *d*. Connection between feeling and will. *e*. The will as first and last.

V. THE PSYCHOLOGY OF COGNITION 101

A. Sensation 101

1. The psychological significance of the question as to the simplicity and self-dependence of sensations.—2. The simplicity of sensations.—3. The self-dependence of sensations.—4. On the quality of sensations.—5. The law of relativity in the province of sensation.—6. Motor-sensations.—7. Sensation and movement.

B. Ideation 121

1. Sensation and perception.—2. Free representations.—3. Sensation, perception, and free representation.—4. Separation of free representations or ideas from percepts.—5. Formal and real unity of consciousness.—6. Preservation of ideas.—7. *a*. Memory-images, hallucinations, and illusions. *b*. Remembrance conditioned by the circumstances of the actual experience. *c*. Remembrance, conditioned by the circumstances of reproduction. *d*. Remembrance, conditioned by the character of the ideas.—8. *a*. Regularity of the combination of ideas. *b*. The laws of combination of ideas. *c*. Fundamental law of combination of ideas. *d*. The laws of obliviscence.—9. Simple ideas, individual ideas, and general

PAGE

ideas.—10. Language and ideas.—11. Association of ideas and thought.—12. Formation of free concrete individual ideas (imagination).

C. The Apprehension of Time and Space 184

1. Conditions of the idea of time.—2. Development of the idea of time.—3. Symbolic character of the idea of time.—4. Estimation of time.—5. Is the form of space original?—6. Is the perception of distance original?—7. *a.* Is the perception of surface original? *b.* Simultaneous impressions. *c.* Local signs.—8. "Nativistic" and genetic theory.—9. Organic basis of the intuition of space.—10. The idea of space.

D. The Apprehension of Things as Real 205

1. The content of cognition as expression of a reality.—2. Connection as criterion of reality.—3. The causal relation.—4. Psychological development of the causal concept.—5. The limits of cognition.

VI. THE PSYCHOLOGY OF FEELING 221

A. Feeling and Sensation 221

1. Unity of the life of feeling.—2. Feeling different from special sensation.—3. Feeling and the several senses. *a.* Vital feeling. *b.* Feelings accompanying contact and movement. *c.* Feelings accompanying taste. *d.* Feelings accompanying smell. *e.* Feelings accompanying sight and hearing.—4. The natural course of development of the elementary feelings.

B. Feeling and Ideation 233

1. Originality of feeling.—2*a.* Disgust, sorrow, hate. *b.* Love, joy, sympathy. *c.* Impulse, desire. *d.* Hope, fear. *e.* Mixed feelings.—3. The law of the development of feeling.—4. Remembrance of feelings.

C. Egoistic and Sympathetic Feeling 242

1. Egoistic centre of gravity.—2. The psychological genesis of sympathy.—3. The physiological basis of sympathy.—4. The feeling of love and sympathy.—5. Sympathy takes root through inheritance and tradition.—6. Ideal satisfaction of sympathy.—7. Disinterested sympathy.—8. Ethical and religious feeling.—9. Intellectual and æsthetic feeling.

PAGE

D. The Physiology and the Biology of Feeling 267

1. The physiological seat of feeling.—2. The biological significance of feeling.—3. Feeling and the conditions of life.

E. The Validity of the Law of Relativity for the Feelings . . . 275

1. The law of relativity common to cognition and to feeling.—2. Contrast and rhythm of feeling.—3. Relative feelings.—4. Effect of repetition upon feeling.—5. Emotion and passion.—6. Pessimism and the law of relativity.—7. No neutral states.—8. The feeling of the sublime.—9. The feeling of the ridiculous. *a.* Laughter apart from anything ridiculous. *b.* Laughter as expression of the feeling of power and freedom. *c.* Sympathetic laughter (humour). *d.* The ridiculous rests on effect of contrast. *e.* The sublime and the ridiculous.

F. The Influence of Feeling on Cognition 298

1. Feeling as inhibitive, preserving, and selecting.—2. Incentive of feeling and association of ideas.—3. The teleology of feeling and the mechanism of cognition.—4. Expansion of feeling. *a.* The anticipating and realizing effect of feeling. *b.* The inciting and animating influence of feeling.

VII. The Psychology of the Will 308

A. The Originality of the Will 308

1. The will the most primitive and the most derivative mental expression.—2. Spontaneity and irritability.—3. Spontaneous and reflex movements in higher organisms.—4. The physiological seat of instinct and of will.—5. Involuntary and voluntary attention.—6. *a.* The will and the motor-ideas. *b.* Isolation and combination of movements. *c.* The significance of the inherited basis.

B. The Will and the other Elements of Consciousness 321

1. The higher development of the will, conditioned by the development of cognition and of feeling. *a.* The psychology of the impulse. *b.* The wish. *c.* Deliberation, purpose, and resolve.—2. Reaction of the will upon cognition and feeling. *a.* Reaction of the will upon cognition. *b.* Reaction of the will upon feeling. *c.* Reaction of the will upon itself.—3. Relation of opposition between the will and the other elements of consciousness (concentration and expansion).—

PAGE

4. Consciousness of will. *a.* The consciousness of volition. *b.* The problem of reality in the province of the will.—5. The will and the unconscious mental life. *a.* The centre of consciousness not always the centre of individuality. *b.* Determinism and indeterminism.

C. The Individual Character 348

1. Typical individual differences.—2. Physical, social, and inherited elements.—3. Psychical individuality an empirical limit to cognition.—4. Psychology and the evolution hypothesis.

OUTLINES OF PSYCHOLOGY

I

SUBJECT AND METHOD OF PSYCHOLOGY

1. PSYCHOLOGY is the science of mind—that is the shortest description we can give of the subject of the present inquiries. But it is merely a provisional description, yielding no clear and distinct conception. It serves merely to mark psychology as the science of that which thinks, feels, and wills, in contrast with physics as the science of that which moves in space and occupies space. These two provinces include everything that can be the subject of human research. Psychology is as little bound to begin with an explanation of what mind is, as physics is obliged to begin with an explanation of what matter is. And this general statement of the subject of psychology involves no assumption as to the question how far the mind exists, or does not exist, as an independent being distinct from matter. It will be our endeavour to preserve psychology as a pure science of experience, and to distinguish sharply between the given facts and the hypotheses employed to classify and explain them.

But even in starting from the position that mental phenomena have certain characteristics which distinguish them from material, we presuppose a knowledge which was reached only at a certain stage of mental development, and of which we cannot even yet say that it is universal. It will set the subject of psychology in a

clearer light if we adduce certain features characteristic of the way in which the idea of the mental has been developed in the human race, and is still developed in each individual.

2. Mental, like bodily, vision is from the beginning directed outwards. The eye apprehends external objects, their colours and forms, and only by artificial, roundabout ways, sees itself and what is within itself. And even in respect of external objects, the eye is always naturally set for the vanishing point, the greatest distance of sight. While we are conscious of a certain effort when the eye has to accommodate itself to nearer objects, it is with a feeling of relief and ease that we direct the glance from nearer to more distant objects. In like manner external objects occupy our attention long before we think of the sensuous perception and conception through which alone external objects exist for us. Our immediate natural life we carry on in sensuous perception and in imagination, not in subjective reflection. This is connected with the fact that man acts before he theorizes. His weal and his woe are conditioned by his power of forgetting himself in the outer world. Observations of animal and human life, of the appearance of plants and fruits, of the course of the heavenly bodies, etc., are more important in the struggle for existence than observations of self. Only at a higher stage of culture can the command "know thyself" be pronounced, and with it the way be opened to direct psychological inquiry.

3. Because language was developed under the influence of attention directed to the external world, we find that expressions for mental phenomena were originally taken from the material world. The inner world of mind is denoted by symbols borrowed from the outer world of space. This observation had been made already by Locke and Leibniz, and the modern science of language has confirmed it. "All roots, *i.e.* all the material elements of language, are expressive of sensuous impressions, and of sensuous impressions only; and as all words, even the most abstract and sublime, are derived from roots, comparative philology fully endorses the conclusions arrived at by Locke." [1]

There are interesting examples in the words which denote spirit and mind in different languages, in the names for mental activities, and in the meaning of prepositions. "It may be fairly taken as

[1] Max Müller, *Lectures on the Science of Language* (2nd ed. 1885), ii., pp. 372, 373. Locke cites as examples: to imagine, apprehend, comprehend, spirit. Müller adds to these, among others: animus, from *anima*, air (*Athem*); *cf.* Sanscrit *an*, *blasen*, Greek *aẽnai*, and Sanscrit *anila*, Greek *anemos*, wind.

established that all real prepositions originally denote relations of space exclusively, not only because all the several significations that can be traced lead to this conclusion, but also . . . because these spatial relations were the only relations which could be pointed out, and were so distinctly apprehended that there could be a common understanding about words applied to them. The task of language—that is to say, the need and the endeavour of speaking man—was therefore to make clear, by means of analogy with and reference to spatial relations, the non-spatial relation in which ideas appeared."[1]

4. If, then, the first set of ideas into which man penetrates derives its elements from external nature, how is it that we ever come to distinguish between our own self and the things outside of us?

The beginning of conscious life is to be placed probably before birth. It is true that as yet the tender organism is divided off from the great outer world; some of the most important sensuous impressions (sight, hearing, and smell) are rendered possible only through birth; and those sensations which are possible (taste, and sensations of touch and movement) are no doubt only faintly and dimly distinguished from the general feeling of vegetative comfort and discomfort. Still the experiences undergone before birth perhaps suffice to form the foundation of the consciousness of an external world. The feeling of comfort or discomfort, together with the sensations of movement, may even at this stage offer a certain contrast to the sensations of resistance, contact, and taste. It follows as a matter of course that this first germ of a world-consciousness is dim and dreamlike, and that we, from our waking, fully conscious standpoint, are easily tempted to attribute too much to it. But these first stirrings must be taken into account, especially as they serve to indicate the difficulty of fixing on a definite point as the point of transition from unconscious to conscious existence. To Erasmus Darwin and Cabanis belongs the credit of having shown the significance of this first period of mental life.

The revolution effected by birth probably consists, not in a quickening, but in a great alteration of the relations of life, internal as well as external. Organic sensations (sensations of what passes within the organism) and the vital-feeling or general

[1] J. N. Madvig, *Sprogvidenskabelige Strøbemærkninger* ("Observations on the Science of Language"), Copenhagen, 1871 (*Universitätsprogramm*), p. 9. Leibniz has brought this out very prominently. *Nouveaux Essais*, iii. 1, 5 (Opera, ed. Erdmann, p. 298).

feeling of life (the pleasure or pain accompanying organic sensation) are changed by the fact that nourishment and breath no longer stream in immediately from the maternal organism, with which the fœtus shared a common life, but have to be taken in from without and appropriated by special organs (alimentary canal and lungs). In addition to the fact that internal functions thus acquire greater energy and independence, stronger pulsations of organic sensation are brought about by the same cause, for the previously continuous influx now becomes periodic and interrupted, so that the contrast between feelings of pleasure and pain becomes more intense. At the same time impressions from the greater outer world rush in upon the tender organism, which must be especially susceptible to impressions of cold. The cry of pain, with which the new-born infant begins life, finds its most probable explanation partly in the difficulty of breathing produced by the separation from the maternal organism, partly in sensations of cold.[1]

Although at first organic sensation continues to play the greatest part, yet such a variety of impressions gradually streams in upon the young consciousness that a more definite contrast between a subjective and an objective pole becomes possible. Just as feelings of pleasure and pain, organic sensation, and the sensation of movement appear in a more energetic form by reason of the greater contrast with the external world, so the influences received from that world are now more definite and stronger. The impressions of light and sound render possible a discrimination and an acquaintance with the surroundings, which far surpasses in delicacy that produced by mere sensations of touch and movement. The resistance offered by the hard-and-fast world to the movements of the child is much more powerful than that which its movements met with in the soft and fluid surroundings in the maternal organism. Finally, a set of memories and ideas is now formed, which is soon contrasted with sensations and percepts.

Light affects the new-born infant at an early stage, although in this as in other respects individual differences immediately assert themselves. The child seems to take pleasure in an excitation of light, and tries (even on the second day after birth) to turn towards it, in order to retain it. The power of fixing the gaze on definite objects is developed from the third week; the objects most readily retained are of course those which are near and catch the

[1] Adolf Kussmaul, *Untersuchungen über das Seelenleben des neugeborenen Menschen*, p. 27 *seq.*

eye. Clear, brightly coloured, and moving objects especially attract the attention. Memory also now plays a leading part. Instead of crying so long as it feels hungry, the child is pacified at the sight of preparations for the satisfaction of its wants (in the third week), and recognizes its mother (from the third month) as the source of this satisfaction, a step assisted by sensations of sound, for the child turns its head to the side whence sound comes.[1] Sensations of light, sound, and touch appear, indeed, as phenomena independent of the individual's feelings of pleasure and pain, and of his active movement, but do not directly come into conflict with them. The sensation of resistance and limitation first does this. Such sensations of checked and hampered movement, as already noted, are possible even in the fœtus state, but they now become more varied and powerful. The strong vegetative energy finds expression in movements of the limbs, and the child is thus led to experiment with things of the outer world. Active experiment is for the adult also the surest means of making acquaintance with his surroundings. The child does not wait for the outer world to come to him; from the beginning he himself grasps at the world by involuntary movements, and thus secures the best knowledge as to the limit between the world and himself. The not-self begins wherever movement meets with resistance, especially if the resistance causes pain. When memory-images become numerous and connected, a third important "moment" is reached, the contrast, namely, between the clearer and stronger impressions which arise immediately, unexpectedly, and often disconnectedly, and the weaker images which are at the disposal of consciousness under all circumstances,—the contrast, that is to say, between percepts and memories.

Now the question is, how much is included in the self? The limits of the self coincide for a time with the limits of the organism. All that takes part in movement and meets with resistance we reckon as part of self. The limitation can be learned only by experience. The child gradually discovers his own body. The hands are the first familiar part of his own organism; they are examined especially by means of the lips and the tongue, the child sometimes putting his finger in his mouth and sucking it even on the first day. Afterwards he learns to fix his gaze on the hands, and then a firm association of ideas is speedily formed between the muscular sensation accompanying their movement

[1] Kussmaul, pp. 26, 39. Vierordt, *Die Physiologie des Kindesalters*, pp. 154, 159.

and the appearance which this movement presents. Later, again, the feet are discovered; this can be done only when the child can sit up and see them, or when, lying on his back, he can stretch out his legs so as to look at and catch hold of them. The great interest which a child takes in his limbs and movements may be due to the wonderful circumstance that here is something which can be seen and grasped, and offers resistance, and yet shares in active movement. It is an object, which nevertheless pertains to the subject. The experience of the child is here the same as that of the dog running after its own tail. The fact that a child, even towards the end of his second year, will offer his foot a biscuit, shows that he still looks upon it as an independent being. Reciprocal contact of the limbs, and resistance of one to movements of others, gradually give precision to the idea of his own body as something related to, yet in a peculiar way different from, other objects. This idea becomes most clear when the child gives himself pain by treating parts of his organism as purely objective.

A further step is now possible; this, however, is taken only at a more advanced age, and not by everybody or in all times. The body, hitherto separated off from the not self, has nevertheless shown itself to possess essential characteristics in common with the not-self; it can be perceived by the senses, and can offer resistance. Thus it presents a contrast to the feelings of pleasure and pain, and to the inner stream of memories and ideas. *That through which* we feel pleasure and pain we may perhaps perceive by means of the senses, but not *the feeling itself. That which* we remember and represent to ourselves may be an object of outer perception, but not so the *remembrance* and the *idea* themselves. This contrast is so decisive that the idea of the body may be transferred to the objective pole, to the not-self, and then there remains to us only the idea of self as the subject of thought, feeling, and will. The contrast between the inner and the outer now becomes more acute, or rather, we retain the expression "inner" as a figurative designation of the mental province in contrast with the material as the "outer." Inner experience, then, relates to thoughts, ideas, and feelings, as mental conditions; outer experience, to what is capable of being seen, and can resist movement in space.

5. The psychology of primitive races teaches that the idea of the mental has passed through the same stages in the history of the human race as in the individual. The ordinary mythological theory

attributes to primitive man a tendency to conceive and explain all natural phenomena by everywhere introducing his own conscious life. "To explain" means simply to trace the unknown back to the known, and whence (so argues this theory) should man originally derive the elements for the explanation of natural phenomena, if not from himself? This much is certain, that the mythological conception of nature is distinguished from the scientific by its tendency to personify. But may not this tendency itself require explanation, and may it not be asked whether there are not necessary intermediate links through which the idea of personal powers is transferred to natural phenomena? The theory referred to seems to impute to primitive man a creative imagination which is possible only at a higher stage of development. And were the theory correct, it would necessarily be expected that language would denote material things by terms originally applied to mental things, whereas in reality it denotes mental things by terms originally material.

Modern investigations relating to the mental life of savage races have led, therefore, to a modification, if not to a complete rejection, of the theory of an originally personifying faculty. Tylor, Lubbock, and Spencer have proved that dream-images play an extraordinarily large part in moulding the primitive conception of the universe. In dreams a man sees himself and others, and having at first no reason for assuming a difference between dream-images and percepts, he believes the former to be as real as the percepts of waking life. Just as a child delivers greetings from people he has dreamt of, so the primitive man takes everything occurring in dreams for actual experience. He has therefore been in distant places, although it is evident his body has not moved from the spot; and others have visited him, although it is certain that they were far away or dead. Besides dream-images, reflections of himself and others confirm the notion of a form of existence other than that given with the presence of the body in a definite place. A savage who had been made to look into a mirror exclaimed, "I gaze into the world of spirits!" One of Darwin's children, at nine months old, turned to the looking-glass on hearing his name called. Such experiences lead to the notion of a double existence: as mind, man is a free, ethereal being; as body, he is tied down to definite and limited places in space. Now, this duality forms a firm point of support for the imagination. Striking phenomena—change, the emergence of things and their vanishing away, life and

death—find now their natural explanation, a like duality being assumed to exist in everything. The spirits of the dead especially serve as an important element of explanation ; with them dreams and imagination are chiefly occupied, and there is consequently a disposition to find their intervention everywhere. All nature is peopled from the world of dreams.

But it would certainly be going too far to suppose that we can dispense altogether with the assumption of a personifying tendency. It is one thing to find the mere appeal to such a tendency not enough ; quite another to dispense with it entirely. A man must at any rate recognize his own person in dreams, and ascribe to the images of other men shown in dreams a life of feeling and will corresponding to his own. If we wholly reject the personifying tendency, it is impossible to explain how man can assume at all the existence of other personal beings besides himself. The dream-theory marks an advance so far, that it makes the fact that man attributes his own mental life to his "double" easily intelligible ; in this case he immediately recognizes himself in other relations. But what takes place here differs only in degree from what always takes place when he recognizes a mental life in other beings, who execute movements such as he would himself make in certain moods. His instinct of self-preservation leads him, at an early stage, to attach a meaning to the movements of other beings—to interpret certain looks and attitudes as signs of certain feelings. Such interpretation takes place instinctively and involuntarily, and —to judge from the ease with which a little child learns to distinguish friendly from threatening countenances—is perhaps based upon an innate faculty. Logically formulated, it would be called an inference by analogy. To what lengths the analogy is carried depends on the standpoint. At the mythological standpoint, man is very ready to ascribe to things outside of himself a mental life like his own. The boundary between the self and the not-self also, is indefinite as with children. Only advancing experience can draw more precise lines of demarkation.

The mind is at this stage conceived as an ethereal being, in contrast to the body as a coarser and heavier being. This duality has to pass through many phases before it is developed into the contrast between an immaterial and a material being. The physical characteristics of the conception of mind are only slowly and by degrees worn off. In the mental development of the Greeks such a refining process occurred in the period between

Homer and Plato. For Homer, the mind is only a fainter copy, a reflection of the body; a man's real self, according to his childlike mode of conception, is destroyed with the body, and he thus makes the *souls* of his heroes descend into the underworld while they *themselves* are a prey for dogs and birds! (*Iliad*, I. 3, 4.) Plato, on the contrary, makes Socrates, on Crito asking "how he would be buried," address his friends as follows: "I cannot persuade this Crito that I am the Socrates who is conversing with you and presiding over the argument. He thinks that I am the body which he will soon see a corpse, and he asks how he shall bury me." (*Phædo*, tr. by F. J. Church, p. 186.) Here is expressed a purely spiritual conception of the mind, its essence being represented as activity of thought. This pure conception—which the ancient philosophers did not work out—was again obscured in the Middle Ages, when faith bore a distinctly materialistic impress; *e.g.* it represented souls as burning in purgatory. In modern times, Descartes, who found the essence of the mind in consciousness, stands in the same relation to the conception of the Middle Ages as that in which Plato stood to Homer. Were we to explain, by the way of psychological analysis, this transition from the standpoint of Homer to that of Plato, we should come back to a process similar to that described above as taking place within the individual consciousness (p. 5 *seq.*).

6. That we directly know mental life only in ourselves, and discover it outside of us by way of analogy, we may finally convince ourselves by taking a physiological standpoint. While organic processes and movements were explained through a special vital force or through the unconscious activity of the mind, mental life could of course be extended to all organic phenomena. But even then there remained the question of the relation between the "soul" in the wider sense, as vital force, and the soul in the narrower sense, as consciousness. Descartes was the first to lay down with precision the purely psychological criterion of mental life, in opposition to the older Aristotelian conception, which applied the word "soul" even to the principle of nutrition. He preferred to avoid the word "soul" (*anima*) on account of its ambiguity, and substituted the word "consciousness" (*mens*) when he wished to denote the subject of psychology. The realm of souls was thus greatly narrowed. Descartes himself found only in man occasion for the assumption of a consciousness; animals he regarded as mere machines. This

was a paradox, but indicates a reform in the conception of nature. Instead of appealing to forces that work mysteriously, we can now, since "soul" has been severed from the material world, introduce a purely mechanical explanation of nature.

Modern physiology interprets the phenomena of organic life by means of physical and chemical laws. It is in this way that all the explanations which it has as yet succeeded in giving, have been reached. Physiology has for this reason been called organic physics.[1] While acknowledging the mysterious in the origin and development of life, it knows no way in which the problem can be solved except the reduction of organic phenomena to physical and chemical processes. An appeal to the "vital force," or to the intervention of the mind, it does not recognize as a scientific explanation of an organic phenomenon; it sees in that only a confession of our ignorance regarding the nature of the phenomenon.

Physiology does not of course deny the existence of mental life, in the sense of a conscious life. It inquires in each individual case whether the material movements which we see before us justify us in assuming that consciousness is associated with them. The answer depends partly on whether the movements are so purposive that we must suppose them carried out with deliberation, partly on whether they are such as we ourselves make on experiencing pleasure or pain. In both respects we often interpret too freely. Purposive movements may be executed quite unconsciously by means either of an innate mechanism or of a mechanism produced by practice. They are then mere "reflex movements"—that is to say, movements springing from the fact that an excitation brought to a central organ by an afferent nerve is immediately sent back by the central organ ("reflected") through an efferent nerve. Among such involuntary and unconscious movements must be placed those which a frog, after it has been deprived of its head, executes in order to get rid of a corrosive acid or of some restraint, although from the purposive character of these movements some have assumed the existence of a "spinal mind" in the headless animal. Even in so-called "instinctive actions" it is often difficult to determine the extent to which there is conscious deliberation. As regards the feeling of pleasure or pain, physiology, holding that a parallel may be shown between

[1] Panum, *Indledning til Physiologien* ("Introduction to Physiology"), Copenhagen, 1883, p. 7.

the degree of the development of consciousness and that of the nervous system, maintains with regard to animals of lower organization (*Radiata, Mollusca, Articulata*) "that by no kind of injury do they feel such pain or torture as man can feel, and such as deserves the pity of man"; that the pain which fish and reptiles are capable of feeling is extremely small, about as much "as that produced in men by the sting of a flea or a gnat"; further, that even the pain of birds may not be compared to that of man under similar injuries.[1] To conclude terrible sufferings from the convulsions and the death-rattle of the dying is often a mistake. When death comes slowly, the pain is over before the death-struggle begins, and the convulsions are often only reflex movements, which take place after the circulation of the blood is checked and the activity of the brain has ceased.[2] On the other hand, to an ignorant bystander death by poisoning from curare appears quite painless, for there no convulsion or death-rattle takes place. But this poison attacks first only the organs connecting the motor nerves and the muscles, and thus prevents any indication of feeling during the interval that elapses before the poison has arrested all the functions of life. Thus there may be the most frightful death-anguish without external token of it. Claude Bernard[3] makes use of this very example to emphasize the fact that we know with complete certainty the capacity for feeling (sensibility) only from our own consciousness, and that we are easily led astray when we try to determine whether such a capacity exists in other beings or not.

If we wish, then, to gain a knowledge of conscious life, we must study it, above all, where it is directly accessible to us—namely, in our own consciousness. This immediate experience is also the only source whence the physiologist can determine the significance for mental life of the various organs of the brain. It is the secure starting-point for all our knowledge of the mental world.

7. But now how much is contained in this starting-point? The subject-matter of psychology is not something that can be presented to the imagination or to sensuous perception. It is not something that we can directly find outside ourselves, but something which we transfer, consciously or unconsciously, whenever occasion offers, from ourselves to others. More than that which

[1] Panum, *Indledning* ("Introduction"), p. 56.
[2] E. Hornemann, *Om Menneskets Pilstand kort før Döden* ("On the Condition of Man just before Death"), Copenhagen, 1874, p. 18.
[3] Claude Bernard, "Le Curare," *La Science expérimentale*, Paris, 1878.

inner observation of our own consciousness teaches us we are not therefore justified in using as a basis. Here, however, there is something the reality of which cannot be disputed. No one can deny that there are sensations and ideas, feelings and decisions; and in saying that psychology is the science of mind, we mean by mind, to begin with, nothing more than the sum of all these inner experiences. In this sense the existence of the mind is not open to doubt, but, on the contrary, is a necessary assumption. There is, however, another sense in which the question as to the position of science with regard to the existence of the mind may be raised. Not content with the simple starting-point of psychological experience, spiritualism has thought it necessary to base psychology on the idea of the mind as an independent, self-existent, individual being (a substance). This is an idea which points back historically to the mythological duality, as this was refined and moulded by considerations partly ethical, partly theoretical. On the one side, an influence was exerted by the sense of the high value of mental life—the feeling that everything that interests us dwells in this inner world of thoughts and feelings, and that the outer world of matter has value for us only as an object of thought and feeling. This inner world was therefore exalted far above the material world, and sharply distinguished from it. On the other side, the spiritualistic conception is grounded in an analysis of the characteristics of mental states. It is peculiar to consciousness, to bring together things dispersed in time and space. Differences of time are annulled in memory, differences of space in comparative and combining thought. There is here a thoroughgoing unity, an inner connection, without a parallel. Is not this sufficient justification for ascribing to the mind an existence in and for itself, and for conceiving it as an immaterial substance?

But however great the justification may be, we cannot at any rate acknowledge it at the beginning of psychology. Here it is above all things important to build upon nothing but immediate perception. And this supposition does not even help us to a better understanding of mental experiences. From the character of certain experiences the existence of a mental substance is deduced, but about this substance only so much is known as is contained in these experiences; so far as more knowledge is sought, the validity of the deduction ceases. Experience does, indeed, teach that the special characteristic of consciousness, in contrast with material phenomena, is the inner unity of the variety of all

conscious-content, a unity which does not exist in the world of space; but it does not teach that this unity is absolute, unconditioned and independent. Taking substance in its strict sense, as that which has self-existence, and neither results from nor depends upon anything else, we have no experiential right to apply the term to mind. This is clearly recognized by Hermann Lotze, in modern times the most able advocate of spiritualistic physiology. In attributing substantiality to the mind, he means only to describe the mind as an independent element in the world, as a centre of action and endurance, without asserting anything as to its absolute nature. Hence also he declares that, from the existence of the mind as substance in this sense, no further conclusions of a semi-religious, semi-philosophical nature—such as those held by the earlier spiritualists—can be drawn; it opens no way to a knowledge of the fate of the mind, of its prospects in the future, or of its origin. He even agrees with Spinoza in thinking that, if the notion of substance is to be taken in its strictest sense, there can be only one substance; for only an infinite being, which has nothing beyond to condition it, can be "self-subsisting." A finite being is always limited by something else and dependent; and unless the extent of this dependence can be determined *a priori*, the definition of the mind as "substance" is not only misleading, but also useless and unfruitful.

What Lotze has especially in view in describing the mind as substance in the sense of an independent centre and point of departure, is its relation to materiality. According to his view, the chief characteristics of the mental nature should clearly show that this, in and for itself, is something different from materiality, and that a relation of interaction between mind and body must be assumed, however the relation may be conceived in detail. Here again, however, more is assumed than experience at first justifies. From immediate experience of our inner states absolutely nothing can be gathered as to their relation to other sides of being. Psychological experience gives only the internal mental phenomena themselves—not the manner in which they are connected with other phenomena. This is a special question, which psychology cannot in a one-sided way and directly determine. Other series of experiences besides the psychological must be brought to the solution of this problem; and it is of great importance that, as regards each individual series, no unjustified ideas shall be introduced—ideas which might prejudice the decision in one direction or another. We cannot

determine at the beginning whether two different principles or substances are at the root of the mental and of the material. We see before us two provinces of experience, each with its special characteristics, and study these in order afterwards—but always under the guidance of experience—to try to determine their mutual relation.

This is also to the interest, as rightly understood, of metaphysical speculation itself. The human spirit will never let itself be debarred from brooding over the ultimate principles of that universal system of which it is a member. It will always seek to build its view of the universe on certain highest definitive ideas. But what it must learn, and should have already learnt, is this—that speculation may not mix itself up with the every-day affairs of experiential knowledge, may not anticipate the solution of purely experiential problems. It is not meant that speculation should wait until experience is exhausted; for that it never will be. But the really wise metaphysician is he who lets his ideas move in the direction already indicated by the leading features of experiential knowledge. He thus expresses only the thoughts which, more or less unconsciously, lie at the basis of experientially determined research, and carries them to their legitimate conclusions. He seeks an ultimate, definitive hypothesis, but the foundation is common to him and to the empiricist. Metaphysics therefore presupposes psychology as well as the other experiential sciences, and Lotze's conception of psychology as applied metaphysics will prove more and more untenable.

Psychology as here conceived is so far a "psychology without mind" that it makes no assertion about the absolute nature of mental life, or even about the question whether such an absolute nature exists. Just as little as physics pronounces upon transcendental questions (questions beyond the limits of experiential knowledge) in the province of outer nature, does psychology pronounce upon them in the province of inner nature. This does not mean that psychology may not make an essential contribution to the general conception of the universe. Nothing, on the contrary, can be of greater importance for such a conception than a knowledge of mental phenomena, of their mutual relations, and of the laws of their development. And precisely a conception of these phenomena, framed in accordance with experience, will be able to clear the points of view and to correct many prejudices.

In maintaining the empirical character of psychology as contrasted

with metaphysical speculation, we exclude from psychology materialism as well as spiritualism. We have referred especially to the spiritualistic psychology, because it is of greatest interest, and has the most acute supporters. But it is obvious that materialism makes the same encroachments as spiritualism. Materialism also infers the existence of a substance, which is supposed to lie hidden behind the phenomena of consciousness, but finds this substance in matter, not in a spiritual principle. Spiritualism takes its stand on the difference between mental life and material phenomena, and thence infers a special mental substance, which in itself has nothing to do with matter. Materialism, on the other hand, argues from the connection of mental life with material, that the mind must be a material being. "It is enough for us to know," says Holbach (*Système de la Nature*, i. p. 118), "that the mind is moved and modified by material causes acting upon it. We are justified in concluding from this that it must be material." Broussais defined the mind as "un cerveau agissant, et rien de plus" (a brain in action, and nothing more). Both in what it maintains and in what it denies, materialism, equally with spiritualism, goes beyond the standpoint of experiential psychology. That in the course of the investigations proper to psychology a point may be reached whence judgment can be pronounced on these hypotheses, is quite another matter.

Psychology in and for itself, then, is not a part of philosophy, if by philosophy is meant metaphysics, a search after a general view of the universe; like the experiential science of external nature, it is a preparation for philosophy, a part of the foundation on which philosophy, in the sense of metaphysical speculation, should build, one of the witnesses it should call in. Nor is psychology philosophy, if by philosophy we mean a critical science of the nature and limits of knowledge: while psychology has purely the character of natural history, observes mental phenomena in their development and in their mutual relations, the theory of knowledge (sometimes called logic) tries by critical analysis to bring out the general principles of cognition. The theory of knowledge also, therefore, presupposes psychology.

On the other hand, philosophical thought also becomes one of the objects of psychology. As a form of mental activity, philosophy lies within the sphere of psychological observation. And in many ways philosophical research has played into the hands of psychological research; consciously or unconsciously, philosophical

speculation always works with psychological elements, and in philosophical systems are deposited many profound psychological observations and ideas.

It is the merit of the English school to have shown that psychology is independent of metaphysical speculation. Descartes had, it is true, taken the decisive step of clearing the notion of mind from mythological ambiguities, by laying stress on consciousness as the mark of mental phenomena. He did not, however, hold fast to the experiential standpoint, but in reality laid the foundation of metaphysical spiritualistic psychology by representing the mind as "thinking substance" (*substantia cogitans*), instead of keeping to the phenomena of consciousness as the secure empirical basis. Kant's epoch-making philosophical reform became important for psychology through his critique of metaphysical ("rational") psychology, a critique the weight of which has been shaken only momentarily by romantic attempts to restore the old views.

8. We have tried to exhibit psychological inquiry as distinct in aim from the study of external nature and from metaphysical speculation. The immediate observation of self and immediate consciousness are the source from which both physiologist and metaphysician draw, but by them the source is frequently overlooked because their real interest is not this immediate observation, but that which they think they can deduce from it. Now, supposing that it is necessary to draw from this source, the question arises, whether independence in respect of subject-matter involves also independence in respect of method. This necessitates a closer inquiry into the nature and limitation of subjective observation.[1]

(*a*) The first difficulty presented springs from the fact that mental states are not abiding and steady objects like those which form the subject-matter of physical observation. As space is the special form of material phenomena, so time is the form of mental phenomena. What passes within us, in our thoughts and feelings, is unstable and changing. The botanist, when he spreads out a plant in front of him, or the chemist, when he conveys a substance into his retort, can observe at leisure the appearance of the objects under certain quite definite conditions. But a state of consciousness cannot be isolated in this manner, it has no limits in

[1] For method of psychology may be compared J. S. Mill, *System of Logic*, book vi., chap. iv.; Bain, *Logic*, ii., pp. 275–292; Ad. Horwicz, "Methodologie der Seelenlehre" (*Zeitschrift für Philosophie und philos. Kritik*, 60 Band, 1872); Delbœuf, *La Psychologie comme Science naturelle*, Paris, 1876; Wilh. Wundt, *Logik*, ii., pp. 482–501; J. Sully, *Illusions*, chap. viii. [For standpoint, *cf. Ency. Brit.* 9th. ed. art. "Psychology" (Tr.)]

space; every moment brings in, or may bring in, new elements. In the moment when I wish to observe a state of consciousness, that state is already past, or has blended with other elements. Now it is certain that in one and the same instant several distinct series of ideas may pass through our consciousness; the self is not a unity in the sense that it excludes different or even conflicting currents. And it might be supposed that while the main current persists—as, *e.g.*, in the contemplation and admiration of a work of art—an under-current might at the same time flow, which would stand in the relation of observer to the first. In this way we might admire, and at the same time study the psychology of admiration. And certainly every one knows from personal experience states of this kind, in which, though something quite other than self seems to claim the whole attention, yet an inner spectator keeps up a running commentary. States of this kind cannot be entirely avoided by men in whom reflection has once been roused; and such a dual current may be of importance, particularly in an ethical connection, when it is a question of judging and gradually suppressing a pernicious current of mental life. Criticism as an under-current then makes itself heard, as an opposing motive, which seeks to overcome that previously dominant. But although such dual currents may be fruitful in psychological observation also, yet psychology must in its own interest give a caution against them. The capital of energy at the disposal of the mental life is in such states necessarily divided, and each individual current weakened. If a mood is to be thoroughly experienced, the under-current must be suppressed, and no heed paid to inner suggestions, lest they should withdraw a portion of the available energy. It must be added that the observing under-current is not indifferent, but always more or less diverts the main current. Conscious attention of necessity influences the state to which it is directed, and may in consequence partly destroy or change its own object. It substitutes art for nature.

But what cannot be done at the moment of experience may be done later. During experience, we should only draw the net with all its contents to land, or, to use the simile of the botanist, collect the plants casually met with. What has been fully and clearly experienced will remain in the memory, and by means of the memory can be examined. The rhythmical alternation of self-forgetfulness and self-consciousness makes psychological self-examination possible, and psychological talent depends on the ease and

elasticity with which it is possible to pass from one of these states to the other—in such a way as to keep clear and distinct in the moments of remembrance and reflection what has been immediately experienced, but not on the other hand to allow the immediate feelings to be disturbed by reflection. And yet the two states do not remain wholly unaffected by one another. Unconsciously—and therefore without detriment—the exercise of memory and reflection will cause a stronger light or a greater emphasis to fall on those elements in the immediate experience which are of especial psychological interest. We can make ourselves mental botanists, carefully preserving what is of interest for our psychological observation and our psychological understanding, while quickly passing over what has no such significance.

(*b*) But now, even if we succeed in overcoming this difficulty, a new one arises—namely, that on account of the individual differences in observers, there is no guarantee that they really see one and the same thing. Here they have not the object outside of themselves and among themselves, but each has it in himself!

This applies, however, more or less to physical observation also. Observation is a subjective activity; that which every one observes exists for him precisely as he observes it, and only by comparison can he infer that others observe the same thing (compare, *e.g.*, the perception of colours). To show a thing to some one else it is necessary to make him see it for himself, to rouse his own observing activity. What individual diversities constantly assert themselves here, may be seen, for example, in the fact that, when two astronomical observers calculate the time occupied in the movement of a star, there is always a difference, varying according to the observing individuals, and depending on the varying rapidity with which an impression is received and noted. On this account observations are usually begun by determining the "personal equation" in relation to other observers. From this it has been found that these individual differences are not constant, but subject to oscillations from day to day as well as in the course of years. A mutual check of this kind—though naturally in a much more imperfect form—is the only means of raising psychological observations above what is merely individual, or rather, of distinguishing between what is merely individual and what is of more general validity. Discrimination between what is typical and what is not typical must begin even within what is individual; if the individual wants to apprehend his own inner nature, he must disregard many ob-

servations, because they are isolated, and owe their origin only to single transitory situations. A purifying process of this kind every one involuntarily undertakes, and daily intercourse with other individuals leads, equally involuntarily, to a distinction between what in personal observations is general and universal, and what is merely individual. Psychological inquiry only continues, in both respects, what has been begun without conscious intention. But in its critical examination it must look for a support beyond the purely subjective method, the limitation of which already becomes evident. Even in the thorough checking of individual experiences, the purely subjective starting-point is deserted. Meanwhile, before we enter more closely into the objective psychological method, it is necessary to dwell upon the manner in which subjective observations are elaborated.

(*c*) Scattered observations form a chaos, which has to be set in order. The first piece of work is a classification, by means of which definite groups, or kinds, of mental phenomena are formed. The individual states are arranged in different classes according to their most striking characteristics. Such a classification is not, however, so easily made as was for a long time supposed. As classification, in the provinces of zoology and botany, led to the notion of eternal and unchangeable species—so that it now costs a hard struggle to furnish proof that these species are the fruits of a natural course of evolution—so psychological research for a long time thought its end had been attained when it reduced the various inner phenomena to various "faculties" of the mind—a procedure which conflicted strangely with the strictly spiritualistic conception of the unity of the mind. At the same time these "faculties" were regarded as causes of the phenomena concerned, and thus the need for a causal explanation was satisfied in a very convenient, though quite illusory, manner. In particular it was overlooked that in classification attention is given only to a prominent characteristic; that it is not therefore actual concrete *states* themselves which are classified, but the *elements* out of which a closer examination shows them to be formed. There is scarcely a single conscious state—as will be shown later in detail—which is only idea, only feeling, or only will. The psychological divisions may thus be very useful for preliminary instruction; but, if they are to have scientific value, they must be based on a thoroughgoing analysis, which searches out the individual elements and the laws of their connection and interaction. This analysis, which endeavours

to go back to the constituent parts through combination of which our mental states have arisen, may often lead to a conflict with that which "the evidence of consciousness" seems immediately to include. Observation gives us only matters of fact, and teaches us nothing about the manner in which these facts have arisen. Direct consciousness in itself does not include any psychological theory, any more than it informs us whether it is the sun or the earth which moves. Our thoughts and feelings are in the highest degree complex mental products, fruits of a long, calm, and for the most part unobserved growth. The mere observation and description of them, therefore, are of value as a basis only.

The mental states follow one another, and call one another up. Now, can we lay down laws and rules for this interaction, and is it possible to show which are the elements in the different states of consciousness that lead from the one to the other? These are the questions with which psychological analysis is occupied. It thus proceeds in two directions, which are closely connected; it looks for common features, for that which reappears in the individual cases, and in this way lays down general empirical laws (*e.g.* for the association of ideas, the relation between idea and feeling, etc.); and, taking the individual states, it tries to discover the elements out of which each is compounded. A thought, a feeling, a resolve, is not an absolute unity; closer investigation shows it to be the fruit of a long course of development, during which it has received contributions from many sides. Love, conscience, and—to take a purely intellectual example—the idea of an external object, seem quite complete and self-contained, and yet it appears that they have their history, and that they depend on interaction between simpler mental elements, brought to light by psychological investigation. Analysis proceeds here from the complex to the simple, while in the former case it proceeded from individual instances to the general rule. The one form may be called *generalizing*, the other *elementary*, analysis. But it will be seen that the laws of succession and the mode of combination are closely connected, since the most general laws must be those which hold for the most elementary activities, for those mental functions which reappear in all mental phenomena.

It will never be known with complete certainty whether the explanation is exhaustive, whether we really have before us elements which admit of no further reduction. This in itself is a thing which holds good, not for psychology alone but for all our know-

ledge; the ultimate fact to which we attain with regard to every single point is ultimate only for *us*. We cannot even tell whether advancing development will not lead us further, so that the limits of human knowledge may not yet have been reached. The point at which the individual student and the individual age stop may be passed by later times with richer experience and clearer principles. A noteworthy instance of a decisive change of the fundamental psychological conception is the predominant importance attributed, ever since Rousseau, to feeling as contrasted with the other sides of mental life; the elements of feeling having been ranged for a long time previously partly under the psychology of the idea, partly under that of the will. Irrespective of clearness of observation and of analysis, the possibility that the mental life of man undergoes slow changes cannot be excluded.

(*d*) Purely subjective observation is soon seen to be much too imperfect a means of psychological analysis. The individual constituents of states of consciousness can be clearly distinguished only when it is possible to proceed by way of experiment. Experiment differs from observation in this, that it does not wait for the appearance of certain phenomena, but tries to produce them under certain definite conditions which can be easily kept in view. This not only makes it easier to isolate individual elements of a phenomenon, but also, by enabling us to see how a phenomenon varies under different circumstances, opens a way to the discovery of its cause. It follows from the nature of things that it is chiefly the very simplest phenomena of consciousness which can be made the object of experimental inquiry. The emergence and mutual interaction of sensations, the simplest cases of association of ideas, and the time which these and similar elementary phenomena of consciousness occupy, have of late years been thus experimentally investigated. Midway between psychology and physiology a new science—psycho-physics or experimental psychology—is coming into existence.

In the departments in which experimental psychology is applied, not only can the *qualitative* analysis (the inquiry as to the constituents to which a phenomenon of consciousness owes its origin) be more precise and sure, but the prospect of a *quantitative* analysis appears to be opened, so that it may be determined in accordance with what scale certain phenomena of consciousness increase or decrease, and how great a time they take to arise. Psychology approaches by these investigations to the exact sciences, from which

the non-spatial character of its subject-matter appears so widely to separate it.

The phenomena of consciousness do not arrange themselves, like external phenomena, in the form of space. One feeling does not lie to the right or the left of another, nor one thought above or below another. Different currents may move, as already noted simultaneously in our consciousness; but we cannot, as with simultaneous external phenomena, determine their mutual relation by means of mathematical construction. There is wanting to us here a form of intuition, which—like space, the common form in which material phenomena are presented—might serve as the basis of such a construction. In the psychological province, therefore, we have nothing that fully corresponds to the general laws of movement, which comprise the most general principles of all exact explanation of nature in physics.

The phenomena of consciousness have, however, one property which affords an opening for the application of mathematics. This is their relative strength and distinctness, or, in other words, the degree in which they lay claim to the attention. Herbart had already found in this property a starting-point for his attempt to found a mathematical psychology. Afterwards Fechner tried to find a scale for the degree of strength of sensations (and of mental phenomena in general) by inquiring how they vary in relation to the increase and decrease of the physical stimulus. On his own experiments and those of others he based the rule that the increase of a sensation depends on the relation between the increase of the stimulus and the previously existing stimulus. To this we shall return in dealing with sensation (VA). In order to measure the mutual relation of sensations we require a unit, and Fechner proposed as such a sensation of so small a degree of strength that it can only just be noticed, or, as Fechner (with a phrase borrowed from Herbart) expresses it, that it just rises above the threshold of consciousness.

Fechner is certainly justified in holding that this degree of sensation is constant, when the attention is constant. But he himself allows that it is different in each of the different departments or modalities of sense (sight, hearing, etc.). It appears also to vary for the different species (qualities) of sensation within the same department (since the power of perceiving a difference in illumination is different with red and with blue light), as also for the different parts of the same sense-organ (the central

and peripheral parts of the retina). Even if Fechner's view can be maintained in face of the criticism raised against it, it yet affords no general unit applicable to the whole of conscious life, not even one which is valid for all the most elementary phenomena of consciousness. It does not open up the road to a general psychical arithmetic. We cannot expect that we shall ever be able to establish formulæ for the calculation of the activity of conscience or of the poetic imagination. But the investigations of experimental psychology do not on that account lose their importance. The results attained are not merely of interest for the apprehension and understanding of the phenomena to which they directly relate; but, in consequence of the inner connection between the simpler and the more complex phenomena of consciousness, experimental psychology, even if it should always be limited to certain elementary departments, will be able—through the light thrown on these elementary departments—to give valuable hints for the investigation of the higher life of consciousness.

(*e*) The strictly psychological standpoint is confined to the phenomena of conscious life. We have emphasized this so strongly in order to avoid ambiguity and misunderstanding. We know directly just so much of the mental life as we know of the phenomena of consciousness. But consciousness is not a closed world; new phenomena are always emerging which, from that strictly psychological standpoint, we cannot deduce from anything earlier. Every new sensation seems to come into being out of nothing. We may be able to trace its changes and effects in consciousness, but can give no answer to the question how it comes there.

In addition to this, there are other reasons why we seek for means of supplying the defects of the strictly psychological standpoint. A comparison of our own observations with those of others is necessary, as already shown, that the one-sidedness due to individual peculiarities may be avoided, and, further, that we may make sure how far all the elements co-operating in the given psychological phenomenon have been really taken into account. Finally, for concrete psychological knowledge it is not enough to know the general laws of the connection of the phenomena of consciousness; in practice there appears such a diversity, such a jumble of possibilities, that we cannot deduce from the general psychological law the direction which the conscious life will take.

For every single individual and in every single situation the result depends on the natural temperament, on the conditions of life, and on the special experiences.

The strictly psychological standpoint must, therefore, be supplemented by physiological and historical (sociological) inquiries, or, as we may say (employing an expression introduced by Herbert Spencer), *subjective* psychology must be supplemented by *objective*. With reference to what has been brought out previously, it must be borne in mind that in the last resort objective psychology always rests on an inference by analogy, subjective psychology alone sees the phenomena themselves face to face. What we as objective psychologists think we discover of mental life outside our own consciousness, we reproduce in ourselves by means of a sympathy closely connected with analogy. But these analogies may afford indispensable correctives for our subjective observation.

Objective psychology comprises physiological and sociological psychology. The former is based on the close connection of mental life with organic life in general. Every explanation that physiology is able to give of the functions of organic life, may be of service, from any side whatsoever, to psychological knowledge. What has now to be especially emphasized is the way in which conscious mental life melts gradually into unconscious organic life. Physiology examines just those unconscious functions which precede the mental activities and form their constant basis. At the boundary line between the conscious and the unconscious, where subjective observation casts but faint light, physiology is able by its physical method to establish definite relations. At all points there is a close interaction between the conscious and the unconscious; it is not only the infant that awakes to consciousness out of the night of unconsciousness; sleep is every day a relative renewal of this night; in instinct, in impulse, and in habit we have forms in which the unconscious takes the conscious into its service, and the conscious life in its turn reacts on the unconscious by generating new habits and impulses. The physiological study of these elementary mental phenomena throws light also on the more highly developed mental life. Discussion will therefore turn on the question how far and with what alterations the teaching of the physiology of the nerves and of the senses about elementary mental life may be applied to the higher mental life; in connection with which question it must never be forgotten that even the physiological experimenter and observer, in his exposition of the

elementary manifestations of mind, argues back to elementary consciousness from that which is fully developed. The true physiologist is not, in his study of the nerves and senses, interested in the states of consciousness as such, but in the physical processes with which they are associated. To the physiologist psychological experiences are only symptoms from which he infers physiological facts. He starts from the assumption that for every psychological experience there is a corresponding physiological process, which it is important to find out, and to explain in accordance with the general principles of natural science. For the present it is the more elementary phenomena of consciousness which best admit of this explanation, but a principle is in this way established which physiological psychology is fully justified in employing as the basis of the investigation of the higher mental phenomena also.

When we consider that mental life, as we know it, develops only under definite physical and chemical conditions and through a series of stages, the lower and higher of which shed a light reciprocally on one another, it is clear that psychology must be regarded—in spite of the independence reserved to it at starting—as a branch of general biology. Biology must put forward a conception of life applicable to all its stages, from the organic process of nutrition in its simplest forms to the most ideal process of feeling or thought. The biology of our time seems to be making an approach to an all-embracing biological conception of this kind, in regarding life in all its forms as an accommodation of the internal to the external. Conscious life marks the highest point of the evolution of life, shows us the highest forms under which living beings carry on the great struggle with the relations of the universe, and in this struggle unfold their nature. To treat psychology purely subjectively would be to overlook the great truth that everything which stirs in the mind is conditioned by the mind's place in the great system of nature.

Besides the physiology of the nerves and the physiology of the senses, the science of mental diseases is also an important aid to psychological insight, both by what it teaches about the connection between mental and bodily disturbances, and by its investigations into the forms and the course of development of the diseased mental life. In the latter respect it serves as a transition from physiological to sociological psychology, which deals with mental life as it reveals itself in movement and action, in literature and art. The material of sociological or comparative psychology is animal life,

child life, savage races, the whole history of man, poetry, and biographies. Sociological psychology may thus be divided into many branches of study (child psychology, animal psychology, the psychology of races, of language, of literature, etc.), all of which lead into the great historical system, within which the individual consciousness develops, just as physiological psychology leads over to the physical system, in virtue of which the mental life shares in the life of the universe. The thoughts and feelings of the individual man at any given time are conditioned not merely by his inherited natural organization, but also by the atmosphere of historically evolved civilization in which he grows up. The physical and historical systems stand in close connection. The study of the influence of heredity forms (as from another side the study of mental diseases) a connecting link between physiological and sociological psychology, especially if we extend our view to the great horizon opened for us by the hypothesis of evolution. Through this hypothesis, organic nature, even the whole system of nature with its laws, acquires an historical character, as conversely we look at organic forces and laws in their influence on the historical development of human nature and of the relations of human life.

(*f*) We need only glance hastily at all these different sources to know that psychology cannot be a sharply defined science. It may be pursued by many methods and in many ways; here we have wished to bring out distinctly only the principle of the relation between the various ways. Thus there is not one psychology; there are many psychologies. But in consequence of the principle of the position occupied by subjective psychology, there will always—in spite of the growing importance of objective psychological study—be a natural and legitimate endeavour to utilize subjective psychology as a basis, and to collect around it as the centre the contributions made from other sources. In fact psychology has followed this method ever since Aristotle laid the foundation of experiential psychology. Only for a time did psychology, guided by a mistaken spiritualistic interest, endeavour to make its cause distinct from that of physiology and the other objective sciences, with the result the re-establishment of the connection came to be regarded as a new discovery. Subjective psychology has had to wait for objective; when it had arrived at a thoroughly clear idea as to its principle, it soon attained a certain completeness in its broad features, before physiological and sociological study was sufficiently

developed to be able to work seriously into the hands of psychology. In this respect it may be said that in our time a turning-point has been reached.

Anyone who studies psychology out of philosophical interest will have a special reason for bearing in mind throughout the principle of the relation between the different sources of psychological knowledge, that the contribution which psychology is capable of yielding to our general conception of the universe may not be distorted. Here, as everywhere, it is important so to spread out for observation the content of experience, that what is actually given may be sharply distinguished from what is hypothetical, while, on the other hand, the common and constant features, the general laws, may come clearly and distinctly into view; for on these, not on the gaps which always remain in human knowledge, every progressive philosophical inquiry should be based.

9. Psychology stands, then, at a point where natural science and mental science intersect, where the one passes over into the other. In its principle is the central point round which the currents circle from either side, since all knowledge—being based upon human nature and organization—becomes directly or indirectly knowledge of mankind.

Psychology forms the basis on which the ideal mental sciences, logic and ethics, build. What is true and good can be determined only from the human standpoint, and cannot be understood without acquaintance with actual human nature. Logic and ethics set up ideals of human endeavour in thought and action. But if these ideals are to have any value in actuality, they must be rooted in it, and must therefore be based on a knowledge of the deepest and most general elements and powers of human nature. *Logic*, as the science of method, studies the special methods of investigation, and tries to trace them back to fundamental methods immediately arising from the nature of human consciousness; as the philosophical science of knowledge, it tries to lay down the general principles, and the consequent limits, of human knowledge; but without psychological insight into the development of the life of ideas, such an attempt can have no good result. *Ethics* tries to lay down general principles for the estimation of human volition and action, and to find out the direction in which, according to these principles, human life should be developed; but, in attempting this, it must always proceed from human nature as actually given, and from its possibilities as given by psychological

laws. Among these possibilities ethics, after weighing them, makes its choice.

On the other hand, to confound logical and ethical ideals with psychological reality leads to the distortion of psychology. Psychology is concerned only with what *is*, not with what *should be*. Of course, that state of consciousness in which it becomes apparent to us that there is something we ought to do comes also within the province of psychology; like every other state of consciousness, it is here investigated. But psychology makes no valuation; it inquires only into the actual connection, and into the manner and the laws of its development, and leaves it to ethics to pronounce a judgment on the different states. Psychology regards mental phenomena as natural phenomena, and examines all of them with the same calmness and impartiality. The fact that psychology is independent of ethics was energetically maintained by Spinoza;[1] but it is not yet, by a long way, sufficiently recognized. There is still a disposition to regard certain forms of mental life as exempted by their sublimity and worth from explanation and analysis. But precisely those psychological phenomena which are of the greatest ethical value are not simple and uncompounded, since they are the crowning point of a long and rich process of development. From their value, therefore, it follows that they are the very opposite of an exception to general psychological conditions. It is in all cases a mistaken notion that to esteem a thing of value and to explain it causally are necessarily incompatible and opposed. Of course theoretical inquiry may expose illusions; in each individual case it calls for a fresh testing of the justice of the valuation; but, in itself, it may very well be compatible with the determination of worth. It is only a *blasé* person, or one under the influence of mythological superstition, who supposes that a phenomenon loses its value because it is understood. Meanwhile it must be admitted that the harmony between valuation and causal explanation is as yet only coming into existence; but psychology teaches that it must grow by a necessity of nature, since knowledge and feeling cannot permanently move in opposite directions.

[1] See my work, *Spinoza's Liv og Lære* ("Spinoza's Life and Teaching"), Copenhagen, 1877, p. 120 *seq.*

II

MIND AND BODY

1. IN the foregoing investigation it has been established that knowledge of the mental and knowledge of the material are derived from two distinct sources. The question which now arises is concerned with the relation between these two different provinces of experience. This question does not lead, as here presented, to any metaphysical inquiries. We employ the word mind only in the sense of consciousness, as a collective term for all our inner experiences (sensations, thoughts, feelings, and resolutions), and ask what guidance experience affords as to the connection of these experiences with those whose content is what moves in space. Our standpoint is thus, to begin with, purely *empirical* or *phenomenal*, not metaphysical or ontological. According to the view given in the preceding chapter, the work of metaphysics begins only when experience has been thoroughly explored, and its tendencies and possibilities have been discussed.

Here, as everywhere, the popular mode of apprehension is distinguished from the scientific in being a compound of experience and metaphysics. Popular apprehension often fastens, with instinctive assurance, on certain prominent experiences; but it explains and circumscribes these experiences under the unconscious influence partly of traditional, partly of undisciplined metaphysical ideas. Scientific apprehension, on the other hand, endeavours first of all to become acquainted with the sources of its assumptions, and to distinguish sharply between experience and explanation. Consequently there arise for it difficulties and problems which the popular mode of apprehension does not feel.

So long as the phenomena of consciousness and the material phenomena, each set with its special characters and internal connection, are neither of them clearly conceived, the problem of the relation between mind and body does not, properly speaking, exist at all. If by mind is understood vaguely a moving principle, an inner force of things, then there is no occasion to see any kind of difficulty; for such principles and forces can be postulated with equal right in any province whatsoever. It is only when the notion of mind is definitely limited to conscious life and its facts, and when material phenomena, on the other hand, are conceived as a self-contained world with its own principles and laws, that the difficulty of a connection between the two provinces makes itself felt. Thus the problem does not come from a dogmatic and absolute distinction of two substances or essences; we do not know at the outset whether the difference is one of essence or not; we know only that there is a difference, and ask what is involved in this phenomenal difference, given in experience, and what follows from it. In order to answer this question, we shall place side by side the main features characteristic of the two provinces of experience.

2. The first great feature of material phenomena is the fact that they appear in the form of space; that directly or indirectly they may always be traced back to a movement in space. This distinguishes them from states of consciousness, which can be represented as spatial only symbolically. This characteristic does not in itself contain anything by which the material is sharply defined and closed off as a world in itself. For we might conceive these spatial movements as brought about by something non-spatial. The material world would in that case lie open to influences from without.

But scientific research makes such a possibility always more inadmissible. It now applies in all departments the principle that every material movement must be explained by another material movement.

The very first principle on which exact natural science is based is, that the state of a material point (rest or movement in a straight line) can be altered only through the influence of another material point. Physics marks off its special province by this principle (the law of inertia), having found that it can attain to a scientific knowledge of nature only by employing this law as basis. If there were in a material point a capricious force, which might at

any moment move it in this or in that direction, or leave it at rest or set it in motion indifferently, natural science would be impossible.

This principle cannot, from its nature, admit of rigid proof. It is the fundamental assumption with which natural science comes into existence; wherefore it was laid down by Galileo, the founder of physics. It cannot be deduced, as has been sometimes attempted, from the universal principle of causality. For a material phenomenon, a material movement, so far as its nature is concerned, might very well have a cause, without this being necessarily a material cause: the universal principle of causality may be satisfied in many different ways. But it is a matter of fact that physical science as hitherto developed has been made possible only through the closer determination and limitation which the law of inertia gives to the principle of causality in the province of material nature. Nor can the law of inertia be fully established by experience; it does not, as some have supposed, express a "fact." It can only be proved that *the more* a body is preserved from external influence, *the more* it remains in the state (rest or movement in a straight line) in which it already is. The first proposition of dynamics can therefore be only approximately established in experience. Its chief importance is that it sets the problem—to trace material phenomena back to other material phenomena as their cause.

The like holds true of a more special principle, which gives its character to modern natural science, the principle, namely, of the conservation of matter and energy. Modern chemistry is based on the assumption, confirmed by numerous experiments, that, in all changes of matter, the sum of material particles (atoms) remains the same. When bodies acquire new properties, this is to be explained by the changed combination and disposition of the parts. By the emergence and disappearance of a material object is meant the composition or separation of atoms which existed previously, but in other combinations. Chemistry, in explaining in this way all changes of matter by the different movements of atoms, applies in its particular department the principle that material phenomena must be explained by other material phenomena. And as matter is assumed to persist through all changes, so the sum of the energy (*i.e.* capacity for work, for overcoming resistance) manifested in material nature, is assumed to remain the same. If energy appears to come into existence or to be lost,

this is an appearance only. Some examples will throw light on the meaning of this principle.

Through chemical combination heat may arise. But the precise amount of heat which arises through the combination disappears when the combination is broken up. Now, whence does this heat come, and whither does it go? It arises as the equivalent of that elastic force which held the parts asunder before their combination, and it recovers its equivalent through the tension with which, after separation, the parts are kept away from one another. The force with which a stone falls to the ground depends on the height from which it falls; but the height depends in its turn on the force with which the stone has been raised. When the stone is stopped by the earth, force seems to be lost, for the stone certainly cannot set the earth in motion; but in this case again the loss of force means only its translation into another form—into heat. This is what happens, too, when a movement is not altogether stopped, but only checked by friction. The force which a body loses through friction is not really lost, but turned into heat. When water dashes against a mill-wheel, heat is produced. Conversely heat can produce mechanical movement, as when the steam expanded by heat drives the piston, which in its turn sets in motion the wheel of the locomotive. And it has been proved by repeated and uniformly successful experiments, that the amount of force or energy[1] lost under the one form obtains its exact equivalent under the other form, so that the same amount of the same kind of energy can be restored.

However much the different forms of energy taken individually may change, their sum therefore remains the same. But by energy in that case we must understand not merely actual performance of work (living force, actual energy), but also possible performance of work (tension, potential energy), the work stored up, which under certain conditions can be set free and applied. When Sisyphus succeeds in rolling his stone up the mountain, he really accomplishes something: his work is not lost, for the stone represents a greater amount of energy at the top of the mountain than when lying at the foot. In both cases it is at rest; but the potential energy is greater in the former case than in the latter, as becomes evident so soon as the stone is put in motion. The misfortune of

[1] On account of the ambiguity of the term force, that of energy is usually employed, nothing more being meant by it than the capacity to perform work or to overcome resistance.

Sisyphus consists only in his not being able to direct the greater potential energy to something useful to himself or to other men; he is always obliged to begin again from the beginning. It is therefore the sum of the actual and potential energy which—so far as we can regard the universe as a self-contained whole—remains always the same.

The doctrine of the conservation of matter and of energy may be formulated either as a law, as a hypothesis, or as a principle. It has been experimentally demonstrated in respect of so many kinds of matter and force, that it may justly be styled a law of nature. The question is whether it holds for all kinds of matter and force, and from this point of view—as a universal law of nature—it has only hypothetical validity. It can never be more than approximately established by experience, since the whole content of nature will probably never be known to us. To which must be added, that we do not know any absolutely isolated and self-contained totalities; and only for such totalities can the doctrine hold good in its strictest sense, since beings or systems related to other beings or systems give off energy to these or receive energy from them. All that we can show is, that *the more* a material system can be shut off and isolated, *the more* will its matter and energy continue to persist. As regards the extent to which this doctrine admits of experimental proof, it resembles the law of inertia. Like the latter, it has the great importance of being a methodical principle, which impels us to seek equivalents for every portion of matter or of energy that seems to come into existence or to disappear.

3. One class of beings, however, not only popular apprehension, but for a long time science also, was disposed to regard as exceptions to this general doctrine. Organisms, with their special forms of development, their power of self-preservation in face of an external world, seem to be little worlds capable of drawing life from sources within themselves. For a long time any explanation of the phenomena of organic life by means of the general forces of nature was regarded as materialism. As, however, on the other hand, it was clear that the conscious mind is not the direct cause of organic processes, which so often take a direction quite contrary to the will of the individual, a so-called vital force was interpolated between the conscious mind and the body, to explain those phenomena. This conception, the doctrine of so-called Vitalism, could not of course fail to note that living beings stand in a rela-

tion of constant and complicated interaction with the external world, are every instant being influenced and giving off influences, and that the course of their development and dissolution is conditioned throughout by this relation. The "vital force" had therefore to go through a similar process. But what led Vitalism astray was the special manner in which the organism responds to all external influences. That a ball rolls when we push it, seems to us quite natural; but that plants turn to the light, that nutriment is converted into flesh and blood, or that the fingers contract when the palm of the hand is lightly touched, appears to us very extraordinary, for in these cases the response appears to stand in no relation to what has called it forth. Vitalism here makes the mistake of regarding the organism as an absolute unity, while it is in reality an extraordinarily complex whole. An influence, when received, is transmitted from part to part in this whole, and thus gradually undergoes a complete change of aspect. It is converted partly into other forms of energy, partly into potential energy or tension, and finally serves partly to set free potential energy in the organism. Research, in endeavouring to trace these changes step by step, begins to understand them, and to see that the ultimate result may be something totally different from what was taken into the organism in the first instance. It perceives that the organism, by means of the store of potential energy collected in its tissues and circulating in its humours—which form as it were an external world within the organism (a *milieu intérieur*, to use Claude Bernard's pertinent expression)—must confront the external world with an independence quite other than that of the inorganic forms of existence. Organic response to the appeal of the outward world (irritability) must be the richer and more special in character, the more stored-up energy there is to be set free. The doctrine of the "vital force" is really only a mythological way of expressing the amazement which the unique character of organic phenomena excited. Modern physiology has been led to a higher point of view by analysis of the individual factors in the vital process. The idea of the one indivisible vital force came in this way to give place to the conception of an exceedingly complicated interaction, in which individual manifestations of force may be traced back to general forces of nature, and individual material particles to general elementary matter. This is the principle with which physiology now works, and to which therefore we also must adhere in the present inquiries, even though no one may maintain that it is, or

perhaps ever can be, carried out everywhere. The important point is, that to it are due all the advances physiology has made. However many difficulties remain, especially in the province of morphology, no explanation which contradicts this principle will for the future be accepted. In any case the burden of proof rests on those who appeal to the intervention of immaterial causes.[1]

For everything that arises or disappears in the organism, physical or chemical equivalents must be looked for, either within the organism or outside it. Organic life is thus drawn into the great system of nature. Under the influence of light the conversion of inorganic matter into more complex organic matter takes place, more particularly in the green cells of plants.[2] The organic matter thus collected is used up in the functions of the plant and the animal. Metabolism depends on the conservation of energy, and on metabolism in its turn depends the activity of organic beings. The form and the manner in which the accumulated potential energy is applied depends on the structure of the organism. There is a fund of energy in every organic cell, but the use made of this fund depends on the structure of the organs.

Thus the principle of the conservation of energy presses its claims ever more closely. Vegetative life, the functions of alimentation, might perhaps be yielded to it with a good grace. But even the nervous and muscular systems cannot escape subordination to it. The energy consumed in all nervous and muscular activity is stored up during the process of alimentation. The nervous and muscular systems themselves are only highly perfected (differentiated) apparatus for the exercise of functions which are carried on in an extraordinarily simple form even in uniform, structureless protoplasm. Even here an excitation at one point of the organism can be transmitted through the mass, and can set up movement at quite different points or in the whole. The increasing division of labour makes distinct systems necessary in the higher organisms, but this more elaborate formation (differentiation) is not exempted

[1] *Cf.* Panum, *Indledning til Physiologien* ("Introduction to Physiology"), 2nd ed. (Copenhagen, 1883); Charles Robin, *Anatomie et Physiologie Cellulaires* (Paris, 1873), Introduction; Claude Bernard, *Leçons sur les Phénomènes de la Vie* (Paris, 1878), (note especially the following definite statement: "Quelque soit le sujet qu'il étudie, le physiologiste ne trouve jamais devant lui que les agents mécaniques, physiques, ou chimiques," p. 52); Exner, *Physiologie der Grosshirnrinde* ("Physiology of the Cerebral Cortex"), 1879; Hermann's *Handbuch der Physiologie*, ii., 2), pp. 189-191.

[2] The power of forming organic combinations out of inorganic elements is not wholly wanting in the animal organism, although it is in the plant organism that its most favourable conditions are found. *Cf.* Pflüger, "Ueber die physiologische Verbrennung" ("On Physiological Combustion"), *Archiv für Physiologie*, xi. p. 345.

from the general elementary laws.[1] These still hold good, only in extraordinarily complex and often impenetrable relations. Chemically and physically, the action both of nerves and muscles is different during and after function from what it is before function. The blood that circulates in muscles when in action, contains several per cent. less oxygen and more carbonic acid than the blood in quiescent muscles. The nervous tissue – the fibres as well as the central organs—cannot function without an ample supply of blood, which contains the material necessary to the increased change of matter that results from function. The brain is affected by every change in the circulation of the blood ; both anæmia and hyperæmia cause a disturbance in its activity. Brain-work uses up the organic capital just as much as the activity of any other organ.

What really takes place in the nervous system during its activity has not yet been made clear. This only is clear, that it can be nothing material that is transmitted from one end to the other (such as the so-called "animal spirits," formerly believed in). Probably the nervous process consists in a change passing through the nerve fibres, a release of tension, caused by external excitation (the irritant), and transmitted from part to part, so that one nerve-element serves as irritant in relation to another. The tensions thus set free seem to be of a chemical nature ; but there are various difficulties in the way of a purely chemical theory of the nerves.[2]

4. (*a*) The plant uses up its energies wholly in the life of nutrition. It absorbs and secretes matter, grows and propagates. It finds what is required for this in its immediate proximity, and must so find it in order to live. Air, water, light, &c., must bathe the surfaces of the plant, if it is to keep alive.

The plant is like a fœtus, it remains in the maternal bosom of nature, and has not made its way out to independent, individual life. The fœtus obtains its sustenance directly from the maternal

[1] "The nerves are to be regarded in the first instance merely as those points in the tissue through which the effect of the excitation is most easily transmitted, without its being necessary for us to suppose that there are from the beginning more mysterious forces in them than in the other parts."—Lotze, *Allgemeine Physiologie des Körperlichen Lebens* (Leipzig, 1850), p. 386. It has been thought a proof of this, that the effect of narcotics on the nervous tissue differs from their effect on other organic tissue in degree and rapidity only. *Cf.* Laycock, "Further Researches Into the Functions of the Brain" (*The British and Foreign Medico-Chirurgical Review*, July 1855), p. 185 ; Claude Bernard, *Leçons sur les Phénomènes de la Vie*, p. 289; Herbert Spencer, *Principles of Psychology*, i. p. 631 *seq.*

[2] *Cf.* L. Hermann, *Allgemeine Nervenphysiologie*, 1879 (Hermann's *Handbuch der Physiologie*, ii., 1), pp. 186-193 ; Panum, *Nerveväevets, de kontraktile Väevs og Nervesystemets Fysiologie* ("Physiology of the Nerve-Tissue, of the Contractile Tissue, and of the Nervous System") (Copenhagen, 1883), p. 56.

organism. Animal life proper is conditioned by not having everything thus prepared for it. The animal must search, work, and fight in order to satisfy its wants; it must therefore face the external world as a whole, must be able to gather together its energy, and to apply it in definite directions. At the same time it must be able to take into account relations and facts which do not directly affect it at the moment. These requisites are supplied by the nervous system; through it the various parts and departments of the organism are brought into close mutual relation, so that the organism becomes a whole in a stricter sense than can be said of the plant; and the nervous system makes it possible for the relations of the external world to determine the movements of the organism, not only directly but also indirectly.

It is true that it has not yet been possible to establish the existence of nerves in the lowest animal organisms, while on the other hand many plants execute functions similar to those which in the higher animals are executed by means of the nervous system; still, speaking broadly, the plant and the animal may be described as two types of life, the one of which stands only in direct, the other both in direct and indirect, inter-relation with its surroundings. The higher we come in the scale of animal life, the greater is the part played by the nervous system, because the inter-relation with the external world extends in ever wider circles, and thus grows less and less direct and momentary.

(*b*) The simplest form of nervous activity is the so-called reflex movement, where an excitation is carried along an afferent (centripetal) nerve-fibre to an internal centre (a ganglion), and there in its turn frees an impulse which, through an efferent (centrifugal) nerve-fibre, sets in motion a muscle or some other organ (*e.g.* a gland). Here we have the simple schema, which seems to be repeated at all stages in the development of the nervous system, only in extraordinarily numerous co-ordinate and subordinate strata. As a rule, the ganglion not only sends outward-going fibres to the organs in which movement is to be excited, but inward or upward-going fibres also pass from it to higher centres, which in this way receive impulses from several sides—impulses which may in part strengthen, in part inhibit, one another. The ganglion itself exercises an inhibitory influence on the impulse, for, as can be shown by experiment, the course of a nervous process is much slower in the brain and spinal cord than in the peripheral nerves. This inhibition seems to make it possible that the impulse,

before being transmitted further, may be changed by the influence of other impulses. And to this central elaboration of peripheral excitations is due the fact that the movement which they set free is determined, not merely by local and momentary influences, but also to a certain extent by influences from the whole organism. The central nervous organs are therefore modifying and combining organs.

We have a very simple example of this relation in the suckers of the cuttle-fish. Each sucker on the arm of this animal has its own special ganglion, and so can be made to contract and suck when an object is brought into contact with it alone. This may happen even if the arm is separated from the rest of the animal. There is here a nervous function in its simplest form—transmission of the excitation to a simple central organ, and in this organ the setting free of an impulse towards contraction. But now the ganglia of all the suckers are connected both with each other and with the highest centres of the animal (the caruncle), so that, in taking hold of an object with the whole arm, the animal may set all the suckers in action at once. The single elementary nerve-function then takes its place as member of a whole system of functions.

This relation between subordinate and principal centres can be established also in the case of higher animals, though the closer connection and interdependence of the organs make it more difficult to survey the relations, the higher we ascend in the scale of development. The independence of the subordinate centres is greater in cold-blooded animals (as for example the frog, which on this very account is the frequent subject of physiological experiments) than in warm-blooded, and among the latter it is greater in birds and rabbits than in the ape, and much greater than in man. The complete removal of both cerebral hemispheres can be survived only by animals in which the cerebrum has not attained any great degree of development. The higher forms of mammalia, on the contrary, perish quickly when deprived of the entire mass of the cerebral hemispheres.

(*c*) *The vegetative organs* are connected by afferent and efferent fibres with the spinal cord and brain, and are regulated from these centres. Nevertheless, there appear to be special nerve-centres, of a certain degree of independence, either within, or belonging to, some of these vegetative organs. If the heart of a frog is cut out, it continues to beat for several hours, thus proving its relative independence of higher centres. Experi-

ments (on dogs and rabbits) have shown that the pulse beats faster when, through section of the nervus vagus, the heart is freed from its connection with the medulla oblongata. In moments of violent terror the heart of the rabbit stands still, then beats faster than before: after section of the nervus vagus, no influence upon the beat of the heart is perceived. The same holds good of the intestines. The peristaltic movements may continue, after the connection with higher centres is broken.[1]

The *spinal cord* is an important seat of reflex movements. In a headless frog reflex movements in all directions can be set up by a sufficiently strong stimulus on any part of the skin. What is remarkable in these movements is their co-ordination and purposiveness. So far as it has been possible, by section of the spinal cord and application of the stimulus below the division, to produce reflex movements in mammalia, these have seemed to be to a certain extent co-ordinated, but not so purposive as in the case of frogs. The spinal cord seems in the higher animals to act more and more exclusively as the connecting link between the brain and the peripheral parts of the organism.[2]

In the *medulla oblongata* are localized a number of centres of importance to the continuance of life. These centres can act independently of the higher parts of the brain, and can reflexly set in motion very complicated mechanisms. This is so, for instance, with the respiratory centres, the centre for regulating the nervous system of the heart, for the secretion of saliva, for deglutition, and for the excretion of urine.[3]

A frog deprived of the cerebrum, but still retaining the mesencephalon (the brain-ganglia situated in front of the medulla oblongata), proves itself still in control of the motor apparatus required for independent movements; but it appears to move only when stirred up by a definite sensory excitation. It lacks the power of taking the initiative. It has this superiority over the mere spinal frog, that it can be moved by slighter excitations, and is consequently not so passive. While the spinal frog is of course not susceptible to light, and sinks when thrown into the water, the mesencephalon frog avoids a very dark shadow, and when it is thrown into the water, the stimulus given by the movements of the particles of water

[1] M. Foster, *Text-book of Physiology* (London, 1877), p. 81; Eckhard, *Physiol. des Rückenmarks* (Hermann, ii., 2), p. 71; Exner, *Physiol. der Grosshirnrinde* (Hermann, ii., 2), p. 289.

[2] M. Foster, p. 420. [*Cf.* Ferrier, *Functions of the Brain* (2nd ed. 1886), ch. ii. (Tr.)]

[3] [*Cf.* Ferrier, ch. iii. (Tr.)]

causes it to swim. But some outer impulse is always required to set it in motion. Similar features are found in birds and mammalia, when these survive the removal of the cerebral hemispheres. They cannot take the initiative, or help themselves in cases of any difficulty, but, on the other hand, single elementary excitations call forth movements, some of which are very complex. The physiological significance of the *cerebellum* is not yet certain. It is thought by some to help in the co-ordination and combination of movements.[1]

(*d*) The special work reserved to the most important part of the brain—the *cerebrum*—can be no other than this: to elaborate and combine the elementary excitations received in the medulla oblongata and in the brain-ganglia, and to employ, in accordance with the result of this elaboration, the apparatus lying ready in these lower parts of the brain. The cerebrum forms the keystone to the ingenious structure of the nervous system. The nearer it is approached, the more complicated become the relations, the more numerous the nerve-cells and connective fibres. Here are laid down lines which render possible the most complex interaction between different impulses. When we reflect that every excitation works through release of tension in organic cells, and that the result of this release in the individual cell may be connected in the cerebrum with results similarly obtained from millions of other cells,[2] we grow giddy at the thought of the combinations which are here possible.

The question whether the cerebrum functions as a whole, or whether the several functions are localized each in its special tract, has received conflicting answers, and is even yet a subject of dispute among physiologists. Gall, the founder of phrenology, maintained a very far-reaching localization of all the higher and lower mental powers, but brought the idea of localization into disrepute by his uncritical method and his fantastic cranioscopy. The reaction against his doctrine is represented by Flourens, who argued from his experiments that any part whatsoever of the cerebral hemispheres may be injured or removed without detriment to the brain-functions.

This theory prevailed for about half a century, during which

[1] [Ferrier, chs. iv. vi. (Tr.)]

[2] Meynert and Bain independently calculated the number of nerve-cells in the cortex of the human cerebrum to be a thousand millions (Meynert, *Zur Mechanik des Gehirnbaues* (Vienna, 1874), p. 7).—"A portion of grey 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" (Beale, quoted by Maudsley, *Physiology of the Mind*, p. 117).

time it was placed in doubt only by Broca's discovery (1861) that the seat of the most important central organs of speech and discourse is in the third frontal convolution of the left hemisphere. A new period of brain physiology began with the experiments undertaken by Fritsch and Hitzig (1870). These investigators thought it possible to prove that stimulation of definite points on the surface of the cerebrum sets up definite movements of definite parts of the body. Later, Hermann Munk in particular has tried to prove the existence in the cerebrum of distinct organs for the apprehension and recognition of the elementary sensuous impressions (a sphere of sight, a sphere of hearing, &c.). There would thus be grounds for again believing in a localization, a division of labour in the cerebrum, but with this great difference, that only the elementary activities of the mind would be localized, not thought proper or "intelligence."[1] But even with this limitation, the new theory of localization is not undisputed.[2] Goltz enters a protest against it, taking up an intermediate position between Flourens's doctrine and the new theory. He does not deny the possibility of a localization of the various cerebral functions, and he disputes the justice of Flourens's assertion that any part of the cerebrum can act vicariously for any other. The removal of large parts of both hemispheres gives rise to permanent weakness. But the weakening of definite sensory and motor functions, which accompanies the removal of certain parts of the surface of the cerebrum, Goltz explains partly as phenomena of inhibition due to the operation. If the injury is not too extensive, the animal recovers, a fact of which the localization theory gives only the forced explanation that new special centres are formed in brain-tracts where no such centres previously existed.[3]

While it is still disputed how far a localization of the special sensory functions exists in the cerebrum, the disputants agree that the higher mental manifestations are not tied to definite cerebral tracts. Both Goltz and Munk unite with Flourens in thinking that the most important cerebral functions, the actions from which we conclude intelligence, feeling, passion, and natural impulse, cannot depend on definite sections of the cerebrum.[4]

[1] Intelligence has its seat everywhere in the cerebrum, and nowhere in particular; for it is the abstraction and the resultant of all ideas springing out of sensuous perceptions."—H. Munk, *Ueber die Funktionen der Grosshirnrinde* (Berlin, 1881), p. 73.

[2] [The reference to Soltman, given in the German ed., is here omitted at Dr. Höffding's request, later experiments having led to contrary results. (Tr.)]

[3] Goltz, in *Pflüger's Archiv für Physiologie*, vols. xx. to xxvi.

[4] Goltz, in *Pflüger's Archiv*, xxvi. p. 35. [A full discussion of the question of localization will be found in Ferrier, ch. vii. *seq.* (Tr.)]

(*e*) One or two examples will serve to indicate the physiological relation of the cerebrum to the remaining nerve-organs. The study of disturbances of speech seems to lead to the conclusion that, in the parts of the brain which lie below the surface of the cerebrum, only the arrangements for the mechanical execution and combination of sound-producing movements are to be found ; while the formation of syllables and words, belonging to speech proper, takes place in the surface of the brain. The primitive sounds of the little child may perhaps have in the medulla oblongata alone the conditions of the mechanism which controls them, while the fully formed sounds of a language, which are joined in syllables and words, and are conditioned by the development of intelligence, involve the action of higher centres.[1] The movements set up from the mesencephalon, medulla oblongata, and spinal cord have the character of involuntary movement. On the other hand, actions which are directed by the will, inasmuch as they involve more or less distinct ideas of movements, can be executed only with the co-operation of the cerebrum.[2] While, as above noted, elementary sense-excitations exercise their influence even upon animals which have been deprived of the cerebrum, the proper grasp and comprehension of the excitation is possible only where the cerebrum is uninjured. After extensive injury to both the cerebral lobes at the back of the head, a dog no longer grasps the significance of what he sees and hears. He does not turn when threatened with the whip, does not notice his food unless it is set in the usual place, is not startled by noise, does not obey when called, remains unaffected by tobacco smoke, and will eat a dead dog without any sign of disgust. On the other hand, a dog in this condition goes round obstacles lying in his way, and avoids dazzling light. Goltz and Munk give much the same account of the animal's condition, but disagree as to the explanation. According to Munk, this "soul blindness," as he calls it, is connected with the injury to a certain definite portion of the surface of the brain. According to Goltz, any extensive injury to the cerebrum produces a similar condition. Munk explains it psychologically through the loss of the memory-presentations, by which new excitations may be recognized and understood, while Goltz explains it through a general intellectual dullness, especially perhaps want of attention. Both explanations bring out

[1] Ad. Kussmaul, *Die Störungen der Sprache* (Leipzig, 1877).
[2] Munk, p. 51 *seq.* ; *cf.* Goltz, in *Pflüger's Archiv*, xxvi. p. 6.

the importance of the cerebrum in relation to the subordinate centres.[1]

But the cerebrum stands not only in a positive, but also in a negative, relation to the subordinate nerve-organs, inasmuch as it is able to inhibit their activity. The vegetative functions are for this reason carried on more vigorously during sleep, when the cerebrum does not interfere so strongly as in the waking state. Even in the lower animals, where its position is by no means so prominent as in the higher, this inhibiting influence is noticeable. When the headless frog recovers after the operation, its mobility becomes even greater than before. The subordinate centres respond to excitations more readily than the higher. This is a simple consequence of the fact that in the higher centres excitations have to go through a long process—must be confronted, so to speak, with so many other claimants, that the individual excitation cannot get its own way so easily and absolutely as in the less complex organs.

The increased vigour of the subordinate nervous processes after the removal of higher centres is explained by some as due to the fact that the quantity of nervous activity which an afferent nerve arouses in the lower centre is now spread over a smaller sphere, and must consequently produce speedier and stronger effects. But all the phenomena cannot be thus accounted for. Strong cerebral activity, as in sudden and powerful stimulations of sense, in agitation of feeling, in the exercise of thought, seems to influence subordinate centres immediately, preventing direct excitations from taking effect as they would otherwise.[2]

Through such inhibiting activity that which passes in the higher centres becomes of importance to the lower. We know, to take a simple instance, how sneezing may be prevented by a sudden sense-excitation. A violent emotion or pain inhibits the action of the heart (under the influence of the brain through the medulla oblongata and the nervus vagus) and so causes fainting. Great dread may prevent secretion of saliva, a circumstance which lay at the bqttom of the "ordeal of God," in which the accused person was held to be guilty if he could hold rice in his mouth without wetting it. Weeping can be prevented by a sudden, gripping stimulus; peristaltic motions, by an affection of the nervus splanchnicus. It is not only by single sense-stimuli that inhibiting

[1] Goltz, in *Pflüger's Archiv*, xxvi. p. 42 *seq*; Munk, p. 29.
[2] Eckhard, *Physiol. des Rückenmarks* (Hermann, ii. 2), p. 37.

forces are liberated in this way: more complicated brain functions exercise a similar influence; and in a later chapter we shall see that an important part of the supremacy of the will is connected with this. All that need be noted at present is, that the phenomena of inhibition are the stronger the fuller the organism is of life, and weaker when the organism is in a state of fatigue. In this respect the condition of the central organ is of decisive influence; if it is tired, badly nourished, or affected by cold or strychnine and certain other poisons, the reflex movement increases in speed, strength, and extent. With "nervous" persons, whose unhealthy state is connected with disturbances of nutrition in muscles and nerves, there is found a strong propensity to reflex movements and spasms.[1] So far as there is any occasion to talk of reflex movements (in the sense of immediate motor responses) within the brain itself, the brain is a complete little world, possessing in its myriads of cells and fibres the means for internal strengthening or inhibition, for internal debate, and for the struggle for supremacy among all the impulses that can arise in it.

5. From the purely physical point of view, which is also the physiological, everything that takes place in the nervous system, even in its highest centres, is a conversion of forces, since an excitation from the external world, or from within the organism itself, sets free the tension accumulated in the nervous tissue. The physiological way of expressing it is to say that the excitation (the irritant) calls forth a reaction, which consists either in a movement of the muscles or a secretion of the glands, or in a more comprehensive process in the centres of the nervous system. But it is evident that in the case of some of the phenomena included in these points of view, a third point of view must be established—namely, the psychological, for with the physico-physiological processes are linked certain states of consciousness. Then comes the question of the relation between these different points of view. Is the one subordinated to the rest in such a way that, as the physiological point of view is included in the physical—if the word physical be taken in the widest sense—so the psychological should be included in the physiological as one of its special forms? Is that which is presented to us from the one point of view perhaps the cause or the effect of that which is presented to us from the others?

Something is still wanting for the clearing up of this question.

[1] Wundt, *Physiol. Psychologie*, i. pp. 260-263 (3rd ed. i. pp. 273 *seq.*); Panum, *Nervevävets Fysiologi* ("The Physiology of the Nervous Tissue"), p. 196 *seq.*

For, while we have given a sketch of what in physiology is of importance for our problem, we have not yet given any detailed account of the characteristics of the conscious phenomena. The psychological point of view, therefore, has not yet been clearly presented. It is the special object of all the following investigations to give an account of the mental life, and it will of course be impossible to give it now. But since I have chosen to treat of the general problem of the relation between mind and body before dealing with the more special psychological questions, which in many ways presuppose a definite conception of that problem, nothing remains but to present here a preliminary description of the psychological phenomena, reserving to the following chapters the more complete proofs of its validity.

Consciousness in general is in the same position as particular forms or elements of consciousness (colours and sounds, *e.g.*); a description or definition of them is impossible, because they are fundamental facts, and cannot be traced back to anything simpler and clearer. But this does not exclude the bringing out of their most important characteristics. Attention may be directed namely to those marginal cases, in which consciousness is just gliding over into unconscious states; and we may observe and investigate the transitions from weaker and more obscure to stronger and clearer consciousness, through which the higher states of consciousness are conditioned.

A completely uniform and unchanged condition has a tendency to arrest consciousness. Uniform impressions (such as the rippling of a fountain) have a somniferous effect. The more change and variety are kept at a distance, the more consciousness gives place to unconscious states. Staring at one special point produces a sort of border state. Thomas Hobbes, the founder of English psychology, maintained that to have always the same feeling and to have none at all were one and the same thing.[1]

By uniform treatment, as, for instance, by being stroked up and down regularly with the hands, or by being made to fix attention on a single point, a person can be put in a *hypnotic* or somnambulant condition. James Braid, the discoverer of hypnotism, gives as the condition of its appearance, "monoideism,"[2]—that is, absorption in one idea.

[1] *De Corpore*, xxv. 5; *cf.* Leibniz, *Monadologie*, § 24.

[2] *Cf.* Preyer, *Die Entdeckung des Hypnotismus* (Berlin, 1881), p. 41 *seq.*, 81; Richet "Le Somnambulisme provoqué" (in the treatise *L'Homme et l'Intelligence* (Paris, 1884. [Sully, *Illusions*, pp. 185, 187. (Tr.)]

Concentration of attention on a single thought has the same effect as absorption in one sense-affection. The mystic tries to lose himself in the Deity, to him an absolute unity, and to become one with the Deity; therefore he strives to avoid all change of ideas, and the more he succeeds in doing so, the more nearly he approaches to ecstasy—a condition which is described as being raised above all consciousness. To attain to this end the mystics often made use also of hypnotism.

By changes, consciousness is aroused from sleep or from a state of abstraction. If awake, consciousness is quickened and enhanced by contrasts and changes. We feel cold more intensely on coming out of a warm room; light appears of extreme brilliancy when we come out of deep darkness; we are thoroughly conscious of quiet and repose only after the noisy town or hard work.

But change and contrast are not in themselves enough. They give a sudden shock, a surprise; but unless the effect they produce were preserved, it would be only like a quickly vanishing ray of light. It is possible to imagine a living being constituted so as from time to time to have quite isolated sensations. Such separate rays would not correspond to sensations as we have them; in us the single elements of consciousness are not isolated, but are from beginning to end in closer or looser connection. Such a connection is necessary, to enable even the single impressions, each for itself, to take effect. Then the earlier conditions must admit of *retention* or *reproduction*, to make a connection and an interaction among the different elements of consciousness possible. This is corroborated by the fact that want of connection and interaction among the elements of consciousness is a sign of approaching dissolution. As mental disease advances, fixed ideas are formed, rendering free natural stir and conflict among ideas impossible. At a later stage not even fixed ideas can be held fast and applied; no comparisons can be instituted, or combinations made. Finally there ensues a complete absence of images and thoughts: sensuous impressions are no longer elaborated, memory is almost extinguished, and the power of speech for the most part lost.[1]

The two conditions we have mentioned do not, however, suffice for a full account of conscious life. They would serve equally well for organic life. The power of preserving and repro-

[1] *Cf.* Griesinger, *Die Pathologie und Therapie der psychischen Krankheiten* (Stuttgart, 1861), pp. 323-351.

ducing earlier states is found in unconscious nature. But what this lacks is the power of *recognizing* the states reproduced. With unconscious beings one moment falls outside the other, even though the content of both is the same. In recognition, on the contrary, the distinctions of time and space are annulled, things which have been experienced at different times and in different places being immediately brought together. In recognition and in memory is expressed an inner unity, to which the material world affords no parallel.

Conscious life has thus three main characteristics: (1) change and contrast as condition of the individual elements entering consciousness; (2) preservation or reproduction of previously given elements, together with connection between these and the new elements; and (3) the inner unity of recognition.

If we look back on our previous states of consciousness, they come before us as a series of sensations, representations, and feelings—as a stream with succeeding waves. It may often seem to memory as though this series were composed of independent, separate units, only externally combined. Some psychologists (in particular Hume) have consequently described consciousness as a mere succession of ideas without inner bond and connection, or more precisely as the series of our possible and actual sensations (John Stuart Mill). But the fact that it is impossible for the individual elements within what we know as consciousness to stand out absolutely isolated, shows distinctly the inaccuracy of this description. Every individual element belongs to consciousness only through its union with other elements. The emphasis is thus to be laid on the union, the connection, and not on the members in their individuality. The peculiarity of the phenomena of consciousness as contrasted with the subject-matter of the science of external nature—material phenomena—is precisely that inner connection between the individual elements in virtue of which they appear as belonging to one and the same subject; and this connection has its typical expression in *memory*, which may on that account be called the fundamental phenomenon in the mental province. That which has escaped the memory may still indirectly, through its after-effects, exercise a great influence on our conscious life, but is no longer a part of it. In the physical world memory can be spoken of only figuratively. Everywhere, where there is development, later events are conditioned by earlier; and by virtue of the law of the per-

sistence of energy, nothing happens, however insignificant, without exercising its effect on what happens afterwards. But only on the supposition of a consciousness can that which is past be itself re-experienced, actually enter into a later mental connection, so that the distinctions of time are annulled. The different stages at which this fundamental psychological phenomenon appears, and the forms it takes, will be discussed in a later chapter.

It here remains to add that this intimate union and unity may vary greatly in degree, and that in our psychological experience we never meet with it in the highest degree imaginable. Beneath the clearness and the connection in our consciousness there is always a more or less obscure chaos; the original elements must always arise in it as something given, to serve as material for its activity. There is thus a passive and an active side in the nature of consciousness, the former corresponding in the first instance to the diversity of the elements, the latter to the unity and the connection of all conscious content. The energy of consciousness is manifested in the way in which the individual elements are connected and brought into interaction. Kant, therefore, rightly characterized consciousness as a synthesis. Synthesis, at whatever stage in the development of conscious life we look for it, presupposes a given manifold. It combines individual sensations into percepts, forms representations into concepts, and so forth. Work of this kind is carried on from the very threshold of consciousness; this is implied in the fact that consciousness approaches more closely to unconsciousness, the nearer it comes to the point where there is only a single element. Consciousness, in awakening to clearness, finds its special work in full progress. Synthesis, to employ Kant's words, is "a blind, but indispensable, function of the soul, without which we should have no knowledge whatsoever, but of the existence of which we are scarcely conscious." [1]

It is especially this property of conscious life which makes its origin so great a problem. For even if we admit the existence of elementary sensations in less developed organisms, still the decisive test is the connection, the unity of these sensations. The *first* sensation cannot, of course, be attached to any other mental element; how, then, can synthesis and consciousness exist here? Similar questions arise wherever we go back to the beginning. The question of the origin of organic life presents a like difficulty.

[1] Kant, *Kritik der reinen Vernunft*, 1st ed., p. 78 (Kehrbach's edition, p. 95). [Max Müller's translation, p. 69.]

It is a principle of physiology that every organic cell springs from another cell (*omnis cellula e cellula*) ; but the *first* organic cell must have originated under quite different conditions.

The history of psychology shows that different schools of thought have laid different weight on the two sides in the nature of consciousness. The German school (Leibniz, Kant, Hegel) lays paramount stress on synthesis, activity, unity. The English school (and Herbart in Germany) has given prominence to the passive or mechanical side, to the diverse elements and their reciprocal interaction. Each school is especially strong in the treatment of different problems. The English school devotes attention rather to the elementary, real side of conscious life, to the manner in which the mental structure is raised by the combination of fundamental elements ; the German school, on the contrary, attends more to the connection and the unity which from beginning to end are the marks of consciousness. The more recent English school appears to meet the German school in the recognition of the fact that the individual sensation or idea exists only as a member of a connected, conscious series, and that consciousness therefore can never be conceived as mere sum or mere product.[1]

German psychology has often exhibited a tendency to approach metaphysics ; English psychology, on the other hand, has approached the mechanical sciences, and has transferred analogies from them to the conception of mental phenomena.

In the account of consciousness just given, we have confined ourselves mainly to the formal side. Only in the more special psychological discussion shall we be able to deal more closely with the real side. In the present connection we must content ourselves with calling attention to the fact, that the unity of mental life has its expression not only in memory and synthesis, but also in a dominant fundamental feeling, characterized by the contrast between pleasure and pain, and in an impulse, springing from this fundamental feeling, to movement and activity.

Synthesis is the fundamental form of all consciousness. But the activity which finds expression in synthesis is in every individual case directed to a definite end. This end may be more or less conscious ; but the activity directed to it will be accompanied by a feeling of pleasure, the interruption of this activity by a feeling of pain. The capacity to feel pleasure and pain, quite as much

[1] On this point see my book, "*Den engelske Filosofi i vor Tid*" ("The English Philosophy of our Times"), (Copenhagen, 1874) ; German translation, 1889.

as the synthetic activity, presupposes a unity, an inner central point, into relation with which the changing diverse elements of consciousness are brought. The relation between the formal and the real side of consciousness we shall examine more closely in another connection (V. B. 5).

6. If we now try to institute a comparison between the activity of consciousness, as we have provisionally described it, and the functions of the nervous system, a wealth of parallel traits will present themselves. It might even be said that the need for a visible image of the mind—a need which so often asserts itself at the unscientific standpoint—is actually met by Nature herself in the form and method of function of the nervous system. The next problem, then, is to explain the image—to find out the relation between the symbol and the thing symbolized.

(*a*) The great importance of the nervous system, as we have seen, lies in its serving as the connecting central organ of the several parts of the organism, guiding their activities into inner harmony, and enabling them to present a combined front to the external world. Exactly the same task is fulfilled by consciousness in its own way. In it things scattered in space and time are brought together, the wave-beats of the conditions of life are expressed as a rhythm of pleasure and pain, and in memory and intellectual activity is manifested the closest concentration to be found in the whole of our experience.

(*b*) To become conscious of something presupposes a change, a transition, a contrast. The content and energy of consciousness must have their equilibrium disturbed, the attention must be aroused. An arousing, an excitation (irritant) is in like manner essential to the function of the nervous system. The excitation operates by setting free restrained force, by upsetting equilibrium in the nerve-fibres and nerve-centres.

(*c*) But the excitation acts not only on single centres; owing to the highly ramified connection between the different nerve-centres, it sets free a series of processes which reciprocally augment or inhibit one another, so that the total effect depends on the result of this physiological debate. To this corresponds on the psychological side the calling up of associated ideas by simple sensations. The simple sensation has thus not a simple, but a very complicated, effect. The psychological relation between sensation and memory has its physiological parallel in the relation between the arrival of an excitation in the central nerve-organs and the interaction

among these organs. Not only from the purely physical, but from the physiological, point of view, the effect of the spark on the powder is the most appropriate representation of what here takes place.

(*d*) The formation of sensations and representations takes a certain amount of time. Of all our movements, the unconscious are most quickly executed. The greater the caution, the slower the action. The more complicated the operations undertaken, the longer the time required. In like manner the nervous process takes a certain time, which physiology has begun to measure. All that here interests us is the circumstance that movement in the nerve-fibres passes more quickly than movement in the nerve-centres (the grey substance), and more especially that the central nervous functions (the psycho-physical functions), with which the activity of consciousness seems to be linked, take more time than the purely physiological functions. It accords with this, that actions, undertaken at first consciously, become unconscious after frequent repetition and exercise, and more quickly executed. The child learning to read looks closely at each letter until he recognizes it, and devotes special attention and care to its accurate pronunciation. But by degrees he learns to read aloud, without thinking about the formation of the letters and the character of the sound. So with dressing and undressing, walking, dancing, swimming, and many of our daily occupations. The shorter the time that passes betwen the excitation and the movement it sets up (the reaction-time, the physiological time), the more unconsciously does the action take place.

(*e*) To the physiological hierarchy of principal and subordinate nerve-centres, and to the relative independence of the latter, corresponds the fact that in our organism there are activities which under normal conditions are not accompanied by consciousness, but which become conscious if taken out of their normal conditions. The functions of nutrition, for example, are usually carried on unheeded. They give rise to sensations accompanied by pleasure or pain only when they are especially favoured or hindered. When food is wanting the blood ceases to flow to the stomach, which has then nothing more to work up, and from the consequent want of nourishment for the nerves arises, as some suppose, the feeling of hunger. This feeling is a particularly good example of the transition from unconsciousness to consciousness, since it passes through a whole scale of degrees, from the first vague feeling of discomfort up to the most terrible torture.

The psychological parallel to the relation between higher and lower nerve-centres appears from another side in the phenomena of movement. We have just seen how new reflex actions may result from constant and repeated functioning of the higher centres. But the higher centres also, as already noted, exercise an inhibiting influence on the involuntary movements which can be set up in lower centres. As the exercise of new reflex movements corresponds to the positive work of the will, so the inhibition of natural and involuntary movements corresponds to its negative work. Our natural as well as our artificial education consists in partly accustoming, partly disaccustoming, ourselves to something. This will be treated more in detail in the chapter on the psychology of the will; here we would only suggest that even the struggle between "the spirit and the flesh" has its physiological counterpart.

(*f*) Finally, a parallel appears between the different sides of conscious life and the different organs of the nervous system. In cognition and feeling consciousness turns as it were an open side to the not-self; where it thus lies open, it is mainly receptive and appropriative. In will (at its several stages of instinct, impulse, purpose, and resolve) we have, on the other hand, the response of the conscious life, the mental reaction. Precisely the same double-sidedness is found in the nervous system, in the contrast between the sensory and motor organs. To conceive thought, feeling, and will as localized, each in its special place in the brain, would be to revive the errors of phrenology: no one of these, looked at psychologically, is a single and simple process, the course of which may be conceived as in one definite organ; they inter-penetrate, as will be proved later, to such a degree that it is only in the abstract mode of speech that we can talk of them as different processes. Here we refer only to the general schema of the nervous system: an in-going movement, a central elaboration of it, an out-going movement. The same schema serves for the conscious life.

7. We must assume that these parallels have a real significance; there must be an inner connection between conscious life and the brain.

The matter might be most simply settled, if we could immediately observe that conscious life is attached to the brain, a certain state of consciousness being accompanied by the sensation of a certain state of the brain. In severe mental work we do, indeed, think we feel something in the brain; but it is not the function

of the brain itself which is then felt. Such phenomena, according to Griesinger,[1] appear to correspond to processes connected with the membranes of the brain and their supply of blood.

It is evident, moreover, that it was long before the connection of consciousness with the brain was fully established. In ancient times the seat of the mind was held to be in the blood, in the diaphragm, or in the heart. Among the ancient Greeks, only Alcmæon and Plato taught that we think with the head. Herophilus, the great Alexandrian anatomist (300 B.C.), was the first to transfer the mind to the brain, relying on definite facts—that is to say, on the observation that the nerves, and especially the sensory nerves, are collected in the brain as the last centre.[2] But this anatomical proof is not enough to establish the conviction of the real connection between consciousness and brain. However a series of comparative observations and experiments has here been decisive.

In the lowest animals a nervous system has not yet been discovered. In Mollusca and Articulata there is only slight centralization of the nervous system; at the best the central nervous system consists of a ring of nerve-ganglia. The lowest vertebrate, the Amphioxus, has only a spinal cord, no brain; and in the lower classes of vertebrates the brain is developed in a much lower degree than the spinal cord.

The more the cerebrum preponderates over the other brain-organs, the more highly do we find the conscious life developed. The higher centres occupy far more room in the brain of man than in that of animals, the immediate centres for sensation and muscular movement having apparently the ascendency in the latter. The greater or smaller wealth of convolutions in the brain is also proved to stand in connection with the higher or lower stages of development of conscious life. The brain of the more intelligent species of dog has more convolutions than that of the less intelligent species; man is in this respect far in advance of apes, which in other respects come so close to him in structure; the cerebral hemispheres of distinguished men are very large, and rich in convolutions.

With this agrees the constitution of the brain in the fœtus and the new-born infant. In the earlier states of the fœtus the cerebrum, in man as in all vertebrates, lies in front of the other portions of

[1] *Die Pathologie und Therapie der psychischen Krankheiten*, 2nd ed., p. 26.
[2] Exner, *Physiologie der Grosshirnrinde* (Hermann's *Handbuch*, ii., 2) p. 193.

the brain without covering them. In the course of development it covers (in man and to some extent in apes) first the pons Varolii and ultimately the cerebellum. The cerebrum of new-born children—both in structure and in power of functioning—is little developed, while the subordinate brain-apparatus is ready for immediate use.

Finally, it is proved by experiments that sensations arise only if excitations are conveyed from the surface of the organism to the brain, and that voluntary movement is possible only if the motor-centres in the brain are uninjured. By removal of the cerebrum the conscious life of animals which can survive the operation is weakened, deliberation and initiative are lost. Conversely, a dull and undeveloped conscious life (as in idiots) is connected with a defective nourishment and defective development of the brain ; and the advancing dissolution of conscious life in mental disease is accompanied by gradual dissolution of the brain, especially in the cerebrum. If the veins which supply arterial blood to the brain are tied up, there ensues an unconscious state, which leads to death.[1]

8. Now, whither are we led by this formal agreement and this actual connection between conscious life and the life of the brain ?

No hypothesis can be admitted which does not allow due weight to all the facts we have brought forward. In the nature of the case only four possibilities can be conceived ; (*a*) either consciousness and brain, mind and body, act one upon the other as two distinct beings or substances ; (*b*) or the mind is only a form or a product of the body ; (*c*) or the body is only a form or a product of one or several mental beings ; (*d*) or finally, mind and body, consciousness and brain, are evolved as different forms of expression of one and the same being. These several possibilities we now proceed to examine, relying on the results set forth in the preceding sections. Whichever we may prefer, it is clear that we can adopt it only as a provisional hypothesis. At the same time it must be carefully borne in mind, in the following examination of the different hypotheses, that, as already noted (II., I.), we are here concerned with the relation between mind and body only from the point of view of experiential psychology, and are not in search of a final philo-

[1] Exner, pp. 193-206 ; Griesinger, pp. 418-444 ; Tardieu, *Etude médicolégale sur la Folie*, 2nd ed., pp. 85-89, 119

sophical or metaphysical theory. Possibly the result arrived at must be reconsidered before it can take its place in a philosophical theory: but our present task is not the establishment of such a theory. The hypotheses now to be examined lie on the borders between experiential science and metaphysics; but we are concerned with them only from the point of view of the former.

(*a*) The ordinary notion is that the mind acts upon the body and the body upon the mind. It is perhaps thought that we feel this immediately, although this seems to be at once contradicted by the want of agreement as to the existence of a mind, independent, and distinct from the body, and by the fact that in any case it is only indirectly that we have come to know with which part of the body the mind is more particularly connected. "But are there not unquestionable facts which prove the truth of this view? An excitation of a sense-organ is transmitted to the brain, and there passes into sensation, while conversely, our will is able to set the body in motion!" But it is just the relation between what passes in the brain and states of consciousness that is the question, and if the facts were as stated, we should have no reason for asking it; we should already know the answer. If the state of the brain, with which the sensation or the decision is connected, does not itself become an object of consciousness, it is impossible to discover whether there really is a causal relation, or a relation of interaction, between the brain and consciousness or not. There is no justification, therefore, for maintaining, as a fact, that a bodily process causes a mental process, or the reverse. And it will be admitted, on further reflection, that, even if physiology could give a scientific explanation of the condition of the brain which ensues when I am struck by a stone, the feeling of pain aroused in me would not be included in the physiological explanation. Physiology, like every natural science, explains a material process by means of other material processes. Its assumptions are not framed to include a case in which one member of the causal relation shall be spatial, the other non-spatial.

The supposition that a causal relation may exist between the mental and the material is contrary to the doctrine of the "conservation of energy." For at the point where the material nerve-process should be converted into mental activity, a sum of physical energy would disappear without the loss being made good by a corresponding sum of physical energy. To this it has been

answered that it is, indeed, inconceivable how material activity can pass into mental activity, but that, taken strictly, every transition, every conversion of force, is inconceivable to us; and, moreover, that the doctrine of the conservation of energy requires only that a certain corresponding sum of energy shall come into action instead of that which has disappeared, it being all one whether this equivalent be of a physical or a psychical nature. But this would be a bold and unwarranted extension of the doctrine of the conservation of energy, which, in the form in which it lies before us, is a purely *physical* doctrine. Such an extension would imply the possibility of finding a common measure for the mental and the material. Now what denominator is common to a thought and a material movement, or what common form serves for both? Until such a common form can be pointed out, all talk about an interaction between the mental and the material is, from a scientific point of view, unjustified. So long as we confine ourselves to the material we are on safe ground, and so long as we confine ourselves to the mental we are on safe ground; but any attempt to represent a transition from physical to psychological laws, or conversely, brings us face to face with the inconceivable. In the causal concept, as in all concepts which condition our apprehension of reality, there is contained an epistemological problem. As at all points where we approach the boundary lines of our knowledge, difficulties arise, but a difficulty multiplies itself when the causal concept is employed to connect two factors which have no common measure.

The ordinary notion, indeed, leads involuntarily to a doctrine of homogeneity, since mind is apprehended as material when it is thought of as affected by material movements, and the material is turned into something mental when regarded as open to mental influence (as Plato makes reason "persuade" matter).

It will easily be seen that it avails nothing to say that the mind may not indeed be able to increase the *sum* of physical energy in the world, but that it can alter the *direction* of the applied energy. A physical movement does not change its direction except under the influence of a physical force of a certain strength. So that this subterfuge also of necessity makes the energy of consciousness a physical energy.

The application of the causal conception presupposes not only a common measure, but also a difference in time. The question which has been raised, as to whether cause and effect are

simultaneous or not, rests partly on a misunderstanding, and in any case does not concern us here. On the other hand, it cannot be denied that the conception of causality would never have been formed had not phenomena been subject to change. If everything were uniform and unchangeable, we should have nothing about whose cause we could inquire. The relation of causality presupposes the occurrence of an event. If the relation between mind and body, or consciousness and brain, is a causal relation, there must be a difference of time between the process in the brain and the act of consciousness. This, however, is contrary to the view suggested by physiology. As we have seen, the aim of modern physiology is to conceive all organic processes as physical or chemical. It does not boast that it has explained the origin of organic life; it maintains only that where it has attained to a comprehension of anything in the region of organic life, this has *in every case* been by the tracing back of organic phenomena to physical and chemical laws. If, then, there is a transition from physiological function to psychological activity, from body to mind, physiology at any rate, working with its present method, cannot discover it.

To admit such a transition implies that the physiological process is *interrupted* at certain points, namely when the stimulus becomes a sensation, to be resumed by a psychological process, under changed conditions, when the mind has recovered from the material stimulation and responds to it with an act of will. The idea of a causal relation between mental and material forces upon physiology an interruption of this kind. But physiology will hardly be induced ever to admit such interruption. Apart from the physical, which is also a physiological, difficulty involved in the breach of the doctrine of the conservation of energy, the nerve-process must from the physiological standpoint be conceived as a connected course. In this department very much is still unexplained.[1] The relation between nerve fibres and nerve-cells is very obscure; the physical properties of the ganglion-cells, and consequently the physical origin of the simplest reflex movement, are not yet understood; it is not even quite certain that the ganglion-cells form the connecting

[1] *Cf.* Ditlefsen, *Menneskets Histologie* ("Histology of Man") (Copenhagen, 1879), p. 582. "The new discoveries as to the structure of the nerve-fibres have not advanced our knowledge of the relation between them and the cells; for the time being we must tentatively hold that the nerve-cells are centres of the nerve-fibres, and address our histological investigations to the task of producing a satisfactory morphological understanding of this physiological fact."

link between the afferent and efferent nerve-fibres. Nor has it been possible to point out the anatomical connection between the centres of the centripetal and those of the centrifugal nerves in the spinal cord.[1] But in spite of all this, physiology cannot permit its boundaries to be invaded from without. Its fundamental thought is the universal coherence of organic life ; it tries to explain the more complicated processes by reducing them to the simpler ; it learns from the lower phenomena how the higher are to be understood, for it takes the principles of structure and of activity to be the same throughout. Thus *e.g.* the doctrine of reflex movements throws a light on the way in which the highest cerebral functions are to be explained,[2] though we are not thereby justified in concluding straight away that all cerebral activity is reflex activity. So far as we can speak of final results in the physiology of the brain, this represents the brain as a republic of nerve-centres, each with its function, and all in interaction ; but there is nothing to indicate the possibility of the physiological process breaking off at any point to pass into a process of a wholly different kind.

Of course there is always one way of escape; to deny the universal validity of the doctrine of energy. This doctrine is not experimentally proved, and as we have seen, cannot, strictly speaking, ever be so proved. But according to the general rules of methodology, we may not, in framing our hypotheses and in judging of them when framed, enter into conflict with leading scientific principles. And in modern natural science, the doctrine of energy is such a leading principle. If, therefore, an hypothesis is in conflict with this doctrine, the fact tells at once decidedly against it.

The ordinary doctrine of interaction (the doctrine of the *influxus physicus*, as it was called in earlier times) is presented in a stricter, more metaphysical, and in a vaguer, more indefinite, form. In its metaphysical form it appeared in the writings of Descartes, who conceived of mind and body as two substances, absolutely distinct in kind, but nevertheless acting on one another. Here was made the hasty attempt, already mentioned, to prove the soul

[1] C. Lange *Kygmarvens Patologi* ("Pathology of the Spine"), p. 24; Eckhard, *Physiologie des Rückenmarks und des Gehirns* (Hermann, ii., 2), pp. 7-19, 61 *seq.* [Ferrier, p. 60 *seq.* (Tr.)]

[2] After Marshall Hall (1833) had laid down the theory of reflex-movement, Laycock (1840) pointed out that its principle must be applied to the physiology of the brain also. ("On the Reflex Action of the Brain. *The British and Foreign Medical Review*, 1845). Independently, as it seems, of Laycock, Griesinger expressed the same thought in his treatise "Ueber psychische Reflexaktionen" (*Archiv für physiologische Heilkunde*, 1843.)

to be an independent substance, a view which exchanged the standpoint of experiential psychology for that of metaphysics. But it was precisely the distinct and clear form which Descartes gave to the current doctrine that to an extraordinary extent contributed to lay bare its weak points. It was abandoned, as the history of philosophy shows, as soon as it was set forth with all its consequences. To Descartes, therefore, belongs the credit of having set the problem of the relation between mind and body. For to the current notion in its vaguer form there is no difficulty in this relation. With legitimate heedlessness, the practical usage of speech ignores theoretical difficulties. Ordinary language no more regards the fact that physiology and psychology are opposed to the notion of brain and consciousness acting on one another, than it respects the doubt of Copernicus as to the sun really moving round the earth. Moreover, the practical usage of speech has been formed under the influence of a partly spiritualistic, partly materialistic, metaphysics.

(*b*) An end is put to this inconsequence and vagueness, when one of the two factors, whose connection is the point in question, is without more ado struck out. And since the perception of the external, material world takes the leading part in our ordinary, every-day ideas, while our inner self-consciousness is with difficulty educated to a like clearness and distinctness, it is perhaps the most natural thing to identify materiality with reality, and to conceive of the mental as a form or effect of the same. Certainly *materialism* is historically older than the current doctrine of an interaction. Homer and the earliest Greek philosophers (before Socrates and Plato) are materialists; even in the teaching of the Christian Fathers before Augustine materialistic notions predominated. The older forms of materialism did, however, draw a distinction between mind and body, though regarding both as material substances (*cf.* 15). Modern materialism does away with this duality, usually treating the mental as a function or a side of the material. In modern times materialism has found a solid basis in the doctrine of the conservation of matter and energy and in that of physiological continuity. It has full justification as against every spiritualistic line of thought which leads to the setting of external limits to the series of physical and physiological causes. As a method of natural science, materialism is unanswerable. But it is another affair when the method is converted without more ado into a system. It has a perfect right to treat all changes and

functions of the organism, in particular of the brain, as material; but as a system it goes farther, and maintains that the phenomena of consciousness are only changes or functions of the brain, and in this consists its encroachment.

Karl Vogt gave in his time great offence by declaring (in his *Physiological Letters*) that "as contraction is the function of the muscles and as the kidneys secrete urine, so, and in the same way, does the brain generate thoughts, movements and feelings." It might appear as though he had here left a choice between two ideas: to conceive of thoughts either as *matter* or as *movement*. The first mode of conception, though it comes closest to direct apprehension, and was on this account chiefly adopted in the ancient materialism, has on closer consideration something so quaint about it, that it needs no further discussion. And in Vogt's comparison of the origin of thought and the origin of secreted matter doubtless the chief emphasis is to be laid on the secreting activity, not on the product. The principle, however, remains the same. Even among cautious physiologists with some philosophical training, the doctrine that conscious activity is a function of the brain may be sometimes met with. And yet it would seem as though just the strict physiological use of the term function must contradict such a doctrine. To say, *e.g.*, that contraction is the function of the muscle only means that it is a certain form and a certain condition of the muscle in movement. As Goethe has put it, "Function ist Dasein in Thätigkeit gedacht." The muscle when functioning is just as material as the muscle when at rest, and that which has not the properties of the material cannot be the form of activity of something which is material. The conception function (in the physiological sense)[1] implies, just as much as the conception matter or product, something presented as an object of intuition in the form of space. But thought and feeling cannot be pictured as objects in space or as movements. We get to know them, not by external intuition, but by self-perception and self-consciousness,—a source from which the physiologist also draws, without being always clearly conscious of the fact, when he inquires into the relation of conscious to organic life. By many round-about ways it has been at last discovered that certain definite phenomena of consciousness are connected with the function of certain definite parts of the brain. It is

[1] In the mathematical sense, however, we have a perfect right to say that consciousness is a function of the brain, since experience shows a certain proportionality between the degrees of development of consciousness and of the brain. Conscious activity would then, to speak precisely, be a mathematical function of the physiological function of the brain.

not even doubted that the highest of all the activities of consciousness have their corresponding cerebral functions,—as the most beautiful melodies are not too sublime to be expressed by notes. But activity of consciousness and cerebral function always come to be known through different sources of experience. The encroachment of materialism consists in the fact that it effaces this essential distinction without more ado. In quietly attributing to the brain the power of being conscious, or in even perhaps making the brain the subject of the manifestations of consciousness,[1] materialism is really returning to a fanciful mythological standpoint.

We are attending here principally to *empirical* or *phenomenological* materialism, that is to say, to the view which holds as the direct result of experiential science, that the phenomena of consciousness are forms or effects of material phenomena, so that all reality may be traced back to movements in space. Here we move in the region not only which we ourselves prefer, but in which materialism has always believed itself to move. Materialism has never observed that, even if all its assertions are admitted to be just, it yet always overlooks something which gives rise to a new, and for it a terrible problem; namely the circumstance, that movement in space is known to us only as an object of our consciousness. For the theory of knowledge, such notions as consciousness, idea, and intuition lie deeper than such notions as matter and movement. For this reason an absolute and decided materialism was possible only in ancient times, before the awakening of more deeply penetrating philosophical reflection. Democritus is the only consistent materialist. None of the modern materialistic writers can speak with the calm and the certainty with which Lucretius in his majestic verses sets forth the doctrine of Democritus. Modern materialists for the most part confess that, even if we can reduce everything to matter, yet we cannot know what matter is in itself. Thus La Mettrie, Holbach, Cabanis, not to speak of the wild, rambling inconsistencies of the most recent writers (Büchner, Moleschott).

But what we have here urged against materialism, is not the epistemological inconsistency exhibited in its desire that conscious life shall recognize, as the absolutely original and only reality,

[1] Ch. Robin, *e.g.* defines "sensibilité" as follows (*Anat. et Physiol. Cellulaire*), p. 540, "Ce mode de la névrilité est charactérisé par ce fait, que les éléments nerveux qui en jouissent, après avoir reçu une impression du dehors, la transmettent de ce point à un autre où ils (*sic*) la perçoivent." A similar mode of expression is employed by Broussais. But what idea is really conveyed by nervous elements perceiving and apprehending anything?

something which is given only as an object of consciousness, and which can be represented and recognized only through the activity proper to consciousness. Our task is only to find out to what view the given facts impel us; and the result of our criticism of materialism is that it offends against the conceptions derived from experience itself.

(*c*) In treating of *monistic spiritualism*, as the third possible hypothesis, we must always hold fast the distinction between a phenomenological and a metaphysical way of looking at things. Very many confusions relative to the problem before us are the result of overlooking this distinction. Spiritualism, like materialism, has almost always confounded metaphysical and empirical results. Monistic spiritualism is the view according to which the mind is a mental (geistige) substance, and the mental is the only reality; everything material, all movement in space, is but an outer form of a mental life. Through this last view *monistic* spiritualism is distinguished from the *dualistic* spiritualism introduced by Descartes. It is based on the impossibility of explaining the mental by the material, and on the fact partly overlooked, partly undervalued, by materialism, that our conception of matter is a mental product, and that, apart from our conception of it, we do not know what matter is. Thus the spiritual or mental is a *prius*, a pre-supposition, on which all thought rests; and a reasonable hypothesis is formed only by the reduction of the less known to the better known. The mental is properly the only thing fully intelligible to us, for in it we have not only a knowledge of outward circumstances and relations (*cognitio circa rem*), but a knowledge also of the thing itself (*cognitio rei*).

But even supposing all this to be true, it is not to the point. For if it be granted that everything is mental, and that nothing exists except thoughts and ideas, there still remains a distinction between ideas of material movement and ideas of phenomena of consciousness; and thus again arises the problem how these different sets of ideas, which have arisen in accordance with experience, are to be combined. In other words, the empirical problem is independent of the metaphysical. We do not here examine whether mind or matter is the most fundamental; we inquire in what way mental and material phenomena are connected in that experience, which every system of metaphysics consciously or unconsciously presupposes.

Hermann Lotze, the most distinguished representative of spirit-

ualism in modern philosophy, has with great clearness emphasized the distinction between phenomenological (or occasionalistic, as he called it in his earlier writings) and metaphysical investigation. He did not, however, hold fast by this distinction, but on the contrary put it arbitrarily aside.

Lotze is one of the writers who in modern times have with the greatest energy defended the mechanical conception of organic phenomena, and have upheld the claims of the notion of mechanism to dominate our entire explanation of nature. It is the more noteworthy, that he struggles against the admission of the full consequence of the doctrine of the conservation of energy. "Physicists," he says in one of his earlier works (*Allg. Physiol.* p. 461) "appear to be convinced that every spatial-temporal movement of masses can be neutralised only by another similar and contrary movement, and hence has arisen the problem, to trace every movement, when once it has been started, through all changes of forms, to its final passage out of the organism into the external world, or to the point where it is destroyed by a contrary movement. I am not fully convinced of the perfect correctness of this fundamental doctrine; I know of no convincing reason supplied by the principles of natural philosophy, wherewith to confront *the possibility that spatial movements may be absorbed by passing into intensive states of the real.*" The point at which this passage from the spatial to the non-spatial world takes place is that at which, according to a later utterance (*Mikrokosmus*, 2nd ed. i. p. 326, Eng. trans. i. p. 290) we must look for the seat of the mind. In his later work (*Three Books of Metaphysics*), the last gift permitted to us from this able inquirer, he speaks more precisely as to his position with regard to the law of the persistence of energy. He lays emphasis on the fact that in itself this law expresses only an equivalence of the manifestations of force, promises only a *certain* compensation for energy that ceases to act, and says nothing as to what *kind* of energy this is. He thinks, therefore, it is not impossible to apply the law to a case in which a mental energy takes the place of a physical, or conversely. *Phenomenologically*, he thus places himself at the standpoint of the natural interaction, and in so far as he does so, his theory falls to the ground through the objections already urged against this doctrine. (See pp. 55-59.) But he does not remain at the phenomenological standpoint. The distinction between spiritual and material phenomena is for him only the starting-point; the spiritual —as he tries to prove by metaphysical arguments—is the only reality;

material phenomena are merely manifestations of the interaction of spiritual elements ; and a transition from that spiritual essence which forms the foundation of material phenomena, to that spiritual essence which reveals itself in the phenomena of consciousness, offers no theoretical difficulties ; the difference in kind, the want of a common measure, is got over by metaphysical reflection. Lotze's theory, like the Cartesian, is a doctrine of interaction, but supposes an interaction between spiritual substances ; not, as with Decartes, between a spiritual and a material substance.

It is not easy to understand why at this point Lotze calls metaphysics to his aid if in the principle of the conservation of energy there is no obstacle to the doctrine of interaction. Here is an evident inconsistency in Lotze's theory, an inconsistency due to over-hasty interest in the defence of an idealistic conception of the universe. It is quite possible to agree with Lotze in his fundamental metaphysical thought, according to which the material is in its innermost essence of the same nature as that which stirs in our consciousness, without agreeing with him in his application of this fundamental thought to the theory of the relation between mind and body. That fundamental thought has so profound a philosophical significance that it may well be maintained without necessarily prejudicing the leading conceptions of experiential science.

(*d*) Only the fourth possibility, then seems to be left. If it is contrary to the doctrine of the conservation of physical energy to suppose a transition from the one province to the other, and if, nevertheless, the two provinces exist in our experience as distinct, then the two sets of phenomena must be unfolded simultaneously, each according to its laws ; so that for every phenomenon in the world of consciousness there is a corresponding phenomenon in the world of matter, and conversely (so far as there is reason to suppose that conscious life is correlated with material phenomena). The parallels already drawn point directly to such a relation ; it would be an amazing accident, if, while the characteristic marks repeated themselves in this way, there were not at the foundation an inner connection. Both the *parallelism* and the *proportionality* between the activity of consciousness and cerebral activity point to an *identity* at bottom. The difference which remains in spite of the points of agreement, compels us to suppose that one and the same principle has found its expression in a double form. We have no right to take mind and body for two beings or substances in reciprocal interaction. We

are, on the contrary, impelled to conceive *the material interaction* between the elements composing the brain and nervous system, *as an outer form of the inner ideal unity of consciousness.* What we in our inner experience become conscious of as thought, feeling and resolution, is thus represented in the material world by certain material processes of the brain, which as such are subject to the law of the conservation of energy, although this law cannot be applied to the relation between cerebral and conscious processes. It is as though the same thing were said in two languages.

Experience alone can determine whether the two forms are co-extensive. We have already touched on the difficulty of finding the lower limit of consciousness ; the next chapter will afford us an opportunity of taking up the question again. On the other hand, there are still some who hold that the noblest manifestations of mind are not linked to material processes. That sensuous perception, and so-called physical pleasure and pain, are linked with certain nervous processes, no one will dispute ; it is only for higher phenomena of consciousness that it is thought necessary to adopt a completely new principle. But even the general account of consciousness already given, suffices to show the impossibility of drawing a boundary line between a lower and a higher. The same type prevails from the simplest to the highest forms. Far as the ideal world of thoughts and feelings appears exalted above the series of single, momentary sensations, it is yet the same principle which prevails in both ; only the degree of development is different, not the plan of the structure or the material. The subsequent special psychological inquiries will bring this out more clearly.

As sharp limits cannot be drawn between a lower (sensuous) and a higher (spiritual) content, each with its own conditions of existence, so it is not permissible to regard the matter or content of consciousness as bound up with physical processes, while the formative and elaborating mental activity is supposed to have no physical parallels. While the individual sensations, in the opinion even of the strictest spiritualists, are connected with physiological processes, many think it is impossible to believe this of the activity whereby sensations are compared and judged. But, as will subsequently be shown, it is not possible to preserve a hard and fast line between what is given and its working up, between an absolute content and the relations which arise between the constituents of this content. Even in the simplest percept, at the

very threshold of consciousness, we find the result of a mental activity, a combining of elements into unity, a synthesis. An absolutely simple state would not be conscious. At no point, then, can matter and form be separated. The physiological connection and interaction between the extraordinarily numerous brain-centres afford, moreover, ample ground for the belief that not only the mental elements, but also their combinations, have their physical expression.

In the mental as in the material world, we hold fast to the law of continuity. The *identity hypothesis* regards these worlds as two manifestations of one and the same being, both given in experience. The two languages, in which the same thought is here expressed, we are not able to trace back to a common original language. Moreover, so long as we keep strictly to experience, the one province is presented to us as a fragment, while the other extends to infinity in uninterrupted sequence. The doctrine of the conservation of energy makes the material world into a totality, which we indeed can never measure, but in which the fate of the individual forms and elements can be traced. The mental world has no corresponding law to exhibit. Mental elements come and go in experience, without our being able to point to an equivalent, which in the first instance would be used up, in the last would serve as compensation. The fact that mental states cannot be measured like physical energies and chemical substances, is in itself sufficient to frustrate the hope of our finding a mental parallel to the doctrine of the conservation of force. But in addition to this, even the fundamental conception of a mental existence puts difficulties in the way. Material existences can pass one into another, so that the energy lost in the one is preserved in the other. The doctrine of the conservation of energy shows us the unity and eternity of nature during the coming and going of all material beings. But mental existence, as has been seen, has for its fundamental form, memory, synthesis; and synthesis presupposes *individuality*. The material world shows us no real individualities; these are first known to the psychological standpoint, from which inner centres of memory, action, and endurance are discovered. If now we conceived of the individual mental elements (sensations, thoughts, feelings, etc.) as capable of being transposed to other combinations, like chemical atoms, it would follow that they might have an existence apart from a definite individual consciousness, a supposition which our account of con-

sciousness shows to be absurd. Sensations, thoughts and feelings are mental activities, which cannot persist when the definite individual connection, in which they occur, has come to an end. They correspond to the organic functions, but not to the chemical elements. If the organism is resolved into its elements, organic function is impossible. The mental individuality has its physical expression in the sum of energy which the organism, in the germ and throughout its development, has at its disposal, and in the organic (especially the nervous) form in which this energy is applied.

The theory to which we are here led is not a complete solution of the problem of the relation between mind and body. It is only an empirical formula, an indication of the manner in which the relation presents itself provisionally, when, following the hint of experience, we take heed of the close connection between the mental and the material and the impossibility of a reduction of the one to the other, together with the difficulties attending the notion of a transition from the one to the other. Concerning the inner relation between mind and matter, we teach nothing; we suppose only that *one* being works in both. But what kind of being is this? Why has it a double form of manifestation, why does not one form suffice? These are questions which lie beyond the realm of our knowledge. Mind and matter appear to us as an irreducible duality, just as subject and object. We therefore postpone the consideration of the question. And this is not only justifiable but even necessary, since it is evident that the question lies in reality far deeper than is usually supposed.

It would be a misinterpretation of the identity-hypothesis to explain it as if it regarded the material as that which really exists, and the mental as a superfluous addition. The hypothesis, as here given, does not enter into the question whether mind or matter is the fundamental part of existence. It pronounces only that the same power which lives, expands, and takes form in the outer world of the material, also discloses itself in its inner world as thinking, feeling and willing. In asking after the inner connection between the physical and the mental worlds, we stand at the limit of our knowledge, and as yet no conception whatever has answered the question of the place of the mental life in the scheme of things, except by a teleological postulate, which it is not the business of psychology to investigate. So much only is certain, that if we are right in admitting this duality, there must be a reason for it. This is not the only instance

in our experience, where we are obliged to accept a connection as given in fact, without being able to establish its necessity.

The empirical formula, with which we here end, does not exclude a more comprehensive metaphysical hypothesis. The fundamental notion of idealism, that the mental stands closest to the innermost essence of existence, may be very well combined with the empirical acceptance of the identity-hypothesis. As empirical formula, this says nothing as to the question whether the two forms of being are absolute or possess validity apart from the human point of view. Spinoza's doctrine that mind and matter are two equally eternal and infinite attributes of the absolute substance, was an over-hasty metaphysics. The absolute substance is not known by us, and we cannot therefore know whether mind and matter are equally essential to it. On the contrary, the theory of knowledge leads us to regard the phenomena of consciousness as the most fundamental facts in our experience, since, looked at logically, the subjective point of view is deeper than the objective. From this point of view the most natural conception is that which regards the mental life as the essential, and the corresponding cerebral activity as the form in which it is manifested to sensuous intuition. All the same, we have no right to maintain with monistic spiritualism, that spiritual existence expresses the innermost essence of being. There may be infinitely more forms of existence than the two which alone we know, and which, because they are the only two known to us, we are disposed to regard as the only forms possible.

It may therefore easily lead to misunderstandings, to describe the identity-hypothesis as "new Spinozism." It is, indeed, connected with Spinoza's name ; it is to him that the honour is due of having first propounded the theory, and so advanced beyond the conflicting materialistic and spiritualistic theories. To this he was impelled by three different motives. In the first place, he wished to remove all imperfect notions from the idea of the infinite essence ; nothing besides this was to exist, nothing that was not penetrated by it ; matter, therefore, could not be an external limit, but must be a special form of its manifestation. But besides this religio-philosophical or metaphysical motive, his conviction of the uninterrupted connection of the physical causal series also influenced him. If mental activity cannot interfere with this causal series, nothing remains but to suppose that the mental and material activities do not take the place of one another,

but are carried on simultaneously (*simul natura*), especially as they cannot be reduced to a common measure. Spinoza anticipated the victorious march of the mechanical conception of nature; perceived that Galileo and Descartes had laid down principles under which the whole of material nature would have to be arranged. Finally, Spinoza based his theory on empirical grounds. Although for him as a speculative philosopher the question was doubtless settled on the two *a priori* grounds, still he thought that people "would scarcely consider the question calmly" if he did not adduce proofs from experience. He pointed, then, partly to the purposive way in which the body can act, even when consciousness is not present, as in instinctive movements and somnambulant states, partly to the proportionality between states of the mind and of the body, partly to the analogy between the psychological and the organic systems.[1]

The theory propounded by Spinoza has, under different forms, held its place in philosophy ever since his time. Leibniz maintained with Spinoza, that thoughts are to be explained by thoughts, movements by movements; only, on the basis of this parallelism, he undertook a more far-reaching reduction in the idealistic direction. Kant hinted at the identity-hypothesis in the first edition of the *Critique of Pure Reason*, although in the second edition he altered his earlier, more consistent conception in this as in other respects.[2] After the time of Kant it is found with more or less clearness and consistency in the speculative direction (Schelling, Hegel) as well as in the critical-empirical (Fries, Beneke). In Danish literature it makes its appearance with Treschow and F. C. Sibbern. And it is found in a whole series of philosophers and students of nature of the present day. More particularly Fechner must be mentioned, as the first[3] who based the theory of the relation between the mental and the material on consequences deduced from the principle of the conservation of energy.

Here this hypothesis interests us as the most natural determination of the relation between physiology and psychology. These two sciences deal with the same matter seen from two different sides, and there can no more be dispute between them, than

[1] *Cf.* my book, *Spinoza's Liv. og Lære* ("Spinoza's Life and Teaching"), (Copenhagen, 1877), pp. 89-100.

[2] *Cf. Kritik der reinen Vernunft* (Kehrbach's Ausgabe), pp. 206, 320, and 340, with p. 699. *Cf.* Vaihinger in *Strassburger Philosophische Studien*, p. 151 *seq.*

[3] *Elemente der Psychophysik*, 1860.

between the observer of the convex and the observer of the concave side of a curve (to make use of a simile employed by Fechner). Every phenomenon of consciousness gives occasion for a twofold inquiry. Now the psychical, now the physical, side of the phenomenon is most accessible to us; but this does not affect the principle of the relation of the two sides to one another.

III

THE CONSCIOUS AND THE UNCONSCIOUS

IN the preceding account of mental life, stress has been laid on two chief distinguishing traits—on the occurrence of a change, through which new elements of consciousness emerge, and on the connection between all elements of consciousness. If this account is correct, then consciousness may cease from two causes: either because the individual elements do not possess strength enough to make themselves felt, or because the connection between them ceases.

So long as we adhere strictly to the principle that the mind is known only through the manifestations of consciousness, the province of mental life is not widely extended. Nerve-processes are not all of the kind which we have reason to think accompanied by consciousness, and even those with which this is the case may be carried on without consciousness, if their intensity is not sufficiently great.

Thus a physical stimulus may take effect on the nervous system without a sensation arising; the sensation arises only when the stimulus has reached a certain strength. The nerve-process, on the other hand, must begin at lower degrees of stimulation, and has thus already reached a certain strength when the sensation crosses the threshold of consciousness. Let x, for example, denote the degree of strength of a nerve-process, which is just strong enough for a scarcely preceptible sensation, which we will call y, to correspond to it. We then have a peculiar relation: while the degrees of strength on the physical side continuously decrease from x downwards, the psychical side remains empty, stops suddenly at y. This is how the relation presents itself,

whatever fundamental conception as to the relation between the mental and material we start from. It is the same with combination as with degree of strength; for there is only a difference of degree between the structure and mode of action of the lower and the structure and mode of action of the higher cells. Now is it probable that at a certain stage of the scale a something should arise which did not exist at all at the lower stages? If the series in the one sphere is continuous, must it not be supposed to be so in the other? We have no right to assume that there are chinks or gaps anywhere in nature; at any rate the advances of knowledge principally consist in the filling up and connecting of interstices and clefts.

The question before us is, whether the unconscious can be other than a purely negative conception. In daily speech (and, more than is proper, even in the scientific use of language) we use such expressions as unconscious sensations, unconscious ideas, unconscious feelings. As, however, sensations, ideas, and feelings are elements of consciousness, the expression is in reality absurd. If by an unconscious idea is meant an idea which I *have*, then the predicate "unconscious" signifies only, that I do not think of or pay heed to the fact that I have it. This use of the word unconsciousness is connected with a twofold use of the word consciousness. It is used to denote not only the inner presentation of our sensations, ideas, and feelings, but also self-consciousness, the attention expressly directed to our sensations, ideas, and feelings. We have, of course, many sensations and ideas without being conscious that we have them; many feelings and impulses stir within us, without our clearly apprehending their nature and direction. In this sense we can speak, for example, of unconscious love; a man who has this feeling does not know what is astir in him; perhaps others see it, or he himself gradually discovers it; but he *has* the feeling, his conscious life is determined in a particular way.

In desiring to examine here, however, the relation between the conscious and the unconscious, we understand by unconsciousness a state which lies below the threshold of our consciousness in general (not merely of our self-consciousness). We wish to examine whether it may not be shown that the unconscious is related to the conscious, and the difference on the psychical as well as on the physical side consequently one of degree only. But for the present we take it as a purely negative conception. It is not the

intention to follow Edward v. Hartmann in the mystical paths which he believes he has opened up in his *Philosophie des Unbewussten* ("Philosophy of the Unconscious"). Hartmann not only without more ado makes the unconscious into a positive conception, but also uses it as an explanatory principle wherever he thinks that the physical and the psychological causal series fail. Psychology is on secure ground only when it confines itself to the clear and certain phenomena and laws of consciousness. But starting from this standpoint, it discovers the unconscious, and sees to its astonishment that psychological laws prevail beyond the province of conscious life. In what follows we shall adduce some examples to make this clear.[1]

2. Reference has repeatedly been made to memory as the typical phenomenon of consciousness. But memory presupposes change in the elements of consciousness. Now what becomes of the ideas that have disappeared, in the interval before their recall? In daily conversation the memory appears as a storehouse or treasure-chamber, where ideas are saved up for future use. It is only figuratively that actual existence can be in this way attributed to the ideas which have disappeared from consciousness. But the remarkable fact is, that it seems as if, nevertheless, they played a part in the actual activity of consciousness. If we want to recall something that is in our memory, and cannot come upon it, it is a well-known resource to leave off the search for it, and to think of quite different things; then the idea wanted may suddenly emerge. Here we give up the conscious search, and allow instead an absolutely unconscious process to begin. The case is similar when we have collected materials for some work, as *e.g.* the treatment of a scientific question. We are then often so overwhelmed by details, as to be unable to arrange and combine the matter. Here again occupation with quite different matters may be a good resource. In the midst of the new activity, the proper mode of treating the question may suddenly, as of its own accord, present itself to consciousness. Unconscious action has effected what conscious, direct, and strenuous work might never perhaps have succeeded in. Of course such results are never obtained in sleep; strenuous work is presupposed, the unconscious operation crowns the labour.

Some psychologists explain phenomena of this kind quite simply,

[1] In Carpenter, *Mental Physiology*, p. 515 *seq.*, there are a great number of examples. Some of those quoted in what follows above, are taken from this collection. Benecke in the first chapter of his *Psychologischen Skizzen* (Göttingen, 1827), has inquired with great acuteness into the relation between the conscious and the unconscious.

by the greater freshness of the brain and mind, when a thing has been "slept upon." But this explanation can apply only to cases in which the question is directly taken up again after the break, not to those in which the abandoned subject suddenly, in the midst of occupation with other matters, presents itself to thought in a perfectly clear light. Here the subject has in the interval undergone further treatment, but this treatment has taken place below the threshold of consciousness; it has been carried on in us, not by us. And yet this unconscious working bears the impress of the same principles and laws that control conscious working.

3. What is true in this way of many of our thoughts, is true also—as has been proved by the physiology of the senses—of our apparently simple and immediate sensations and percepts. We make for ourselves a continuous visual image, although in the retina there is a point (the blind spot) which receives no excitation. Many of our sensations of colour which we regard as immediate, are determined by the effect of contrast with other colours. The conception of space, which discloses itself to us *at one stroke*, has arisen by the combination of diverse impressions. Our two eyes have not the same range of vision, and yet we imagine that with both eyes we survey the binocular range of vision immediately. We judge the direction of the line of sight (according to Helmholtz) by the effort of will with which we try to alter the position of the eyes. But of all these combinations we are not conscious, and when it is said that our sensuous percepts are results of "unconscious inferences," it must be carefully noted that this expression is permissible only because we have no means of denoting these processes, known to us only by their results, except by expressions derived by analogy from the higher conscious life.[1] We employ here a sort of inverted anthropomorphism.

4. Not only may conscious results come from unconscious working up, but there may also be unconscious intermediate links in the midst of conscious work. Supposing the idea *a* to be linked with the idea *b*, and *b* again with *c*, then *a* will finally produce *c* directly, without the intervention of *b*. A proposition, which we have learned to understand by way of proof, remains in our consciousness after we have forgotten the proof. All education

[1] Helmholtz, *Physiologische Optik*, p. 811. Afterwards Helmholtz avoided the use of this expression on account of the misuse made of it by Schopenhauer and Hartmann. But he still adheres to the position that we have here to do with an elementary process, which lies at the bottom of all thought properly so-called. "*Die Thatsachen in der Wahrnehmung*" (The Facts of Perception) (Berlin, 1873), p. 27 *seq.*

rests on the possibility of the intermediate links thus sinking below "the threshold." The authority of the educator is at first indispensable, but gradually falls into the background. The intermediate links are often so numerous, that they cannot be recovered at all, or only with great difficulty. Many psychological paradoxes and sudden suggestions have their explanation in this unconscious determining of conscious ideas.

5. Everything that we call instinct, tact, self-acquired or innate disposition operates in this way. Habits and tendencies which we have acquired or yielded to, or which are bequeathed to us from earlier generations, endure long after the causes of them have passed away. The ideas, feelings and actions, to which these tendencies lead, do not receive a complete explanation in the conscious life itself. There are always intermediate links which are passed over, and can be discovered only by physiological and sociological research. The conscious motives have passed away, but their effects remain. Instinct therefore has been defined as an acting for ends of which we are not conscious. Conscious effort is partially determined by unconscious motives, and leaves behind it unconscious effects. In the individual as in nations, sudden revolutions avail but little; below the surface tendencies persist, which it takes time to overcome. Thus it was necessary for the Israelites to wander forty years in the wilderness. Herodotus relates (iv. 3, 4) how the slaves of the Scythians, while their masters were away on distant expeditions, had married their women and secured supremacy. When the masters returned, they could not by force of arms subdue the young generation that had sprung from these marriages, but obtained their submission so soon as they cracked the whips which ordinarily served for the punishment of slaves. This narrative may serve at any rate as a poetical representation of the force of inherited habit.—In the lives of eminent and leading men, we often see how they have to struggle to overcome what the impressions of youth and habit have implanted.

Every mental revolution disturbs at first only that which stirs in clear consciousness; the unconscious undercurrents may long pursue their course, without being reached by the movement of the surface.[1] The reaction after a revolution often discloses how little

[1] In H. Bröchner's treatise, *Om Udviklingsgangeni Filosofiens Historie* ("On the Course of Development in the History of Philosophy"), (Copenhagen, 1869), will be found many interesting indications of the way in which ideas may unconsciously influence their advocates; even their opponents, in the age which has produced them. See also his paper in *Nyt dansk Maanedsskrift* (New Danish Monthly, 1871), on the relation between the conscious and the unconscious.

real hold the movement has obtained. What has been consciously attained has not taken real root until it operates unconsciously or, as we say, has become part of the flesh and blood. Conscious work acts as pioneer ; but it is also important that the unconscious machinery should be set in motion.—Conversely, we may practise something quite mechanically, which afterwards gradually gains control over consciousness. Forced conversion may lead to zealous faith, if not in the same generation, yet in later generations. Compulsion works against that of which there is clear consciousness ; so that compulsory conversion succeeds only where no such consciousness is as yet developed. But mechanical exercise may gradually weaken consciousness. We are, according to Pascal's expression, automata as well as spirits, wherefore Pascal counsels us to begin with taking holy water and observing ceremonies ; the rest will come of itself. This is his notorious principle : *Il faut s'abêtir.*

6. An unconscious activity may be carried on simultaneously with a conscious. The spinner turns the wheel and draws out the thread, while all her thoughts are far away. A reader may be wholly absorbed in the contents of the book or even in other thoughts, while he sees the letters and pronounces the words corresponding to them. In these instances the subordinate action at any rate approximates to the unconscious, and there can be little question that the boundary-line may be crossed. And yet that which has thus taken place unconsciously, may afterwards assert itself in consciousness. Fechner relates (*Elemente der Psychophysik*, ii. p. 432), that one morning in bed he was surprised by having a white image of the stove-pipe, when he closed his eyes. As he lay with his eyes open and speculated, he had seen before him, without being conscious of it, a black stove-pipe with a white wall as background, and what now made its appearance was the negative after-image of this.[1] The physical excitation had thus been of such a nature, that the visual sensation *might have* arisen ; but the attention being otherwise engaged, what appeared to consciousness was not the sensation itself, but only the more impressive after-image. In like manner, when we listen in a state of abstraction to some one speaking to us, we may not until long afterwards become conscious of what he has said. It is only by the express direction of attention that the impressions unconsciously received are here raised above "the

[1] I have myself had an exactly similar experience.

threshold." That we are able to remember something is therefore no decisive proof that we consciously apprehended it at the time of its occurrence. By connection with that which has been consciously apprehended, even an unconscious impression may be called to memory.[1]

7. Unconscious impressions play an especially large part in the development of the feelings. Feeling is determined not only by clear and distinct sensations and ideas, but also by imperceptible influences, the sum of which only takes effect in consciousness. Hence the mystical and inexplicable character of so many feelings; especially when first excited are they incomprehensible even to the individual himself, since he does not know their definite causes. The vital feeling results from the effect of the organic functions on the brain; but the single impressions do not here stand out clearly, but combine to produce an obscure and changing background of well-being or discomfort. The feeling of love has, especially in its first dawning, a mystical character due to the arousing of uncomprehended organic instincts, and to the influence of these on the vital feeling and on the imagination. There is something of the sort even in other feelings, since we are never fully conscious of the influence of our experiences and the conditions of life on our state of feeling, until the feeling acquires a distinctly marked character or even perhaps breaks forth in actions. Such influences are like the air we breathe without thinking of it. They occasion within us a quiet growth which is often the most important and decisive factor in the mental life. This points us back to the general condition of conscious life and of nerve-process, that only a more or less sudden change arouses either to activity. A slowly increasing application of heat or of electricity may cause the death of a frog, without its ever stirring from the spot.

In the history of individuals and of the race, inner connection is preserved by means of this unconscious growth, which determines a great part of the content and of the energy of conscious life. It is only when attention is confined to the distinctly marked states of consciousness, that there appear to be sharp

[1] Koch, *Vom Bewusstsein in Zuständen sogennanter Bewusstlosigkeit* ("Of Consciousness in States of so-called Unconsciousness"), (Stuttgart, 1877, p. 19): "There may be remembrance even of what was absolutely unconscious, as when, *e.g.* of a series of events, which did not come into consciousness, the last member joins on to a conscious state, and from it the whole series is raised by reproduction into consciousness; or when, in some later conscious state, the brain is disposed somewhat as it was in an unconscious state, and the correlated processes are then reproduced as conscious, as memory."

lines of demarcation and sudden revolutions; far below, infinitely ramified connections are discovered. So the coral-zoophytes build always below the surface of the sea, and what they build is not discovered until it rises above the sea-level.

Leibniz was the first to call attention to the significance of the infinitesimal elements in psychology (as also in mathematics and physics). He brought this view into connection, moreover, with the law of continuity so energetically maintained by him. By means of unconscious impressions (which he called *petites perceptions*) he explained the connection of the single individual with the universe, a relation which is much closer than the individual is himself clearly conscious of; and he also employs them to explain the way in which the past determines, and is continued in, the future.[1]

8. In the state of dream we have an intermediate stage between the purely unconscious and the conscious state. The analogy exhibited between the dream-consciousness and the waking consciousness, may so far throw light on the relation between the conscious and the unconscious.

Sleeping and waking are usually contrasted as strict opposites. But just as in the waking state there are innumerable degrees of energy, clearness and connection of consciousness, so there are many shades of transition from waking to sleep, and conversely; and there are also different degrees of sleep. Thus the following descending stages in the scale of psychical energy have been distinguished: (1) Dreaming in a half-dozing state; (2) the light morning sleep with vivid dreams; (3) deep sleep with obscure, fluctuating dream-images; (4) the deepest sleep without dreams (?); and (5) a yet lower degree experienced in illness, the state of lethargy or fever-sleep.[2] The deepest sleep is that which we have immediately after falling asleep. The question whether we always have dreams, receives different answers. Those who believe this to be the case, appeal partly to metaphysical arguments—that the mind cannot from its nature refrain from activity; partly to physiological—that movements must go on continuously in the brain, and that impressions must be continuously received. It is at any rate clear, that dreaming is a step closer to waking life than dreamless sleep, if there be such a thing.[3]

[1] *Opera Philosophica*, Ed. Erdmann, p. 197.
[2] P. Hedenius, "Om Drömen" (*Vetenskap för alla*), Bd III. pp. 609-611 (Stockholm 1880).
[3] [*Cf.* Sully (*Illusions*, pp. 132-134.) (Tr.)]

The connection of the dream-consciousness with the waking consciousness is shown, in the first place, by the fact that the dream-consciousness is frequently occupied with that which is the object of waking interest. Difficulties and annoyances, which were insuperable in a waking state, are overcome or thought to be overcome in dreams, while on the other hand familiar and simple situations present inconceivable and insuperable difficulties. In the next place, the elements of which the world of dreams is composed are for the most part derived from the experiences of waking life, though these are brought into new, often fantastic, combinations. During sleep, however, impressions are continuously received not only from within the organism (from the respiratory and digestive organs), but also from without (impressions of touch, sound, light, etc.). The connection with the external world is thus not entirely broken. Now, these impressions are interwoven with the after-effects of waking life, into a new world of images. But the formation of this new world takes place under conditions which differ from those of the waking state. There is lacking that firm concentration of attention and the universal control, which waking life calls out or imposes. Individual impressions, especially the organic sensations, obtain in consequence a power which thrusts unity and continuity aside. A free and bold interpretation of each individual impression is the result. Dreams acquire what has been appropriately called a mythological character. If the breathing is unusually easy and free, we think we are flying; if it is difficult, we are oppressed with nightmare. If the sleeper becomes cold through losing the bedclothes, he finds himself on a journey to the north pole or promenading the streets naked. A man who had a hot-water bottle at his feet dreamt he was walking on the crater of Mount Etna. Often a most complicated event is constructed to explain some quite simple impression, as when the falling of a curtain and the appearance of light in the room calls up a dream of the day of judgment depicted with a host of details[1]

In the waking state also we explain individual impressions according to their relation to our other experiences. The dream-consciousness follows the same method, often with great ingenuity and great perseverance, and with a certain artistic capacity; but it cannot as a rule keep individual impressions under control; each several impression sets up its special current of

[1] [*Cf.* Sully (*Illusions*, pp. 135-155.) (Tr.)]

thought, which then takes possession of the entire consciousness, until it is dislodged by the next impression. There is not sufficient power of resistance against the individual elements. Hence the shifting and disorderly nature of dreams, resembling insanity, which is also a state of disorganization. It is possible even that many dream-images arise without being determined by sensuous impressions, quite automatically; but even to this there is something corresponding in waking states, namely in hallucinations and sudden suggestions.[1]

The dream-state shows us, then, psychological laws in operation, but below the threshold of consciousness proper. It is a station on the road from unconscious to conscious life.

9. In the act of awaking there are sometimes circumstances which may throw light on the relation between the conscious and the unconscious. When we are awaked, it is not always the physical strength of the stimulus which determines the event, but its relation to the weal and woe of the individual, to his waking interests, what Burdach[2] has called the psychical relation of the stimulus. An indifferent word softly spoken does not rouse from sleep; but a mother will wake at her child's slightest movement. A very avaricious man was awakened by a coin being placed in his hand. A naval officer who slept in spite of a great tumult, awoke at the whispering of the word "signal." To conclude from such cases with Burdach, that the mind during sleep distinguishes sensuous percepts, is not admissible; on the contrary, they point to the view that an individual impression attains to consciousness only by connection with other experiences. It sets free a whole series of effects in the brain, and therewith consciousness is given. The act of awaking, which is transition from an at least relatively unconscious to a conscious state, is brought about by the individual impression obtaining, by combination with other impressions, the background it requires, in order to become conscious. It accords with this, that consciousness is apparently connected with very complex nerve-organs, in which many currents may meet together.

This circumstance may perhaps throw some light on a psychological paradox already mentioned—that a perfectly simple and unattached sensation cannot be conscious, and on the associated difficulty of representing the beginning of consciousness. This

[1] [*Cf.* Sully (*Illusions*, pp. 156-183.) (Tr.)]
[2] *Physiologie*, iii., p. 460. Carpenter also cites a number of examples (§§ 479-480).

beginning might be thought of as having for its condition, that a single impression should at once call up several conscious elements. Just as it seems that what has taken place unconsciously can be remembered, so an impression might be able to arouse consciousness, by simultaneously freeing both fore-ground and back-ground. But this does not imply that the origin of consciousness can be thought of as a single, momentary act.

10. Notwithstanding the intimate connection and close interaction between the conscious and the unconscious, the latter remains for us a negative conception. The unconscious processes are cerebral processes just as much as the conscious, but whether, like these, they are of several kinds, we do not know. Instead of speaking of unconscious thought or unconscious feeling, it would be safer—if we wish to avoid all hypotheses—to speak with Carpenter and John Stuart Mill of unconscious cerebration, were not this expression unsuitable, as suggesting, in the first place, the mistaken notion that there may be consciousness of cerebration, properly so called, and because, in the second place, it might appear to affirm that there is nothing at all in unconscious activity related to what we know in ourselves as conscious states. Just the impossibility of drawing a sharp line of demarcation between the conscious and the unconscious, together with the thoroughgoing analogy between their mode of action and their results, might perhaps justify an hypothesis upholding the law of continuity in the world of ideas, even as in the material world everything seems obedient to it. To all the different material phenomena of movement there would then correspond different degrees and forms of what in us appears as thought and feeling. As the organic world is built up of elements and by means of activities which make their appearance, though more scattered and without unity and harmony, in inorganic nature also, so in the sensations, feelings, and thoughts of conscious beings we should have higher forms of development of a something that, in a lower degree and in a lower form, exists in the lower stages of nature. We should escape from the paradox that conscious life begins without any previous preparation. Leibniz drew this very conclusion from the law of continuity: "Rien ne saurait naître tout d'un coup, la pensée non plus que le mouvement."[1] He instituted an analogy between the relation of kinetic energy to tension and the relation of the conscious to the unconscious. As

[1] Op. phil. Ed. Erdmann, p. 226. *Cf.*, even earlier, Spinoza, Eth. ii., 13, Schol.

tension (potential energy) is living force in equilibrium, so might unconsciousness be consciousness at rest or neutralized. This would agree very well with the fact that change or destruction of equilibrium is so essential a condition of consciousness. As in the external world there is no such thing as absolute rest, so—it might then be said—there is no absolute unconsciousness. Unconsciousness would then not be a negation of consciousness, but would be a lower degree of it, the continuation backwards of the series of degrees of consciousness.[1]

Empirically, conscious life appears as united to certain forms or functions of the nervous system. But the nervous system has itself arisen by differentiation out of uniform protoplasm; the properties of the nervous system must likewise, therefore, be higher grades of something already correlated with general organic matter (*cf.* above, p. 35). There is nothing here to justify the introduction, at a certain given stage of material development, of wholly new points of view. The nervous system is, so to speak, only the highest flower of material existence; it is distinguished above other forms only by its higher degree of development. For this reason modern physiologists (*e.g.* Claude Bernard) trace sensibility back to the irritability (the power of receiving and responding to excitations) of organic matter. Conscious reaction would thus be only a higher form of unconscious reaction. Bernard finds evidence for this in the effect of stupefying drugs (anæsthetics). The power of such drugs (opium, chloroform, &c.) to suspend consciousness is due to the fact that they take effect first of all on that part of the organism which is most susceptible to excitations, and this is the nervous system, the most highly differentiated organic matter. But by the use of stronger doses, or by continuation of the effect, the remaining vital activity is also gradually affected. Now that which is influenced by one and the same thing in the same manner, only in different degrees, can be different only in degree. In this way we ascend gradually from the lowest manifestations of life to that highest

1 This view is held by various more modern writers. The most interesting development is that of Clifford (*Lectures and Essays*, ii., pp. 61-84 *seq.*). Virchow, who contested this hypothesis in his speech on "The Liberty of Science" (*Die Freiheit der Wissenschaft*), made nevertheless in regard to it the significant admission that, *if* the mental processes could be completely brought into connection with what takes place in the rest of the world, the province of mental phenomena would necessarily be extended far below the human consciousness—down to the lowest animals, to plants, cells, and atoms (p. 27). Monistic speculation cannot be called inadmissible, if it really is the only logical method of postulating connection between the mental phenomena and the rest of the world.

vital activity, with which consciousness is linked.[1] The difference between human consciousness and the psychical element associated with the group of atoms, must be supposed to be as great as is the distance between the functions of the human brain and the movements of the inorganic group, though it may be one of degree only. Here, therefore, we are brought to recognize a continuation downwards of the scale previously given (I. 6). A difference of degree, however, does not exclude the possibility of the emergence of absolutely new forms and properties, to which we have no parallel in the lower stages; a body acquires, *e.g.*, other properties when its temperature is changed, and a compound substance may possess properties which belong to none of its constituents. We cannot, therefore, form any idea of the character of those forms of mental life which lie lower than what is to us the threshold of consciousness.

11. There still remains an important consideration. In what precedes, stress has been laid on the principle of the conservation of physical energy, a principle which expresses a grand coherence in the material world, but prevents the acceptance of a causal relation between matter and consciousness. But the principle of the conservation of energy is only the special, precise form which the general causal principle takes in the physical province. In this province the causal principle is satisfied, if physical causes have physical effects. But now consciousness makes its appearance as a plus which is added at certain points to these physical effects, as a something over and above, that cannot be explained by physical causes. Dubois Reymond, in his treatise *Uber die Grenzen des Naturerkennens* (1872), ("On the Limits to the Knowledge of Nature,") concludes from this, that mental phenomena stand outside the law of causality, and indicate a breach with the principle of sufficient reason. After all we have said, he must be allowed to be right, so long as we keep to a purely deductive standpoint and derive the premisses of the deduction from the principles of physical mechanics. But we have no right to regard these principles as the only ones. They are, as already pointed out (II. 2), the presuppositions on which it has been possible to erect the proud structure of the natural sciences; but it does not follow that they exhaust the nature of being. The same being, which,

[1] Bernard, *Leçons sur les Phénomènes de la Vie*, pp. 280-290; see also his paper "La Sensibilité dans la Règne Animal et dans le Règne Végétal" (in the collection of Bernard's papers published under the title *La Science expérimentale*); as also his *Rapport sur les Progrès et la Marche de la Physiologie générale en France* (Paris, 1877), p. 180.

looked at from one side, may be apprehended and explained from points of view contained in the law of conservation and in the law of energy, may well have other sides, not to be explained from these points of view but involving new principles, though these cannot of course contradict the others. Now we have shown in the first chapter, that the principle that psychology is independent of natural science (in the narrower sense) is indicated by the fact that psychology is not merely based on the consequences of physics and physiology, but draws also from a totally different source of knowledge, namely, from inner subjective perception. If, then, experience is not exhausted in physical experience, we understand the necessity—after drawing the final consequences of the fundamental laws of physical experience, and finding that they do not lead to consciousness—of instituting a new inductive investigation, of apprehending a new empirical starting-point. Here two tasks present themselves, the one the discovery of a conformity to law in the psychological world of experience, the other the discovery of the relation in which the psychological experiences must stand to the physical. With the first we shall occupy ourselves in the subsequent chapters; the second we have treated in the preceding chapter. There it was seen to be difficult, if not impossible, to interpolate conscious life in interstices or gaps of external nature, and we were led to conceive of it as another form of manifestation of the same being that operates in the material world. Herewith Dubois Reymond's paradox falls to the ground. For there is now a possibility of supposing a connection as thoroughgoing in the one province as in the other. That consciousness seems to us to arise out of nothing is in that case only an illusion, precisely as it is a delusion to suppose that in external nature anything arises out of nothing. The apparent emergence of consciousness is then only a transition from one ideal form into another, just as every new material movement is produced by conversion from another form of movement.

Such an hypothesis must be taken at its proper value. The unconscious is a conception that marks a limit in science, and when we stand at such a limit, it may have its importance to try and measure, by way of hypothesis, the possibilities which suggest themselves as consequences of our knowledge; but any real extension of knowledge in this way is impossible. The psychologist acts here like the philologist, who supplements the fragment of an ancient author by critical conjecture. The mental world—as

compared with the physical world—is to us as a fragment; it is possible to complete it only by means of hypothesis, and even such completion has great difficulties, which have already been touched upon (see p. 66 *seq.*).

12. This fragmentary character of the psychological phenomena, as known to us, makes it impossible for psychology ever to become an exact science, such as physics is already, and as physiology is in process of becoming.

The inner incompleteness of psychology is connected with the fact that we can propound no principle to which both our psychological and our physical knowledge can be traced back. Philosophical speculation has sought for some such principle, from which both the world of spirit and of matter might be deduced. Spinoza found it in "substance," the infinite original essence, Schelling in "the absolute identity," Hegel in the "absolute idea." But it has been proved of every principle of this kind, that it contains no real explanation, and that the deduction rests on unwarranted assumptions. Starting from experience, we are led to formulate such an aim, but perceive at the same time that it can never be attained.

But if we cannot at once reach an exact deductive psychology, to say nothing of a higher knowledge from which both psychology and physics might be deduced, we may establish by way of induction significant laws, which hold good in matter of fact for both conscious life and external nature. To Herbert Spencer belongs the credit of having first really worked from this point of view.[1] He has shown that all phenomena known in inner as well as in outer experience are subject to evolution, and has tried to lay down laws of evolution common to both. In all departments evolution consists in transition from an incoherent, indefinite, and homogeneous state to coherence, definiteness, heterogeneity.[2] By these common laws and forms mental life appears from a new side as closely bound up with the general life of the universe; with this its paths are interlaced. Here we will call special attention only to the fact that progressive individualization may be given as the

[1] *First Principles* (1st ed., 1861); *Principles of Biology* (1864); *Principles of Psychology* (1st ed., 1855).

[2] See *Den engelske Filosofi i vor Tid* ("The English Philosophy of our Times"), pp. 137-139 (German edition, 1889, pp. 176-178). Among Danish writers, Sibbern has laid special weight on the fact, that all evolution takes place sporadically from different starting-points, and only by degrees leads to coherence, and he has shown this in respect of mental life very finely in a treatise in his *Philosophischen Archiv* (Kopenhagen, 1830), p. 263. [*Cf.* Dr. Ward's application of this principle of "progressive differentiation" to the theory of presentations (*Ency. Brit.* vol. xx. pp. 44 *seq.*, Art. "Psychology"). (Tr.)]

common mark of evolution in all its forms. Everywhere in nature smaller totalities form themselves within the great, infinite totality, each with its particular relation of interaction with the surrounding world.[1] An individual is a being which is in such a way separated off from and independent of its surroundings, that it can re-act upon them with a certain uniqueness. But as already hinted (p. 35 *seq.*), the full stamp of individuality is found only in the province of conscious life, where central points are found for passion and action. This law of the universe receives therefore its clearest expression in the mental province, as a sort of compensation for the fact that the more elementary law of the conservation of energy cannot be established there. Could these two laws be brought into inner harmony or reduced to a yet deeper principle, all problems would be solved.

[1] See my work *Uber die Grundlage der humanen Ethik* ("On the Basis of Humane Ethics") (Bonn, 1880), pp. 80-81.

IV

CLASSIFICATION OF THE PSYCHOLOGICAL ELEMENTS

1. The preceding chapters have been occupied with the relation of psychological phenomena to other departments. Before we enter into an investigation of special psychological relations, it will be profitable to glance at conscious life as a whole and at the chief differences found in it. We shall thus be less exposed to the danger of losing sight of the whole for the details. It is true that, as in the previous chapters we have made use of psychological developments and results, so here we shall have to take as given and allowed much that can be proved only by special investigation. We shall gain, however, this advantage, that the exposition may proceed from the more to the less obvious, and from the main features to the details. To which may be added, that special psychological investigations presuppose an abstraction from that great vital connection, in which every mental fact has its existence; so that it is the more necessary to gain first of all a firm grasp of that whole out of which psychological abstraction isolates single elements.

The abstract character of psychological distinctions and conceptions has not always been clearly seen. Reflection discovered at a very early stage different elements in conscious states, but was disposed to establish them as independent, separate parts or faculties of the mind (*cf.* I. 8, *c*). Thus even in Plato (*Republic, Bk. IV.*) we find a distinction, based on a penetrating analysis, between different "parts" of the mind, in which inner contending principles are exhibited: (1) Reason; (2) Feelings of courage and anger; (3) Sensuous impulse. In modern times

different "faculties" have been spoken of in the same external manner, as acting independently of, and in opposition to, one another. Not only was a division between different parts or faculties thus introduced—a division disproved by the thoroughgoing unity of conscious life, without which even the strongest contrasts could not be felt or apprehended—but moreover those who took this view fell into the delusion of supposing that by tracing the phenomena back to different "faculties" they had reached an explanation: that, *e.g.*, knowledge and feeling would severally be more easily intelligible, if a special faculty of knowledge and a special faculty of feeling were accepted. This illusion was similar to that which derived life from a vital force—a notion ridiculed by Molière in the last interlude of *Le Malade Imaginaire*, when he makes the candidate for a medical degree explain the soporific effect of opium by attributing to opium a *virtus dormitiva*. The purely abstract character of such distinctions was overlooked—as in popular usage it is still overlooked. They imply only that there are certain differences between certain states of consciousness. But it does not follow that there is any justification for arranging the various states each in its own class. It must first be inquired whether there are not the same elements in all actual states of consciousness, the differences arising from the preponderance of certain elements and the subordinate importance of others. Properly speaking, then, it is not the phenomena of consciousness or the states of consciousness themselves which are grouped and classified, but the elements which on closer examination we find in them, since by psychological elements we understand the different sides or qualities of the states or the phenomena of consciousness. When intellection and feeling are contrasted with one another, all that can be meant is the contrast between states with preponderating ideational-elements, and states with preponderating feeling-elements. It will be seen that this view is the only one tenable, since no state can be pointed out, which is absolutely pure idea, or feeling, or will. The question as to classification, then, is really this—whether we are justified in admitting different species of psychological elements.

2. The classification now generally accepted is the tripartite division, into cognition, feeling, and will. After the bipartite division into cognition and will had been followed from the time of Aristotle, the German psychologists of the last century accepted feeling as an intermediate link. Rousseau obtained special in-

fluence on psychological classification by impressively maintaining the rights and the importance of the life of feeling. Kant's application of this tripartite division secured for it universal acceptance. The attempts which have been made since Kant to trace back all manifestations of consciousness to a single species of element, have not been successful, and besides, these really recognize the three kinds as given, and only endeavour to trace them back to one principle.

The older psychologists conceived feeling either as obscure thought, or as impulse and will. It was natural that attention should first be directed to cognition and will, and should overlook the elements which lie deeper. This is analogous to the fact that attention is directed outwards to the external world earlier than to the internal. Cognition and will denote in fact the sides of conscious life which are turned to the outer world. In cognition (under which psychology reckons sensations, representations, and thoughts) an image is formed of the external world and of the individual himself as a part of the world. In will (under which are reckoned impulse, purpose, and resolve) the individual reacts on the outer world. The elements of feeling, the inner rhythm of pleasure and pain, are always so closely bound up with certain images and thoughts or with certain actions, that they may easily be confounded with them. Besides, the element of feeling is in itself difficult to describe. A simple sensuous percept, *e.g.*, a colour or a sound, can be more directly indicated ; but feelings of pleasure and pain lie deeper, and cannot be elements of immediate sensuous perception. Feeling might perhaps be defined as that in our inward states, which cannot by any possibility become an element of a percept or of an image. It is an inner illumination which falls on the stream of sensations and ideas. Nor is it every pleasure and pain which finds expression in action. In the first chapter we have given instances of the difficulty of arguing from external relation to inner feelings.

The independence of the feeling-elements as contrasted with other conscious elements is apparent in the fact that even if there be no state that can be called mere feeling without cognition and will, yet feeling does not necessarily accompany any definite condition, theoretical or practical. In different individuals and in the same individual at different times, pleasure and pain accompany different objects. Something which at first excites pain, may afterwards excite pleasure, and *vice versâ*. At the same time there

is a clear contrast between states in which thought or action so powerfully occupies consciousness that the wave of feeling is scarcely perceptible, and states in which the powerful stirring up of feeling suppresses clear and coherent thought and circumspect action. Physiologically, the latter states are clearly indicated by the transmission of movement from the central nervous system to the internal organs, and by the reaction of these upon the brain.

3. Although we are thus justified in employing the tripartite division as a basis in psychological inquiries, it does not follow that it is to be regarded as original. In presenting the characteristics of conscious life, we take it as it appears at an advanced stage of development, where it has acquired a certain distinctly marked form. There is no ground for supposing that the threefold nature of the elements is equally prominent at lower stages of development. On the contrary, it is one of the general laws of development that the indefinite and the homogeneous precedes the definite and heterogeneous. The first germ of the organism is a uniform mass, in which no definite structure can be distingished. If conscious life follows the general laws of life and of development, then the three different species of elements must not be expected to stand out so clearly at the lowest as at the later stages.

This suggests the introduction of a second point of view. Instead of a classification according to breadth, according to the dissimilar but simultaneous elements, we now obtain a classification according to height, according to the stages of development. A point of view of this kind was introduced at an early period in psychology, and once more Aristotle, the founder of experiential psychology, must first be named. Plato, indeed, distinguished between higher and lower forms of mental life; but he was mainly influenced by ethical motives, and denied that the higher mental forms could be evolved from the lower, since the latter arose only through the implanting of a spiritual being in a mortal body. Aristotle, on the other hand, tries, with a penetrating use of the materials at his disposal, to show how one form of the mental manifestations forms the basis of another. In our times this conception has received fresh support through the evolution-hypothesis, and through the inducement this offers to find the connection between the stages of development of mental life not only in the individual but also in the race and in successive generations.

4. Conscious life certainly begins in the fœtus-state (see I. 4). So far as it is possible to judge, various more or less definite sensations (consequently cognitive elements) must be experienced even in this state. In like manner there are certainly oscillations of pleasure and pain, following the course of the vegetative functions. In the movements, often very lively, which the fœtus makes, may be recognized the expression of a primitive will, whether we explain them (with Bain) by an unconscious impulse to the discharge of accumulated tension, or even here talk of an actual impulse to movement. Even if these movements take place at first quite unconsciously, they will soon bring about consciousness through the sensations which they occasion. Here, then, are elements of all three kinds, but in close conjunction. The transition from stimulus to reaction is here immediate; even if the movements of the fœtus are something more than mere reflex-movements, they do not rise far above the stage of instinct. *Instinct* is distinguished from mere reflex-movement by the fact that it includes an obscure impulse of feeling, consequently a sort of consciousness, though not consciousness of the actual end of the action; it is distinguished from the involuntary discharge of energy, supposed by Bain, by the fact that it is directed to a definite end, useful either to the individual or to the race. Instinct need not be displayed at one stroke; it does not exclude the necessity of certain elementary experiences; but these are easily and naturally obtained by means of the original organization. The movements in which the sense of well-being or of discomfort finds expression, must naturally take that course which the organization of the individual renders most accessible. This original organization is a given starting-point, connecting the conscious and the unconscious, the heritage of the race and the experience and activity of the individual. The new-born individual is thus not only in possession of sensory and motor organs, but had already begun, in the maternal bosom, to exercise them.[1] A definite discrimination of the different elements cannot, however, be made at this stage. Sensations blend immediately with feelings of pleasure and pain, and these break out, equally immediately, into movements.

The experiences of early childhood correspond to what may be concluded about the conscious life of the fœtus. The predominating importance of the vegetative life precludes differ-

[1] Kussmaul, *Untersuchungen über das Seelenleben des neugeborenen Menschen*, p. 35; *cf.* Cabanis, *Rapport du Physique et du Moral*, 6d. Peisse, Paris, 1843, p. 114, *seq.* Burdach, *Physiologie als Erfahrungswissenschaft*, Leipzig, 1828, vol. ii. p. 693, *seq.*

entiation. Immediate, instantaneous transition from excitation to movement is characteristic of the earliest stage of conscious life; it is only gradually that an interval is formed, in which inner differences and contrasts may make themselves felt. "The absolute strength of the assimilation of brain-substance is considerably greater in the child than in the adult. The greater content of water, and the decidedly softer constitution of the brain-substance, likewise favour assimilation, the preponderance of which may in some measure account for the greater excitability of a child's nervous system." Where adults merely tremble, children fall into convulsions. The purely involuntary and instantaneous character of the transition from stimulus to movement is especially manifest from the small importance of the cerebrum in the earliest period of life. Its removal or disease has not the same consequences for infants as for older persons.[1] If the connection between the functions of the cerebrum and the higher activities of consciousness is considered, the psychological significance of these facts will be realised.

Even where there is not only instinct, but also *impulse* in the narrower sense, namely, as a motor-impulse directed by an idea of the end, the relations are still too simple for the difference in the psychological elements to be clearly and definitely apparent. The idea plays in impulse only the part of disposing the mind to move in a certain direction, as the idea of water in a thirsty person. Now to the painter who thinks of the play of light on the surface of water, or to the chemist who thinks of its composition, the idea of water is to a certain extent separated off from the rest of the conscious state, and has become in some measure independent of it.

Just as consciousness is slowly evolved out of vegetative life, so is it, through the infirmities of old age, the gradual approach of death, and in advanced mental disease, again resolved into it. The highest, most differentiated phenomena of consciousness are the first to give way; impulse, instinct, and reflex movements become again predominant. The phrase "to grow childish" expresses the resemblance between the first stage and the stage of dissolution.

Thus consciousness describes a curve from the fœtus state to death. The two points in which this curve terminates are com-

[1] Vierordt, *Physiologie des Kindesalters*, pp. 133—137; Darwin, *The Expression of the Emotions*, London, 1872, p. 67 (and edition 1890, p. 70).

paratively simple states, but little differentiated or articulate. Only in the middle and on the highest point do ideas, feelings and expressions of will come into effect in their specific character.

5. What in this way applies to the development of the individual, is valid also for that of the race. A definite distinction between intellection, feeling and will presupposes a stage of civilization where perpetual and instantaneous reaction upon the external world is not required. Directly or indirectly the whole conscious life is determined by the position of the individual in the universe, and by his need to make acquaintance with his surroundings and either bring them into harmony with him, or himself with them. Even in the thoughts and feelings apparently most independent of practical considerations, practical motives of this kind may be traced. But it is a condition of any independent development of the life of thought and feeling, that the elementary practical requirements of life should be satisfied. Science and art, which are the forms taken by this life of thought and feeling when it is emancipated from immediate practical motives, do not develop during a state of general warfare. Nor are the shady sides and degenerate features of psychological differentiation, such phenomena as morbidness and sentimentality, possible under these conditions. Where life is an immediate struggle for existence, thought does not become isolated from feeling, nor feeling from will. Threatening dangers and hoped-for benefits fully engage consciousness, and set the will immediately in motion. The content of thought is that which impulse (Schopenhauer's *Wille zum Leben*) demands, and feeling is one with desire.

6. The forming of an interval between affection and reaction presupposes adequate energy as well as an adequate organization and adequate time.—There must be sufficient *energy* to resist the impression; its immediate influence must be checked, that more extensive inner activities may be called out and developed. And these inner processes lay claim to an energy which would otherwise be at the immediate disposal of the re-acting activity. Starting from the supposition that a conscious being at every stage of development has at its disposal a certain sum of energy, the limits of which are also the limits of the individual (so far as intensity is concerned), it is clear that this sum must be greater if it has to be divided among different complicated functions, than if it is employed in the execution of a single simple function. If this energy does not augment with increasing differentiation, the latter leads to a

weakening or to a morbid one-sidedness of conscious life.—That these inner activities presuppose a richer *organization*, needs no special proof. Even if no thoroughgoing localization of the various psychological elements is admitted, it is yet probable that the cerebral processes are the more complex, the greater the advance in psychological differentiation.—In like manner it is clear that longer *time* is required for the reaction to take place, if several different activities are called into play. A certain independence of the requirements of the moment is therefore, as already observed, a condition of higher mental development. A simple and clear proof of this is given in the investigations into *physiological time*, *i.e.* the time which elapses before a stimulus is perceived and responded to. Even reflex movement takes more time than mere transmission along a nerve fibre; the difference (the so-called reflex time) is about one-twentieth of a second. Still greater is the difference between a voluntary movement and the contraction of a muscle due to the direct stimulation of the motor-nerve; experiments made with the forefinger of the right hand gave the difference as 0·13 of a second. Stimulation of the grey substance of the cerebrum, in the region where the motor-centres are located, takes 0·015 of a second longer to arrive at the muscle, than stimulation of the immediately underlying white substance. The stronger and more distinct the excitation, and the more natural or practised the voluntary movement which it calls forth, the shorter is the physiological time (or, as it is also called, the re-action time), and the nearer the approach to the sureness and quickness of reflex movement and of instinct. The more the individual is prepared for the nature and strength of the excitation and for the movement by which it is to be answered, the quicker will the re-action take place. Even with doubt as to which of two possible excitations will be given, physiological time increases; there is then interpolated a "discrimination-time", which is spent in determining the nature of the excitation. And if at the same time each of the possible stimuli is to be answered by a special movement, so that the movement to be made has first to be decided, then a special "will-time" is required.[1]

7. It must not be forgotten that differentiation implies only

[1] Exner, *Physiologie der Grosshirnrinde* (Hermann ii., 2), pp. 278-281.—Panum, *Nervevärets Fysiologi* ("Physiology of the Nervous Tissue"), pp. 115-207.—Wundt, *Physiol. Psychologie*, i., p. 259, ii., p. 206-279 (3rd edition, i. p. 277, ii. pp. 263-330.) And yet, according to later experiments (Cattell, *Psychometrische Untersuchungen*, Wundt's Studien iii., p. 472) physiological time is not extended in the more complicated transactions as much as might be expected.

preponderance of different elements in different states, not their complete separation.

a. In spite of all independence of practical need and of the wants of the moment, thought is always accompanied by a certain mood. Elements of feeling are present, and are overlooked so easily only when, instead of coming to the front, they subordinate themselves to the play of thought and are determined by it. An activity of thought entirely free from feeling (as so often postulated by speculative philosophy) does not exist. It is because of the movements of feeling accompanying all ideas and thoughts, that knowledge becomes a power in the mind. When the conflict of reason with passion is talked of, what is really meant is a conflict between the feelings accompanying reasonable considerations and the more violent feelings associated with fewer elements of thought, which are denoted by the expression passion. A feeling may be very strong and deeply rooted without being violent, but is then more easily overlooked. The feelings accompanying ideal aims and relations are far less in a position to produce momentary effects and sudden ebullitions than are the primitive feelings, accompanying the physical vital functions. In the passions associated with self-preservation and the propagation of the race there lies an animal ardour, which is often beyond the control of all other influence. Ideal feelings are spread over a longer space of time, and take effect more secretly. And yet they are capable of possessing themselves step by step of the central position in the mind, and of employing in their service the accumulated energy originally under the control of those primitive impulses.

b. Just as little is cognition ever completely emancipated from will. In all memory and synthesis there is manifested an activity, of which we become specially conscious and which we call attention, when for internal or external reasons it is brought strongly into play, but which in reality plays a part even in the simplest sensuous perception. We must *will* to see, in order to see aright. But it is true of this effort, as of the stirrings of feeling, that unless raised by opposition or in some other way to a higher degree of strength, it is as a rule overlooked. This element of activity in all intellection has been dwelt upon chiefly in modern psychology, at first especially as a reaction against the attempts of Condillac and of the one-sided "association psychology" to reduce all knowledge to mechanical interaction between purely passive sensations and their after-effects.

c. While for a long time there was a disposition, overcome only through the influence of Rousseau on modern thought, to overestimate intellection at the expense of feeling, attempts have since been made, and especially in later times, to conceive feeling as the primitive form of consciousness, so that conscious life at its lowest stage would be a life of pure feeling, and the other elements would only gradually develop out of it. Such attempts are explicable partly from the close connection of the life of feeling with the conditions of existence, while the cognitive elements seem to move rather in the periphery of our being; partly and principally from the fact that the feeling elements are found more distinctly and strongly, and play a much greater part as compared with the cognitive elements, the farther we descend from the higher to the more primitive forms of consciousness. But this view is at once proved untenable by the fact that memory is concerned so soon as a state of pleasure or pain persists—and it must persist in order to be really felt;[1] and so soon as a pulsation takes place—the intensity of states of feeling is always subject to oscillations—there will at once be involuntary comparison. Here, then, already are elements of cognition which may serve as the starting-point of a further development, so that cognition does not arise by a sort of *generatio æquivoca* out of mere formless and blind states of feeling.

A conception of this kind was formulated not long ago by Ad. Horwicz.[2] According to this writer's very interesting exposition, the movement stirred up by feeling clears the path for cognition. Pleasure and pain lead to certain movements, which are tested until the most suitable is found; this is then practised and so obtains a special mark, by means of which it is made an object of consciousness.—But then there is something else besides the element of feeling, the motor-sensation namely; and there is no ground for supposing that this latter is always derivative, for involuntary movement makes an appearance as early as con-

[1] Patients under chloroform often utter cries during the operation, without being able on awaking to remember that they had felt pain. "A vrai dire," says Richet in this connection, "cette douleur si rapide qu'on n'en conserve pas de souvenir, n'est rien, et c'est un moment presque mathématique dont il n'y a guère à tenir compte. Ce qui fait la cruauté de la douleur, c'est moins la douleur elle-même, si intense qu'elle soit, que le retentissement pénible qu'elle laisse après elle."—*Recherches sur la Sensibilité*, p. 256. Maudsley considers that these cries of pain are purely reflex. He quotes a case of a lady, who had her breast amputated, and who remembered on waking that she had heard herself shriek, although she declared she had felt no pain (*Mental Physiology*, p. 209).

[2] *Psychologische Analysen auf physiologischer Grundlage* ("Psychological Analyses on a Physiological Basis,") i., Halle, 1872, p. 350, *seq.* [For criticism of this view see *Ency. Brit.* vol. xx. Art. "Psychology," p. 40. (Tr.].

sciousness itself. In primitive consciousness there are, then, probably not only the feelings of pleasure and pain, but also motor-sensations. (I. 4, and IV. 4.)

Even in the monera, the lowest forms of animal life, expansive and contractile movements have been found; the former serve to take in food, the latter as a protection against attack. Even at this stage it seems necessary to suppose elements in consciousness other than mere feelings of pleasure and pain, namely, sensation of touch and movement, and perhaps sensations arising from chemical stimulation, something analogous to sensations of taste. "In the search made by the creatures (*i.e.* the protozoa) for food, it is plainly seen that they are capable of making certain distinctions, a capacity without which touch would have no object, could scarcely be called touch. Hand in hand with locomotion in search of food goes of necessity the formation of a discrimination among different directions, *i.e.*, a discrimination of the pleasant direction (that in which the object of food is found) from the relatively less pleasant; and this distinction once present, the direction whence danger comes is readily discriminated from the contrary one."[1] Although it might be supposed that the sensations experienced by these slightly developed beings, in whom no nervous system has yet been detected, could have no clearness and distinctness, yet the facts mentioned show that the creatures must be able to apprehend a difference between the stimuli. Pleasure and pain, moreover, would be of very little service to them if they were impelled thereby to execute movements, without being able to determine more closely from the character of the stimulus the kind and direction of the movement.

In higher and fully developed animals also there is an approximation to a state of pure feeling, namely, in the vital or general feeling —the fundamental frame of mind which results from the general state of the organism, from the normal or abnormal course of the vital processes, in particular of the vegetative functions. It is but rarely and imperfectly possible to localize the stimuli which produce this feeling. They do not make their appearance separately, or with the special qualitative character of the stimuli received through the senses. Even differences of degree are not so readily apprehended here as in the special senses. The vital feeling consists in

[1] G. H. Schneider, *Zur Entwickelung der Willensäusserungen im Tierreich* ("On the Development of the Expressions of Will in the Animal Kingdom" (*Vierteljahrsschrift für wissenschaftliche Philosophie*, 3. Jahrg.), pp. 183, 301. *Cf.* Romanes, *Mental Evolution in Animals*, London, 1883, p. 55, *seq.*, 80, *seq.*

an obscure mood, of the cause of which we are not, at any rate not at once, conscious. Diseases of the heart and of the mind may cause disquiet and melancholy, without the sufferer discovering the causes of these frames of mind. In the years of puberty there is aroused with the growth of the sexual organs a vague desire and longing, an obscure impulse, that, in a way incomprehensible to the individual, takes him out of himself. The temperament is especially shown in the fundamental mood which prevails in the vital feeling.—Few as are the cognitive elements which can be indicated in these states, they yet stand out, each with such a special character, that the transition from the one to the other, together with the difference between them, must be more or less plainly felt in consciousness, and they can none of them be as simple as a state of pure feeling must needs be.

That the higher feelings contain cognitive elements requires no further proof. Feeling acquires a content or an object only when it is linked with memories and thoughts.

Self-observation reveals at most only an approximation to a state in which all cognitive elements have vanished. Such an approximation is reached, the more the strength of the feeling element increases. Cognition and feeling must thus stand in inverse relation to one another; the more strongly the one is manifested, the less the strength at the command of the other. An overwhelming joy or sorrow may drive out almost all ideation, all recollection; but an ecstatic condition of this kind stands on the margin of consciousness.

d. The close relation between feeling and will appears from the fact that only a strong and lively feeling serves as a motive to the will. Cognitive elements do not in themselves lead to voluntary movement. Sibbern calls attention to the fact that feeling and will have this in common, that in both "the ideas involved have a personal hold and effect, so that we yield ourselves up to them and are incited to act and strive for their realisation."[1] The close connection with movement is common to both. Movements caused by feeling are, indeed, in part such as are beyond the direct control of the will, and arise from the propagation of the strong movement of the brain to larger or smaller regions of the organism. Heart and lungs, alimentary canal, vascular system and other internal organs, show in this way traces of the effect of emotion. But also organs and muscles which are usually under the control of the

[1] *Psychologie*, Copenhagen, 1856, p. 150, *seq.*

will, may be set in motion by strong feeling, and it may be difficult, if not impossible, to distinguish between emotional and voluntary movement. Feeling finds a natural vent through those movements which have been frequently (in the same individual and in earlier generations) employed in the service of the will. Even monads execute movements of contraction and shrinking to protect themselves from enemies; and when the same contraction and shrinking is found in beings on a higher level as a consequence of sudden fear, it is probable that this is an old instinct still obscurely stirring in the expression of the emotions. The Greek word φόβος, fear originally signified (as frequently in Homer) flight. Similarly anger finds a vent in movements of attack, strong sympathy in extending the arms, as though to embrace the object, etc. According to the evolution-hypothesis, these phenomena find their natural explanation in the fact that the involuntary emotional movements were originally purposive voluntary movements.[1]

It is only in the course of psychological development that differentiation between feeling and will makes its appearance. There comes to be an ever greater contrast between the two ways in which inner movement finds a vent. The psychological importance of the law of persistence of energy is here seen plainly. For the more energy an individual expends on the one kind of reaction, the less can he expend on the other. This truth is strikingly illustrated in Saxo's well-known tale of the different effect which the news of the murder of Regner Lodbrog produced on his sons: he in whom the emotion was weakest had the greatest energy for action.

Feeling, like cognition, has at first a distinctly practical character. It is only after a long period of development that feeling is severed from practical impulse and can move freely (as in æsthetic and religious dispositions) without direct regard to outward action.

c. If any one of the three species of conscious elements is to be regarded as the original form of consciousness, it must evidently be the will. In the instinct but slightly raised above reflex movement, is given the primitive form of consciousness, and in this the element of will is evidently the strongest; the intellectual and emotional elements acquire significance only as links in the chain that leads to action. Afterwards, too, the will forms at all stages the constant basis. Activity is a fundamental property of

[1] Darwin, *The Expression of the Emotions*, chap. i.; Spencer, *Principles of Psychology*, ii., p. 545, *seq.*; Wundt, *Physiologische Psychologie*, ii., p. 417 (3rd ed., ii., p. 520, *seq.*).

conscious life, since always a force must be presupposed, which holds together the manifold elements of consciousness and unites them into the content of one and the same consciousness (III. 5). Independently of this, the most fundamental form of the will, the word will is used in two different senses, a narrower and a wider. In the narrower sense, as the power of choosing between different possibilities, the will is only the product of a mental development, not an original factor. But if will is understood in the wider sense, as all activity determined by feeling and cognition, it may be said that the whole conscious life is gathered up in the will as its fullest expression. Although conscious life reaches a higher development only by the inhibition of the involuntary impulse to movement, still the transition to movement is always the final step of all that takes place in the world of consciousness. The development of the conscious individual proceeds from will (in the wider sense) to will (in the narrower sense). This development may be very sporadic, may progress one-sidedly and by way of oppositions ; but there will always be present (if not in the individual, in the race) an obscure impulse leading beyond what is scattered, one-sided, and conflicting, to an inner harmony of the deepest mental currents. Ethics and æsthetics are quite right when they recognise in such a harmony the highest type of human life.

V

THE PSYCHOLOGY OF COGNITION

A. Sensation

1. IN considering the cognitive elements apart from other phenomena, we make, as we saw in the last chapter, an abstraction, since in every actually experienced state of consciousness elements of feeling and will are undoubtedly present also. Such an abstraction is, however, necessary; in every scientific inquiry the subject-matter must be to some extent withdrawn from its complex conditions. And this abstraction must be carried yet farther, for the cognitive elements are themselves in a high degree complex. They can, it is true, be roughly divided into two groups, into sensuous perception and thought, but, as will be seen, these two groups are not distinct, but most closely connected. Consciousness—at any rate in the forms in which we know it at first hand—never makes its appearance as a perfectly simple series. Numerous series of thoughts and memories, sensations and ideas interlock in every individual experience, every individual judgment. But in order to get a clear view of relations and laws, we must, so far as possible, think of consciousness as forming a simple series. And not only so; we must begin by thinking of this series as composed of sensations only. The distinction between sensuous perception and thought rests upon the distinction between sensations and representations; between the new elements immediately given and the residues or after-effects of these elements, which re-emerge. So soon as elements acquired at an earlier stage are concerned in the apprehension of new elements, there is no longer pure sensation; a certain amount of thought is then com-

bined with the sensuous perception. And further, if we disregard this, and endeavour to conceive a consciousness which shall consist of nothing but sensations, there still remains the question whether even these are perfectly simple and independent of one another, or whether there is not constant combination and interaction between them.

It is evident that the provisional account of consciousness given in an earlier chapter (II. 5) cannot be correct, if sensations are perfectly simple and independent. In that account we found the characteristic feature of consciousness to be the fact that it makes its appearance in a series of elements not mutually independent, but on the contrary essentially conditioning one another, a close interaction which had its most typical expression in memory. The correctness of this account must now be to some extent tested.

2. By purely psychological observation the *simplicity* of our sensations can be ascertained only to a certain degree. We can never be quite certain that we have before us something unanalysable. At the point where introspective psychology breaks off, the experimental physiology of the senses takes up the thread, and has in some instances established that the apparently simple psychological phenomenon involves an intricate and complex physiological process. The possibility cannot therefore be excluded, that the psychological simplicity may be merely the result of previous combination below or at the threshold of consciousness.

Organic or general sensations are, as a rule, of a manifold, chaotic character, a fact connected with their obscure and only slightly articulate nature. Stimuli from the organs of respiration, circulation, and digestion operate in conjunction without separately attaining to consciousness. Such a sensation as, *e.g.*, nausea, has something complex about it even to immediate perception, as may be seen from the fact that some have proposed to class it among sensations of taste, some among muscular sensations, while others have wished to distinguish it from either class. Many of the sensations of taste and smell are so mixed up with sensations of touch that they cannot be called anything pure and simple. Salt, sour and astringent tastes, pungent and sharp smells, are really combinations of sensations of taste and smell with sensations of touch. The pleasantness of many sorts of food (*e.g.* jelly) is certainly derived chiefly from their effect upon the delicate skin of the palate, and is therefore much more a question of touch than of taste. In the wider sense in which it is customary to speak of

taste, the Shah of Persia was right when he reproached Europeans (who used knives and forks) for not knowing that the sense of taste begins in the finger tips. Again, not only smell, but also sight, plays a part in the enjoyment of food, for we cannot tell the taste of a thing so well in the dark as when we can call sight to our aid. An isolation is here possible only by artificial means, and will often result in showing that the sense of taste proper has nothing at all to do with the apparent sensations of taste.

The sensation we have when we lift a weight from the ground is very complex. Contact, pressure, and muscular effort mingle in an indefinite whole, which becomes the more complicated from the fact that several different muscles, and in different degrees, are called into play. And yet it may seem to us as though we had a simple sensation.

In respect of sensations belonging to one definite sense, it might be expected that the matter would be simpler and plainer. But even in this case it may be disputed whether a sensation is given in immediate apprehension as simple or as complex.

Goethe held, *e.g.*, that only the sensations of yellow, blue, and red are simple. These he called primary colours, and the other colours he regarded as composed of these, since, as he thought, in violet he could trace red and blue; in green, yellow and blue; and in orange, yellow and red.[1] At the present day, on the contrary, E. Hering maintains that green is a perfectly simple sensation, and that yellow and blue can never be experienced together as elements of a compound colour. He draws up accordingly a scale of four primary colours—red, green, yellow, and blue.[2] That such skilled observers should come to such decidedly different results is a proof of the untrustworthiness of direct psychological apprehension in these doubtful points. The matter itself admits evidently of another possibility, namely, that *all* sensations of colour may be simple. Any one who accustoms himself to abstract from recollections and preconceived ideas, and to concentrate his attention on a narrow zone of the scale of colours, will certainly be able to obtain a perfectly simple sensation of every single colour, and if language had words enough, would feel the need of expressing each of these shades of colour by a separate word. It must be added that the dispute would begin all over again, if we had to specify which precise shade of red, green, etc., was the primary

[1] *Farbenlehre*, vol. i., § 60. [Eng. tr. by Eastlake.]

[2] *Zur Lehre vom Lichtsinne*, 2nd ed., § 38. These four had already been given by Leonardo da Vinci.

colour. Each several observer would name his shade, and would maintain that all other shades resulted from admixture of other colours. When expressions of language contain a reference to certain primary colours, this is probably to be explained either by the fact that the colours of certain striking natural objects (green plants, red blood, etc.) were early imprinted upon and controlled the mind, or by the fact that the retina is more susceptible to some colours (especially yellow) than to others.[1]

But while a distinction may not be drawn between primary and composite colours, there is on the other hand reason to believe that every colour-stimulus is accompanied by a colourless light-stimulus, which passes, when the strength of the stimulus is greatly decreased or increased, into distinctly colourless sensation (of white, grey, or black). It is only with a stimulus of medium strength, that the colour-stimulus (the chromatic irritation) preponderates over the colourless stimulus (the achromatic irritation). This admixture of a chromatic and an achromatic process in the visual organ is inferred partly from the fact that those parts of the retina situated farthest from the point of clearest vision (the yellow spot, *fovea centralis*) are under ordinary circumstances colour-blind, partly from the fact that every sensation of colour passes into a colourless sensation if the strength of the stimulus is sufficiently decreased or increased.[2]

In the province of hearing sensations seem to be compound also. Every tone has its timbre, that is to say consists of a combination, different according to the source of production, of a fundamental tone with weaker "higher tones" or harmonics. The same tone therefore sounds different, if produced on different instruments. But just as the practised ear in a concert may distinguish the share of each instrument in the effect produced, so may specially endowed or well-practised organs of hearing pick out the partial tones in a sound, even though to immediate sensation it seems quite simple. A simple tone is thus properly an abstraction, since we certainly never hear tones or sounds quite without *timbre*. There is only a difference of degree between a tone (*Klang*) and a chord (*Zusammenklang*), a difference conditioned by the weakness or strength of the harmonics relatively to the fundamental tone.[3]

1 *Cf.* V. Krenchel, *Om Grundfarver* ("On the Primary Colours"), Copenhagen, 1880, p. 11, *seq.*; (also in Gräfe's *Archiv. für Ophthalmologie*, 1880); Wundt, *Physiol. Psychologie*, i., p. 415 (3rd ed. i., p. 451); Fick, *Die Lehre von der Lichtempfindung* ("The Theory of the Sensation of Light"). (Hermann, iii., 1), p. 192, *seq.*

2 Wundt, *Physiol. Psychologie*, 1, p. 453 (3rd ed. 1, p. 491)

3 [*Cf.* Bernstein, *Five Senses of Man*, p. 245, *seq.* (Tr.)]

This theory, propounded by Helmholtz and generally accepted, shows how the compound nature of subjective sensations may be established by way of physical and physiological experiment. The sensation of tone (*Klang*) is resolved into elements, the relations among which determine the character of the sensation. But if this is so with one set of sensations, will it not be the same with our other sensations? If we do not with these possess the power of tracing the elementary sensations, out of which the sensation as presented to consciousness is compounded, this may have to do with the fact that the sense of hearing so far surpasses the other senses in the delicacy with which it can discriminate differences and gradations. The study of the sensation of hearing has at any rate shaken the principle of the simplicity of sensations, and has opened a fresh horizon at a point where the accessible psychological world seemed to end.

There are, besides, certain phenomena which point to mental elements simpler than those distinctly received through the senses. The sensations experienced, when the attention is engaged in another direction, or even when we are suddenly surprised, have no definite qualitative character. We start, note that something has happened in or to us, but what this is, whether a light-stimulus, a push, or an electric-shock, we do not know,—at any rate not at the first moment. Thus the more sudden the sensation, and the shorter its duration, the smaller the possibility of classifying it under any one definite sense-quality. This applies also to cases where the excitations are very weak and of very limited range; unless the excitation take effect actually on the palm of the hand or on the face, it is not possible to determine in the case of a weak and limited affection, whether it proceeds from contact or from heat. It seems, then, that in the distinct sensations of temperature and touch, we must recognise results of a combination, by which various elementary sensations are united into groups, which then appear to consciousness as indissoluble unities.—A light-stimulus, if its effect is confined to a very small portion of the retina, calls up only an almost colourless sensation of white, even when the same stimulus applied to a larger portion of the retina, produces the sensation of a very intense colour. So that here again a very limited excitation occasions no qualitative sensation.[1]

It accords with this, that the nerve-process, whatever its nature may be, is carried on in pulsating beats or oscillations. It is the

[1] Hermann's *Handbuch*, iii, 1, p. 164, 169; iii., 2, p. 322.

highest law of the general physiology of the nerves, that a nerve-process can never be set up by a state of equilibrium, but only by sudden changes, effected with a certain rapidity, in the condition of the nerve. A seemingly continuous nerve-process (a tetanus) is really only brought about by a series of quickly succeeding changes of equilibrium. The relations in the individual sense-organs, so far as known, seem to accord with this law.[1] The sensation, as we know it, must correspond to several such beats or different momenta of the oscillations; in one single conscious instant, in one momentary sensation, there is thus brought together what physiologically occupies several moments of time. And since the structure and mode of action of the nervous system seems to be throughout homogeneous, only one way is open to explain the qualitative differences of sensations, to derive them, namely, from the different ways in which the elementary sensations, which correspond to the single nerve-pulsations or liberations of force, are combined. Just as the different kinds of colour may find their physiological counterpart in the different directions taken by the same brain-molecule,[2] so a further step may be taken and the differences in the *modalities of sensation*[3] be conceived as having their counterpart in yet deeper differences of form and direction among the processes in the central and end organs. This is the only way in which it is possible to understand how the different senses can have arisen in the course of the evolution of organic beings. The farther the descent from the higher to the lower animals, the fewer the modalities found. That which remains as starting-point in the development of sensory activity, is the sense of touch. Out of this the special senses or modalities must have arisen by differentiation. It accords with this, that the special organs in all sensitive organisms are modifications of the external integument.

This hypothesis (first proposed by Spencer) of the origin of our specific sensations through combination of simpler elementary sensations, opens up a wide horizon. But our chief interest here lies in the fact that, in taking up with this hypothesis,

1 Funke in Hermann's *Handbuch*, iii., 2, p. 328, *seq.* The above quoted principal law of the physiology of the nerves was established by du Bois-Reymond in connection with electrical stimuli, 1845. L. Hermann, *Allg. Nervenphysiologie* ("General Phys. of the Nerves,") (*Handbuch*, ii., 1), p. 50.

2 V. Krenchel, *Om Grundfarver* (In German under the title "Uber die Hypothese von Grundfarben," Gräfe's *Archiv für Ophthalmologie*, 1880), p. 20, *seq.*

3 ***Modality*** is a term suggested by Helmholtz for what Fichte calls quality-circle (***Qualitätskreis***): the collective name for all sensations belonging to one class (sight, sound, taste, &c.).

we find at the confines of distinct consciousness, traces of a work which, while undoubtedly carried on below the threshold of consciousness, conforms to the laws that govern consciousness (*cf.* III). The general description of consciousness as synthetic and connective, proves to be applicable also to the ultimate elements to which we are led by analysis of compound states of consciousness. If, then, consciousness is asserted to be only a sum of sensations, the comment must at any rate be made, that the units of this sum are not absolutely simple, but have apparently arisen by synthesis of still simpler elements. A sensation is only a relative conception, as is an atom in the province of material nature.[1]

3. Closely connected with the question of the simplicity of sensations is the question of their relative independence. Here again the physiology of the senses yields interesting results.

A certain opposition has to be overcome in the end-organs of the sensory nerves as well as in the nerve centres, before the stimulus can produce its full effect; but when once this opposition is overcome, the effect will continue for some time after the cessation of the stimulus. This is the general physical law of inertia, as it comes into operation in the physiology of the nerves. The several senses are not, however, all alike in this respect. The greatest elasticity belongs to the sense of touch. By bringing the finger in contact with a cog-wheel, which revolves at a certain rate, we may have as many as 1000 distinct sensations per second. But if the rate is increased still further, there results only one continuous sensation. The sense of hearing comes closest to the sense of touch. But that the latter has the advantage is apparent from the fact that, if the hand is placed on a musical instrument, the vibrations of even fairly high tones are felt as a whirring. In experiments with one ear, the crack of two electric sparks is heard as distinct when the one sounds 0·002 of a second before the other. In experiments with both ears, the limit is higher (0·064 of a second). Electric shocks can still be distinguished when they arrive at the rate of thirty-five in the second; if the rate is greater, only *one* single sensation is experienced. On the forehead so many as sixty shocks in the second can be distinguished. The sense of sight stands lowest in respect of elasticity, a fact which is

[1] With regard to sensations of taste and smell, there are no trustworthy observations. It cannot be clearly proved that these sensations can be recalled, since it is impossible to be absolutely certain that remains of the matter tasted and smelt are not left in the organs. Vintschgau in Hermann's *Handbuch*, iii., 2, pp. 221, 284.

accounted for by the nature of the end-organs. After observation of a brightly illuminated object, there remains an after-image when the eyes are closed. The new impression consequently does not find the place empty, but is combined with the after-effect of the previous impression. If a disk, divided into equal alternate sectors of white and black, is set to revolve quickly, the impressions are fused, and there results a continuous sensation of grey, if about twenty-four impressions come per second and if the light equals ordinary daylight. A burning match, if swung round quickly in the dark, presents the appearance of an illuminated circle. When the revolutions are slow, the separate sensations are clearly noted ; when the speed is increased, there is a scintillation, and when increased still further, the impressions are all fused in *one* sensation.[1]

The blind patient operated on by Franz, found it disagreeable, even several months after the operation, to walk along much frequented streets. The many different objects and the quick movements of men, carriages, etc., so confused his sight that at last he could see nothing ; the impression produced by the object last seen not having disappeared before the succeeding object called forth a fresh impression. In this case the separate impressions were not completely fused, but produced a chaos which made distinct apprehension impossible. And at every stage of consciousness a certain rate of succession must be observed if the sensations are to be distinct.

For a sensation to arise there must be not only a certain *interval of time*, but also a certain *contrast*, between the impression it accompanies and the preceding impression. There must be a background, from which the new sensation may stand out. If gently and gradually increased, a stimulus may remain unobserved, even after it has reached a degree of strength which, under other conditions, would call out sensation. The quite gradual increase in strength of an electric current will at length destroy a nerve subjected to its influence, without any sign of sensation. By very gradual increase or decrease of temperature, a frog may be boiled or frozen to death without making the smallest movement. Sensations of warmth or cold arise

[1] Fick, Hermann's *Handbuch*, iii., 1, p. 211, *seq.* ; Exner, *ibid.*, ii., 2, pp. 256-260. The strong and persistent after-effects in the eye are an important argument for the photochemical theory, according to which the setting free of the so-called visual purple in the retina, effected by rays of light, is the real stimulation of the visual nerve. Kühne, *Chemische Vorgänge in der Netzhaut* ("Chemical Processes in the Retina"), (Hermann, iii., 1), pp. 238, 261.

only when a change in the temperature of the skin is effected with a certain rapidity. A sensation of temperature arises when the skin (or more precisely the thermic apparatus) acquires a temperature which is sufficiently above or below its "zero-temperature" (*i.e.* the temperature which, at the points of the skin concerned, is felt neither as warm nor as cold).[1]

Very weak stimuli are absorbed by previous or simultaneous stimuli, without producing any special sensation. If a person has been electrified for some instants by a strong current, he does not notice a weaker one. If a strong current is received through one hand and a weaker one through the other, the latter is not noticed. If one point of a compass is placed on a painful wound and the other on the skin surrounding it, and an equal pressure applied, only one sensation will be felt, even though the distance between the points be twice that at which two sensations would be produced if both points were on the surface of the wound.[2] Even Hippocrates taught that of two pains, occurring at the same time but not on the same spot, the smaller would be suppressed by the greater. Shakspeare makes King Lear express the same thought; for grief and rage he heeds neither rain nor storm, for "where the greater malady is fixed, the lesser is scarce felt," as contrariwise, "When the mind's free, the body's delicate." In a highly excited state of consciousness, even strong impressions can obtain no great hold. The ecstatic enthusiasm of martyrs must weaken their sense of suffering. Similarly hypochondria and mental distraction may prevent painful sensations; the fixed idea which arrests consciousness may be so strong, that no other impression is able to attract the attention.

The *threshold of consciousness*, then, is not always at the same level, but *is raised* when there is not a great enough contrast to preceding or simultaneous impressions. On the other hand, *it is lowered* under certain conditions, as a result of custom or accommodation. If a sound is listened to as it dies away, it can be followed down to a minimum strength, inaudible to any one who has not heard it at the beginning. The eye can follow the flight of a bird to a distance at which the bird could not be discovered by any one freshly looking for it. It is easier for consciousness to retain a given weak impression than to take in a

[1] *Cf.* Fick, *Anatomie und Physiologie der Sinnesorgane*, p. 54; Hering, *Der Temperatursinn*, (Hermann, iii., 2), p. 415, *seq.*; Richet, *Recherches sur la Sensibilité*, p. 42, *seq.*

[2] Richet, *Recherches*, p. 168, 222.

fresh impression which in itself is stronger.[1] An example of the lowering of the threshold of consciousness is given in the capacity which prisoners, after long confinement in dark places, acquire for observing the smallest objects and the faintest differences in the light. In order to practise his eye in discriminating very small differences of light, Lavoisier confined himself for six weeks to a room draped in black.—The lowering of the threshold of consciousness is thus conditioned in a manner analogous to its raising; the *gradual* decrease of impressions does not destroy a sensation, any more than their gradual increase produces one.

Perfectly constant and uniform impressions and states do not come into consciousness, are not accompanied by sensations. The pressure of the air is noticed only when it varies. The very rapid movement of the earth carries us round without our knowing it, because it is constant. We do not notice that the blood-vessels of the retina cast shadows on the retina itself, because we have always been accustomed to them; these shadows do, on the contrary, attract notice, when they are artificially cast on to parts of the retina accustomed to stronger impressions of light. A substance affords sensations of taste only if its taste is different from that of the saliva. For the tongue is accustomed to the saliva, and therefore deadened to its slightly salt taste.[2]

Fechner has tried to find a mathematical formula to express the ratio in which the effect produced by each stimulus is determined by the preceding stimulus. From experiments made by himself and others, he thinks the rule may be deduced *that the increase in sensation, resulting from an increase in the strength of the stimulus, depends, not on the absolute increase, but on the relation of the increase to the preceding stimulus.* If the sensation is to increase to a certain degree, the stimulus must increase the more, the stronger it is to begin with. Fechner expresses this by saying that *the strength of the stimulus must increase in geometrical progression, in order that the sensation may increase in arithmetical progression.* If the sensation is to rise from 1 to 2, the stimulus must rise from 10 to 100; and that the one may rise from 2 to 3 the other must rise from 100 to 1,000, and so forth. Fechner himself allowed that this rule holds good only for stimuli of a medium strength. There is a definite limit to

[1] Richet, *Recherches sur la Sensibilité*, p. 170, *seq.*

[2] Helmholtz, *Physiologische Optik*, p. 161; Henle, *Ueber den Geschmackssinn* ("On the Sense of Taste") (*Anthropol. Vorträge*, ii.), p. 18. [Bernstein, *Five Senses of Man*, p. 80, *seq.* (Tr.)]

the sensibility of the visual organ, and if two stimuli of unequal strength both exceed this limit, the difference between them cannot, from the nature of the case, be apprehended.

The lower limit to the rule is conditioned by the fact, that, when the stimuli are very weak, the internal condition of the organ and of the nervous system comes appreciably into play. In respect of the eye, the so-called "natural light," which arises without any external influence, effects a sort of "normal hallucination."[1] The other senses also seem to be never wholly free from subjective sensations, which become of much importance only when external stimuli are very weak. Very weak stimuli are, moreover, incapable of overcoming the resistance offered by the retina.[2] But even with regard to stimuli of medium strength, the universality of the rule has been brought into question; it appears to have undisputed approximate validity only for medium stimuli in the provinces of the visual and muscular senses, and perhaps of the sense of hearing. The question which still awaits a satisfactory answer is, whether special reasons can be shown for the exceptions to the rule which occur in several of the sense-provinces.

But whether a mathematical formula can be successfully applied or not, all experience points to the fact that the rise and prominence of sensations are determined by their reciprocal relation. Every sensation, as it emerges, has to undergo a struggle with other possibilities of sensation, and it depends on the result of this struggle whether the sensation comes at all into consciousness and with what degree of clearness and definiteness. The several members in the series of sensations are not therefore absolutely independent of one another. This is ground where it is difficult to find the right expressions. For if it is said that sensations fuse through rapid succession, or where the difference in strength is too small or too great, it may be objected that under these circumstances sensations do not separately arise at all,

[1] "The black that we see in the dark and when our eyes are shut, is a sensation of light which we have without external stimulus, not to be confounded with the seeing nothing which we have in the finger or at the back of the head, and not to be compared to the hearing nothing when there is no external sound. The black which we see when our eyes are closed, is only the same sensation of light which we have when we look at a black surface, and which may go through all gradations up to the strongest sensation of light; indeed the internal black in the eye itself is sometimes changed by purely internal causes into clear light, and is sprinkled, so to speak, with luminous phenomena. On closer attention, we discover in the black of the closed eye a sort of fine light-dust, the abundance of which varies in different persons and different conditions of the eye, and which in pathological states may amount to brilliant appearances of light." G. Th. Fechner, *Elemente der Psycho-physik.*, I, p. 165, *seq.*

[2] E. Kraepelin in Wundt's *Studien*, II., p. 324.

and that consequently they cannot be said to fuse. We stand here at the very threshold of consciousness, where the psychical elements approach unconsciousness, and where, consequently, psychological terms can be only half figuratively employed. The general psychological bearing of the phenomena seems, however, clear enough ; *there is no series of absolutely independent sensations, but every sensation is determined by its relation to the one experienced immediately before it or at the same time.*

4. A corresponding rule is found to hold for the *quality* of sensations.

The same excitation may, under different circumstances, produce the sensation now of warmth, now of cold. If, *e.g.*, the hand is placed in a vessel of the same temperature as the room, a temperature to which it is accustomed, warmth is felt, because the radiation of heat from the hand is prevented in the smaller space. If one vessel is filled with water of the temperature corresponding to that of the hand, a second with water of a higher, and a third with water of a lower temperature, and if the right hand is dipped in the second and the left hand in the third vessel, and then both together in the first vessel, the right hand will feel cold and the left hand warm in this first vessel where previously neither would have felt cold or warmth.

The same movement is felt either as exertion or as rest, according as it succeeds a slower or a more violent movement. The sense of rest, indeed, only properly arises through contrast to the sense of change or motion. Sudden cessation of a stimulus may give rise to a very lively sensation, as when an unexpected pause in a loud piece of music startles the audience, or when the miller is awakened by the stopping of the mill. The same surface appears rough or smooth according to the character of the preceding or accompanying sensations of touch. The taste of wine is brought out by eating cheese ; after bitter or salt tastes water seems sweet.

This *effect of contrast*, through which the special quality of sensation is seen to be subject to conditions similar to those that determine the rise of sensation in general, is especially conspicuous in the province of visual sensations.

To see only one single colour would be the same as seeing no colour at all. If several very small coloured objects are placed side by side, their colour quality may often be apprehended, although that of one of them, at the same visual angle, cannot be recognised.[1]

[1] Hermann's *Handbuch*, iii., p. 199.

The deepest black is apprehended only by the side of the purest white, and in contrast to it. The different colour qualities come out most strongly (are most deeply "saturated") when accompanied by their complementary colours. Colours are called complementary when their combined rays produce the sensation of grey or white. The complementary colours are :—

Red . . .	Bluish green.
Orange	Azure blue.
Yellow	Indigo blue (ultramarine blue).
Green	Purple.
Violet	Yellowish green.

If one colour is placed by the side of another which is not its complementary colour, the one will always be affected by the complementary colour of the other. A grey strip on a coloured ground receives a tinge of the colour complementary to the ground, and if a grey strip is laid upon a succession of differently coloured pieces of paper, it acquires a different tinge on each piece of paper. In making this experiment, we must place a piece of thin transparent paper over the grey strip ; for if there is a distinct outline between the strip and the ground, the tinge does not appear.[1]

Contrast may be not only *simultaneous* but also *successive*. A colour will appear "saturated," not only when seen by the side of its complementary colour, but also when it immediately follows it. If the eye is allowed to dwell for some time on a certain colour, it becomes the more disposed to a strong sensation of the complementary colour. And if the eye is transferred from a colour to a white or grey ground, it sees in the latter a tinge of the complementary colour ; thus a reddish gleam is seen on a white wall, if a green curtain has been previously gazed at. The most distinctly marked sensation of a colour arises through the combination of simultaneous and successive contrast.

Without being noticed, similar effects of contrast enter into all our sensations of colour. We seldom look long at *one* point, for it requires a certain effort to fix the gaze for even a short time, and after-images from the one point of the visual orbit influence in consequence the apprehension of other points. The most complicated combinations of simultaneous and successive contrasts are often produced.

[1] [*Cf.* Bernstein, p. 161. (Tr.)]

The effect of contrast does not rest upon erroneous inference or upon illusion. Such an explanation would be possible only if the effect of contrast were confined to exceptional cases. But it is always experienced in a greater or less degree, at any rate in the province of sight, and it is consequently impossible to point out a normal sensation. What is the ground on which a colour must be seen for its true quality to be recognized? In practice, of course, a normal or typical shade is taken as the true colour; but in reality every determination of quality is relative. In its quality, as in its existence, every sensation is determined through its relation to other sensations.[1]

5. The study of sensations thus corroborates the general account of consciousness given in an earlier chapter (II. 5). It is impossible to resolve consciousness into a series of simple and self-existent sensations, absolutely independent of one another. A sensation which stands in no relation to any other is not known to us. This law may be called *the law of relativity*.[2] *From the moment of its first coming into being, the existence and properties of a sensation are determined by its relation to other sensations.*

The law of relativity accords with the principal law of the physiology of the nervous system, that no constant state, but only a change effected with a certain suddenness, calls to life a nerve-process. The preceding state of the organism and of consciousness thus forms a background to the succeeding state. Effect of contrast in its narrow sense is only a specially striking example of what in some measure takes place, and must take place, in every sensation. It is so easily overlooked only when the degree of contrast is small, or when two sensations are at such a distance from one another that they are not thought of in conjunction; the intermediate links are then forgotten. The clearly defined and distinct sensations are built up out of a host of slightly differing sensations.

The distinction or the relation may be either *simultaneous* or *successive*. The successive relation is, however, the most primitive. Simultaneous sensations have a tendency to fuse (especially in

[1] In the opinion of some, qualities of sound form an exception, no effect of contrast taking place in these. Others maintain that a tone sounds differently, according as it is taken in the ascending or descending scale.—If the exception is more than apparent, the inquiry must be made whether it may not be founded on special conditions of the sense of hearing.

[2] This term was, so far as I know, first introduced by Wundt. [For its several applications, see *Ency. Brit.*, Art. "Psychology" (under Theory of Presentation). (Tr.)]

the departments of touch, taste and smell); and since, on the other hand, the attention is no more quiescent than is the bodily eye, but wanders from point to point, even a complex stimulus is from the nature of the case apprehended as successive. Moreover, successive apprehension is clearer than simultaneous. Small distinctions of weight are more easily perceived by weighing successively with the same hand than by weighing simultaneously with both hands; the temperature of two liquids is compared better by putting the same hand successively into both, than by putting either hand simultaneously into one of the liquids. Very faint shadows are noticed only when the object which casts the light is moved. Infants and the lower animals appear to have far smaller power of distinguishing between simultaneous, than between successive stimuli. This accords with the general law of relativity and with the fundamental law of the physiology of the nervous system; for excitations at rest do not occasion anything like the same change and the same contrast as excitations which succeed one another. Successive contrast takes effect more forcibly than contrast between things given together.[1]

As already observed, no distinction can be drawn between absolute and relative sensation, or between sensations and differences of sensation. This consequence of the psychology and physiology of sensation is, however, still disputed even by such a writer as Fechner, who has done so much to show the importance of the law of relativity. "It is true," he says,[2] "that, since we never have sensations of a certain kind or strength without preceding or accompanying sensations of a different kind or strength, no strict experimental proof can be adduced of the possibility of having sensation which is not so preceded or accompanied; but I find neither theoretical nor experiential grounds to forbid the supposition, and accordingly *believe*—nor can the contrary view be based on more than a belief—that, if a child were to awake for the first time in an absolutely uniform bright light, all other stimuli being so far as possible removed (though it is true they could not be completely removed), he would still see the brightness of the light." Fechner recognized correctly that it is necessary to go

[1] E. H. Weber, *Tastsinn und Gemeingefühl* ("Sense of Touch and Common Sensation") (Wagner's *Physiol. Handwörterbuch*, iii., 2), p. 544; Fechner, *Elemente der Psychophysik*, i., p. 174; G. H. Schneider, "Warum bemerken wir mässig bewegte Gegenstände leichter als ruhende?" ("Why do we observe objects moving at a moderate rate more readily than objects at rest?") (*Vierteljahrsschr. für Wissensch. Philos.*, ii.) p. 411.

[2] In *Sachen der Psychophysik*, p. 114.

back to the first sensation, that is, to the beginning of consciousness, if the law of relativity is to be escaped. His example, however, affords no absolute beginning; for the child awaking to the brightness of the light, would have had general and motor, and perhaps other sensations, before he received the sensation of light; this latter sensation would therefore have those indefinite sensations as a background, and consequently would make its appearance with a character different from all later sensations of light. Perhaps preparations might even have been made for it by internally aroused processes in the visual organ, in consequence of which the threshold would have been already crossed. Moreover, the light-stimulus (even if in itself absolutely uniform) does not produce precisely the same effect in two successive moments; in the first moment there is a vague apprehension and excitement which only gradually gives way to sight proper; and in this transition the law of relativity takes effect, for the state in each moment is determined by that which preceded it. This at least is certain, that the more nearly a mental state approaches to absolute unity, or rather simplicity, the closer is the approach to the confines of consciousness. (*Cf.* II. 5.) It cannot therefore be supposed that all shades of difference and all rhythm can disappear while consciousness still exists.[1]

If the law of relativity has complete validity, no sharp line can be drawn between sensation and thought. In the way in which, in successive relativity (*e.g.* in the effect of successive contrast), the preceding determines the succeeding sensation, an elementary memory is apparent. The influence of distance in time, of opposition and contrast, shows us sensation as a discrimination, an apprehension of differences, an elementary comparison. Here

[1] Stumpf (*Tonpsychologie*, i., p. 10) objected to this (*apropos* of my article "Zur Psychologie der Gefühle" ("On the Psychology of the Feelings") in the "*Philosophischen Monatsheften*," 1880, in which the above line of thought had already appeared), that just as certainly as the conscious life of the individual must have had a beginning, there must have been a first sensation; and since this could not stand in relation to any other sensation, he regarded the law of relativity as condemned.—It is not, however, so certain that there must have been *one* first sensation. It is also conceivable (*cf.* III. 6 and 9) that several sensations, mutually conditioning one another, should emerge together; and this is, in fact, the most probable view, for every organism, at every instant, is subject to various different external influences, while, in addition, the internal states of the organism act more or less upon the brain.—Stumpf does not take into account the fact that, from conscious life as we know it and are able psychologically to study it, we cannot make in the slightest degree intelligible a first simple sensation of this kind. If conscious life begins with a single first sensation, then it begins with a condition to which we have no parallel. (*Cf.* also II. 5.) Noteworthy in the extreme is the conclusion which Stumpf draws from the necessity of a single first sensation: "The universality and necessity of relativity in the emergence of sensations, is to be regarded merely as a something acquired, as a 'second nature,' like every strong habit." If the peculiar property of our conscious life, expressed in the law of relativity, is a habit,

therefore is the very simplest form of the same conscious activity, which at higher stages of development makes its appearance as thought proper. And, finally, it is clear that the interaction among sensations, which conditions their rise and their quality, is possible only because all sensations are members of one and the same consciousness, which embraces and unites them. No contrast is possible between my sensation of red and *another person's* sensation of bluish green. Even if we conceive consciousness as a series of sensations, synthesis is still therefore a necessary presupposition.

A main point in the philosophy of Kant is corrected by these results. Kant distinguished sharply between the matter and the form of our knowledge. Sensations he regarded as a passively received matter, which is arranged by a formative activity, derived from a source wholly different from sensations. These latter, the material of knowledge, are, according to Kant, *given*, while the forms in which the material is arranged and worked up, are *à priori*, that is to say, lie in the nature of our consciousness. Kant's argument is that "that in which alone sensations can be arranged and put in a certain form cannot itself be sensation." According to the law of relativity, however, sensations form and determine one another uninterruptedly, and no absolutely unformed matter is to be found in consciousness; such matter would involve the possibility of pure, absolutely independent sensations. The difference between matter and form is only *one of degree.* Psychological experience affords only approximations to purely passive sensations—and even these are approximations to the confines of consciousness.[1]

6. Even if the sensations are regarded as only given or received, it must be observed that they are not all derived from the external world. For in the first place the organism is itself a little world,

then it is a habit which is acquired very early (immediately after the first sensation), and a "second nature" that appears so early might well be placed in the rank of a "first nature." As is seen, Stumpf does not really reject the law of relativity, although he denies that it states an original property of conscious life. He tries to draw a distinction between the sensation itself, and its discrimination. But every proper discrimination pre-supposes the interaction of the sensations themselves, which is the earliest form of the conscious activity, called at a higher stage comparison and judgment. Language has provided no perfectly adequate expression for a relation so elementary as this.

[1] This was clearly seen by Salomon Maimon, one of the most penetrating disciples of Kant. "Sensation," he says, "is a modification of the cognitive faculty, realized in it only through endurance (without spontaneity); but it is *a mere idea* to which we may approach through the *lowering of consciousness*, but which we can never really reach." *Versuch über die Transcendentalphilosophie* ("Essay on the Transcendental Philosophy"), Berlin 1790, p. 168. Maimon is, however, inconsistent in his *Philosophischen Wörterbuch* ("Dictionary") (1791), when he defines "sensibility" as "the capacity of perceiving sensuous qualities in themselves, *apart from all connection and relation of one to another.*"—P. 14.

confronting the greater world with a certain independence. Its own internal activities yield important impressions (general sensations). Nutrition, the circulation of the blood and respiration pursue their course independently, to a certain extent, of what passes without; and these internal processes excite stronger or weaker sensations. In the second place, the organism does not wait for the external world to bring stimuli to it, but executes movements which are accompanied by sensations: *motor-sensations*. Even before sensations arise through excitations from the external world, movements, as some hold,[1] are executed in consequence of the superabundance of potential energy in the nerve-centres. These movements, from a psychological point of view spontaneous and unmotived, can occasion motor-sensations, which are probably among the very earliest sensations of dawning consciousness.

The change or transition, which every conscious act presupposes, or in which it consists, may thus be as well active as passive in character. Excitations not only come to us from without, but also pass out from us. And the active changes may even perhaps precede the passive, since conscious life first finds expression in spontaneous, reflective and instinctive movements (*cf.* IV. 4—6).

From the psychological standpoint, motor-sensations may be divided into two groups; into sensation of effort and muscular sensation. *Sensation of effort* is the sensation of the energy exerted in carrying out a certain movement. We adjust and measure, voluntarily or involuntarily, the degree of effort required for a certain movement, and, before the actual movement, can have a pre-experience of the energy as thus called up. Similarly, without actually attempting a movement, we can feel our powerlessness and exhaustion. *Muscular sensation* is a sensation of the temporary state of one or more muscles. It may come from muscles which are not under the control of higher nerve-centres (as the sensation of cramp in the leg, colic, labour-throes), but may also result from the state into which the muscle is put by motor-impulses from the brain (sensation of muscular tension, or of fatigue).

On the other hand, it is still uncertain whether these two classes of sensations are equally distinct as regards their corresponding physiological processes. It is held by some that the motor-process set up in the motor-centres of the brain, before leaving the brain, sends through nerve-fibres an excitation from the motor to the sensory

[1] [Bain, *Mental Science*, p. 14 *seq.* (Tr.)]

centres. This would give a class of sensations due to excitations originating in the brain itself. These have been called *sensations of innervation*. This view was held by Joh. Müller,[1] who relied chiefly on the argument that, before an actual movement, before raising a weight or mounting a flight of steps, we can feel the degree of effort about to be made. Others explain all motor-sensations, sensation of effort as well as actual muscular sensation, as due to excitations sent from the muscle to the brain, which thus receives as it were notice of the commencing or completed contraction of the muscle. That we feel or calculate in advance the force to be applied, is, then, to be explained by the effect of experience and habit. If this latter view is correct, and it has been much strengthened by Sachs' discovery of sensory nerves passing from the inside of the muscle to the higher centres,[2] then in the sensation of effort we experience not the actual commencing motor-process, but its effect.[3]

7. In almost all special sensations, the movements of the organism play an important part, so that on closer examination sensations of effort or muscular sensations are found as elements in states which on superficial consideration we take to be perfectly simple. In tasting, the movement of the tongue is of importance; solid pieces of food are pressed against the hard palate, and only so can be tasted. Sensations of smell arise only if the air is drawn in through the nose. If the air be kept out, all sensation of smell ceases, even in a heavily scented atmosphere. In hearing, we move the body, or at any rate the head, until we find the position in which the sound is loudest. In attentive listening the muscles of the tympanum contract. Movement is, however, especially important in the senses of sight and touch. The eye must be accommodated to the distance of the object, and this is effected by contraction of delicate muscles, the surface of the lens being thus made more convex; this change is effected with a certain effort. In every definite position of the eye some muscles are actively contracted, others passively relaxed; every position of the eye is therefore accompanied by a certain sensation of effort or a muscular sensation. We move the eye, or even the whole head,

[1] *Handbuch der Physiologie*, Coblenz, 1840, ii., p. 500.—According to Panum, stimuli from the muscle and immediate stimuli of innervation cooperate in the sensation of force. *Nervevaevets Fysiologi* ("Physiology of the Nerve-tissue), p. 95.

[2] Sachs, "Physiol. u. Anatom. Untersuchungen über die sensiblen Nerven der Muskeln" ("Physiological and Anatomical Investigations into the Sensitive Nerves of the Muscles") (Reicherts u. Dubois Reymond's *Archiv*, 1874).

[3] [For full discussion of the question, see *Brain*, 1887. (Tr.)]

until the excitation of light falls upon the place of most distinct vision (the yellow spot). The delicacy of the sense of touch in the different parts of the body stands in a definite relation to the mobility of those parts ; it is (according to Weber) greatest in the tongue, the lips and the fingers, least in the chest and back. To the movable parts of the body the sense of touch owes its importance ; it is by their means that active experiment is possible. Touch and sight, the two senses linked to the most movable organs, are in conjunction the most powerful means we possess of determining our relations to the external world.

We are thus not given over as a purely passive prey to the impressions of the external world. In the spontaneous and reflex movements which precede the birth of consciousness, an active nature is already apparent. The excitations from without soon, moreover, call forth movements, which serve to retain or pursue them. There is now an active turning towards the excitation, as when an infant follows or searches for a light with his head or eyes.[1] An *involuntary search and accommodation* help to determine the character of the sensations. How primitive this first form of attention is, may be judged from the fact that a pigeon deprived of its cerebrum will turn its head after a light that is being moved away. Attention still bears here the stamp of reflex movement. A conscious concentration of attention (voluntary attention) presupposes a certain development of the faculty of remembering, and of forming ideas independently of purely momentary impressions, and is therefore found only at a higher stage than that now under consideration.

The sensation of attention is closely related to the sensation of effort or muscular sensation, and is perhaps connected with the fact that a stronger or weaker contraction takes place in the muscles of the organ concerned.

Condillac's theory, that attention is only an "exclusive" sensation,[2] is, then, contradicted even by direct, subjective observation. If a sensation takes complete possession and almost succeeds in driving all else out of consciousness, it then arrests our activity

1 "I saw a seven months' child, when two days old, in the evening at dusk repeatedly turn his head towards the window and the light, even when he was moved to another part of the room. He doubtless looked for the light." Kussmaul, *Untersuchungen über das Seelenleben des neugebornen Menschen* ("Investigations into the Mental Life of Infants"), p. 26.—It is only later, according to Preyer, *Die Seele des Kindes*, p. 31 (*The Mind of the Child*. Trans. in Int. Educatl. Series, vol. i. pp. 43, 44), when a child is twenty-three days old, that its eyes follow the light without movement of the head.

2 *Logique*, i. 7 ; *cf. Traité des Sensations*, i. 2, 1.

also. An exclusive sensation therefore *presupposes* attention, but is not one with it. Besides, how does a sensation become exclusive? Excitations can flow in upon us simultaneously from several sides. The eye, *e.g.*, receives simultaneous excitations from several points of light. Several senses, moreover, may be in operation together. If purely passive, sensuous perception would afford at every instant a chaos of diverse sensations. But from the multitude of these diverse sensations, in every tiny instant, *one* is selected which becomes the centre. Reflexly and instinctively the attention moves from one excitation to another. As has been seen, the successive is more easily and earlier apprehended than the simultaneous; this seems to stand in connection with the great importance of movement in sensuous perception.[1]

The motive which decides the attention to leave one excitation and turn to another is to be looked for in a sense of fatigue or in a feeling of dulness, which makes it a necessity or a recreation to turn to a new excitation, especially to one which is a natural counterpart or supplement of the preceding excitation (*cf.* the effect of contrast). In every such transition an *elementary choice* takes place.

B. Ideation.

1. In the interaction of sensations and in involuntary attention, unity and activity of consciousness are as yet manifested only in a quite elementary way; the phenomena are here so simple that it is even difficult to find psychological expressions for them. But the province of pure sensations is now to be overstepped, and attention turned to the fact that the new sensations are determined and modified not only by the immediately preceding and simultaneous sensations, but also by others more remote in time. This takes place by the new sensation re-exciting earlier sensations.

This presupposes that sensations repeat themselves. A consciousness that were to pass continually to new impressions, from *A* to *B*, from *B* to *C*, and so forth, would never advance beyond the

[1] Condillac, however, in spite of his own definition, recognizes the independence of the element of attention, when he says, "Lorsqu'une campagne s'offre à ma vue, je vois tout d'un premier coup d'œil, et je ne discerne rien encore. Pour démêler différens objets et me faire une idée distincte de leur forme et de leur situation, il faut que *j'arrête mes regards* sur chacun d'eux . . . Ce regard est *une action par laquelle mon œil tend à l'objet* . . . par cette raison je lui donne le nom d'attention; et il m'est évident que *cette direction de l'organe* est toute la part que le corps peut avoir à l'attention."

elementary stage we have described. But no consciousness is thus constituted. Beings endowed with consciousness have their definite conditions of life, which do not merely make existence possible, but also narrow the horizon, since the series of impressions is not infinite but unfolds itself with a certain rhythm. The experiences (sensations) of finite beings must be limited, because their existence is bound up with certain conditions, some of which are constant, while others must recur at not too remote intervals. Without repetition no life, and consequently no conscious life, would be possible. Life consists in an alternation between the absorption of matter (assimilation) and the waste of matter (disassimilation), between vegetating and functioning. In organic functions a rhythmic repetition is therefore found; as in inspiration and expiration, the circulation of the blood, sleeping and waking. And this rhythm in the phenomena of organic life seems to be only a special instance of a general law of nature, for there is much which points to the conclusion[1] that all movements and changes in nature are periodic.

The most elementary consciousness would be one in which there was only a rhythmical alternation of pleasure and pain together with the accompanying simple sensory and motor sensations. Then, if the series of sensations had arrived say at D, A would occur again—at all events as A_2, for the sensation might not have precisely the same quality. A repetition of the same sensations would not, however, have any psychological significance, had not consciousness the power of reproducing the previous similar sensations, were these latter on the contrary to disappear without leaving the smallest trace. The psychological importance of repetition consists in this, that—the power of reproduction being assumed—it is possible for consciousness to combine earlier with later sensations and experiences. We have here a fundamental property of consciousness which admits of no closer explanation. It is a fact, that when the sensation A occurs again after an interval which has been occupied by the sensation B, it has *a tendency to reproduce the state* which preceded B; it profits by this repetition, since it utilizes the traces previously left behind by A. Here the *law of practice*, which holds good for all organic life, comes into force. All function is made easier by repetition and practice. This is true especially of the functions of the nervous

[1] Herbert Spencer, *First Principles*, ii. 10; Jevons, *Principles of Science*, second ed., pp. 448, 560, *seq.*

system; indeed, all practising of complex movements is properly exercise of the central nervous system. The nerve-tracks are, so to speak, more practicable the oftener they are traversed. A sensation acquires through repetition a certain distinguishing mark, confronts with a special character other sensations which, so to speak, can be compared with one another, not each with itself. There enters a contrast between that which is repeated, familiar, customary, and that which is new, not hitherto experienced; between the known and the unknown.—Sometimes the influence of repetition and remembrance may call up a sensation which would not otherwise arise. The partial tones in a chord can be distinguished when there is a lively recollection of the sensation they produce as simple tones; but if some time has elapsed between the sensation of the simple tone and the sensation of the chord, it is no longer possible to distinguish between them. Two tones so closely related as to be only just distinguishable when heard in immediate succession, appear to consciousness as one and the same when the interval is from half a minute to a minute. If not more than 15—30 seconds elapse between two sensations of weight, a difference between 14½ and 15 ozs. may be distinguished; but after the lapse of 40 seconds this is no longer possible.[1] If we wish for examples from more complex phenomena of consciousness, we may think, *e.g.*, of the difference between reading a book or hearing a piece of music for the first and the second time; the second time everything is taken in more clearly and distinctly, without its being precisely necessary to think of the first time.

The reproduction of earlier sensation or experience does not, in such cases as these, amount to an actual and distinct recall. For the reawakened state fuses immediately with the given sensation, and does not stand out beside it as a free and independent representation. There takes place an involuntary classification, a reference of the sensation to earlier sensations of like kind. To say that little children and blind persons whose sight has been restored, must *learn to see* colours, really means that they must learn to *recognize* them, to refer the given sensations of colour to similar earlier sensations. The very first sensations of colour can be referred only to analogous sensations of different

[1] Helmholtz, *Die Lehre von den Tonempfindungen* ("The Theory of Sensations of Tones") (Brunswick, 1863), p. 110, Eng. trans. by Ellis, p. 103; G. H. Schneider, "Die psychologische Ursache der Kontrasterscheinungen" ("The Psychological Cause of the Phenomena of Contrast") (*Zeitschr. für Philosophie*, 1884), p. 164, *seq.*; E. A. Weber, "Tastsinn und Gemeingefühl" ("Sense of Touch and General Feeling") (Wagner's *Handwörterbuch der Physiologie*, iii. 2), p. 543.

modalities, as in the case of the man blind from birth, who, when an attempt was made to describe to him the colour scarlet, at last exclaimed, "It must be something like the blast of a trumpet."

In such immediate and involuntary recognition consists *perception*. The psychological process which here takes place may be described as the fusing of a reproduction and an actual sensation. The percept is thus conceived as compounded out of a representation and a sensation; but the representation does not come into consciousness as a free and independent factor, and it may therefore be described as an *implicate* (*gebundne*) *representation*. And as we called the immediate interaction among successive sensations *elementary* memory, so we may call the memory conditioning the percept '*implicate*,' because what is remembered is not disengaged from the sensation which calls it up. Since, finally, the percept comes to exist only through the similarity of the given to former sensations, the activity which is here displayed may be described as an involuntary comparison. And this is an *implicate comparison*, since the elements which on account of their similarity are combined, do not make their appearance as distinct and independent. The more frequent the repetition, the more easily, quickly, and unconsciously is the recognition effected. By repetition and practice, the "discrimination-time" (which might also be called "recognition-time,") as well as the "will-time" (IV. 6), is reduced.[1]

In various experiences, springing in some cases from healthy, in some from abnormal states, this contrast between mere sensation and perception is clearly apparent. On first awaking from sleep, we often have sensations which we cannot recognize. A multitude of diverse elements emerge into consciousness, without being immediately classified. It is only when quite awake that we attain to perception proper, and with it to clear consciousness of our surroundings. What distinguishes the dreaming from the waking consciousness is in great measure this, that the same sense-impressions are differently apprehended or explained, and differently classified (*cf.* III. 8). When we are aroused by a

[1] [In a series of recent articles, "Ueber Wiederkennen, Association und psychische Activität" (*Vierteljahrsschrift f. wissenschaft. Philosophie*, xiii. 4, xiv. 1, 2, 3) Prof. Höffding elucidates further this process of immediate recognition, and its place in association. (*Cf.* also Dr. Ward's recognition of the same process under the name assimilation (*Ency. Brit.*, vol. xx., Art. "Psychology," pp. 52, 60), quoted by Prof. Höffding in Art. 1, p. 437. The two writers differ, however, on the point of (free) association by similarity. (Tr.)]

stimulus which excites strong interest,—or, as it has been expressed, when the "psychical relation" of the stimulus arouses us,—we have a percept which is just on the borders between dreaming and waking. One of Charcot's patients lost, after a nervous illness, the power of perceiving visual objects, although the sensibility had scarcely suffered at all. Every time that he returned to his birthplace, it seemed strange to him; he could not at once recognize his wife and children, on one occasion not even himself when he looked in the glass.[1] In some very instructive states of disease, the power of understanding (of perceiving) spoken or written words is lost, without sight or hearing having suffered. The path from the concept to the word is unimpaired, although the path from the word to the concept is closed. Kussmaul[2] calls this malady word-blindness or word-deafness. Later inquiries into the physiology of the brain seem to show that sensation and perception are attached to different nerve-centres. While sensation seems to be possible even in an animal deprived of the cerebrum (as when a pigeon thus mutilated turns its head towards the light), perception can take place only when the cerebrum is intact. After extensive injury to the occipital lobes, a dog no longer understands what he sees and hears. He pays no attention when threatened with the whip, passes indifferently by his food, does not listen when he is called, etc. Dogs in this state are, as Munk expresses it, *soul-blind and soul-deaf*, that is to say, they have lost the power of combining sensations with the corresponding reproductions,—have thus partially lost perception, while sensation is unimpaired. They have gone back to the state of earliest youth, and must learn afresh to hear and see (*i.e.* to perceive) (*cf.* II. 4 *e*).

The word perception is here employed in the sense given to it by some English writers.[3] Sibbern appears, although he does not express himself quite plainly, to distinguish similarly between mere sensation and perception.[4] Other writers understand by perception a process more complex and comprehensive than that just described. Helmholtz, *e.g.*, understands by *sensations* the impressions on our senses in so far as they come into consciousness merely as states of the body (especially of the

[1] *Hospitalstidende* ("Hospital Journal") (Copenhagen, September 5, 1883).
[2] *Die Störungen der Sprache* ("Lingual Affections"), p. 174, *seq.*
[3] Sir William Hamilton (*Lectures on Metaphysics*, xxvii.). Herbert Spencer (*Pr. of Psychology*, § 353). [*Cf.* Sully, *Outlines of Psychology*, p. 147. (Tr.)]
[4] *Psychologie*, p. 50.

nervous system); by *percepts* he understands the same impressions, in so far as we form out of them ideas of external objects.[1] In reply to this it must be observed, in the first place, that our immediate sensations are not from the first presented to us as states of the body or of the nervous system; we have at first no notion that we have a body, not to mention a nervous system, and the knowledge of our body is only gradually acquired by means of sensations. Besides, with the proposed use of terms, no word would be left for the simple psychological operation, by which a sensation is brought into relation with a previous similar sensation. This act does not involve any consciousness of the external origin of the sensation; it may occur, moreover, in subjective sensations and feelings just as well as in those that owe their origin to external impressions.

2. Not only single sensations, but also whole series or groups of sensations, can be repeated and recognized. We then have a *complex percept*, and in reality nearly all our sensuous percepts are complex, because as a rule several sensations occur at the same time. In complex percepts, the content is arranged partly in the form of time, partly in the forms of both time and space. The closer examination of the conception of time and space must, however, be postponed to the next section (C). Here, on the other hand, we shall inquire how the memory and the representations pass from the *implicate* to the *free* state. This transition would not be possible if we had only absolutely simple percepts. Were the sensation A to be repeated and fused with the idea a, the process would then be at an end. But when a series or group of sensations $(A + B + C + D)$ has frequently recurred, then, when A afterwards appears by itself, the representations b, c, and d, as well as the representation a, have a tendency to re-emerge. Now only a can completely fuse with A; b, c, and d, in so far as they are not suppressed, must appear as something different from the given sensation (A), and consequently as independent parts or factors of the conscious-content. They thus become free ideas or representations.

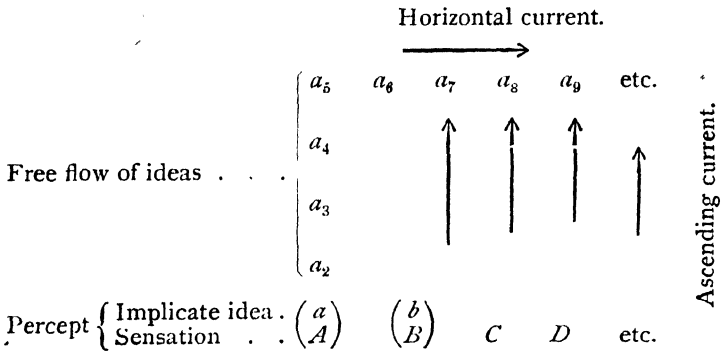
Let the object of a complex percept be, *e.g.*, an apple. That I perceive an apple means that I have, together or in immediate succession, the sensations of colour (A), smell (B), taste (C), hardness (D), etc., which I recognize in their given combination. If now the same sensation of colour recurs, it (A) is not only itself

[1] *Die Lehre von den Tonempfindungen*, 1st ed. (Brunswick, 1863), p. 101. *Cf.* 4th ed. p. 6. [In Ellis' translation of an intermediate edition, see p. 9. Tr.]

recognized (through the implicate representation a), but also rouses representations of the other properties (b, c, and d). I *see* only the red colour behind the leaves but believe what I see to be an apple, because I involuntarily supplement the percept ($A + a$) with the notion of the other properties of the apple. A child, who has burned himself (B) at the fire (A), has the idea of pain (b) when next he sees the fire ($A + a$), although no pain is present at the moment.

The more numerous the free representations that arise in this way, the more there is formed in consciousness an independent field of ideas, a world of memory, which confronts with a certain independence the sensations and percepts of the moment. Immediate sensations then play often a merely subordinate part and act only as liberating forces. When we read a book, the paper and the black characters scarcely attain to express consciousness, but are lost in the ideas and feelings which—at first through many intermediate links—they set in motion. Consciousness has now at its disposal a content, which makes it to a certain extent independent of the influences of the moment; a life may be passed in memory, a life of thought, not merely a life of sensation or perception. The world of ideas has been strikingly compared to the blood. In the blood, which is formed out of nutritive matter derived from the external world, the organism has an internal world (*milieu intérieur*, *cf.* II. 3), which makes it to some extent independent of the external world. Similarly consciousness has in its free ideas an internal medium, which is formed out of previous sensations, and which makes it capable of leading its own life, even when the supply of fresh sensations fails.

We cannot of course completely isolate ourselves from the external world. Sensations are received at every instant, even when we are principally occupied with free ideas. Even in sleep we receive sense-impressions. And every sensation has a tendency to arouse implicate, as well as free, representations. So that there are always two streams in consciousness, of which now one prevails, and now the other. The one is determined by the sensation present at the moment and by the ideas which it tends to excite, the other is composed of the series of free ideas, which have been aroused by a previous sensation and which will be continued for several instants. The one might be called the ascending, and the other the horizontal, current, and the relation between them represented thus :—



Here A has set in motion a series of free ideas, which have so forcibly arrested the attention that they persist not only for one moment, (a . . . a_5) but for several (a_5 . . . a_9), and that the succeeding sensations (B, C, D, etc.), are unable to break the series by the ideas which they in their turn tend to excite. Perhaps they may not even be all recognized; in the schema we have given, only B is recognized, while C and D stir merely in the periphery of consciousness.—I may be, *e.g.*, on a steamer and sailing along the coast. I see the woods, hear the splash of the water, note the sighing of the wind, am aware of the conversation of the people round me, etc. Now the sight of the woods, *e.g.*, may set in motion a series of free ideas. I may think of one spot in it which especially pleases me; from that I pass to the idea of similar spots; a forest landscape of Ruisdael's occurs to me: where did I see it, in Paris or in Dresden? In Dresden I saw also Raphael's Madonna—during the course of this series of ideas (a_2 . . . a_9) the water continues to splash, the wind to sigh, the company to converse (B, C, D . . .), without any one of the sensations and percepts which they occasion succeeding in interrupting the horizontal stream.

In other cases we abandon ourselves to the immediate sensations, as when we listen to music and try to keep out all ideas, so that every moment we may fully and perfectly take in the fresh sensations of sound. In this case no horizontal current is formed. Rigorous musicians even demand that names shall not be given to musical compositions, to avoid the suggestion of a dominant set of ideas which might weaken the effect of the immediate sensations.—When we take a walk for the purpose of mental enjoyment and

recreation, we yield ourselves to disconnected and changing impressions (light, clouds, trees, men, etc.), and permit each to rouse an ascending current, until succeeded by a fresh one. The alternation of dream-images is to be similarly explained. The schema for such cases would be :—

$$\begin{matrix} a_2 & b_2 & c_2 \\ \begin{pmatrix} a \\ A \end{pmatrix} & \begin{pmatrix} b \\ B \end{pmatrix} & \begin{pmatrix} c \\ C \end{pmatrix} \end{matrix}$$

Between a_2, b_2, c_2 . . . there is no connection ; a_2 is interrupted by B, b_2 by C, and so forth.

3. Between the two currents, the course of the free ideas and the series of the actual percepts, and also between the two elements in perception, the sensation and the implicate idea, there is an inverse ratio. They endeavour to check and to suppress one another. The more energy the one element claims, the less from the nature of the case remains for the other. Both elements and both currents are present in every state of consciousness, but with different degrees of strength. If they are equally strong, a rhythmical alternation occurs, so that now the sensation, now the representation, has the upper hand. They do battle for the attention ; but equilibrium between them would presuppose that they could both be presented with equal clearness to consciousness,—a thing which is impossible, for consciousness, like the point of most distinct vision in the retina, is always concentrated in one special direction. In some moments we are almost wholly under the control of sensations and percepts, in others buried in ourselves in reflection and deep thought, when the many sensations and percepts disappear in a single, often narrow but brilliantly illuminated, current of ideas. The difference between the two elements in perception appears in the fact, that the colours of a landscape seem fresher when we look at it with the head turned round. Spencer is doubtless correct in giving as the explanation, that the act of recognition is more easily excluded because of the unwonted position, so that consciousness, instead of explaining the sensations, is wholly occupied with taking them in as vividly as possible.[1]

As the relation between the two currents and between the two

[1] Kant had already seen the inverse ratio of sensation to perception (*Anthropologie*, § 19). Attention has since been called to it by Fries (*Psychische Anthropologie*), i. p. 96, ii. p. 30, and by William Hamilton (*Discussions on Philos.*), p. 63 ; Spencer, in an interesting chapter (*Principles of Psychology*, pt. vi. ch. 18), has described the relation with most exactness.

elements of perception is different in the same individual at different times, so too is it different in different individuals. The bent of some is to give themselves up wholly to the play of sensations (musical and artistic natures); for others sensations are of value only in so far as they may be recognized and classified (observers, naturalists); while others again live mainly in free ideas, in memory, in imagination, or in abstract thought.

The complex nature of perception affords an important contribution to the determination of the relation between sensuous perception and thought. Since perception rests on a process which may be described as involuntary comparison, it manifests itself as an activity of thought, by means of which we appropriate what is given in the sensation, incorporate the sensation into the content of our consciousness. If, then, an activity of thought is manifested in sensuous perception, it is evident that sensuous perception and thought cannot be two wholly distinct activities of consciousness. There is no such thing as absolutely passive sensuous perception. What is received into consciousness is at once worked up in accordance with the laws of consciousness.

Kant first demonstrated clearly the importance of reproduction, of memory, for sensuous perception. In the activity by which the varied matter given in sensation is appropriated ("apprehended"), are connected, according to Kant, sensuous perception and understanding, the two "extremes" of our knowledge.[1] Earlier psychologists either distinguished sharply between perception and thought as two absolutely distinct functions (Plato), or else conceived perception as obscure thought (Leibniz), or thought as transformed perception (Condillac).

4. The question here obtrudes itself, How does the free flow of ideas come to be recognised by consciousness as distinct from the actual percepts? We cannot ascribe to consciousness an original knowledge of this distinction. There is, indeed, as a rule a difference in the degree of strength of a memory-image and a percept; but this difference may be very small, and may even quite disappear. In any case, the first time that a present impression calls out the image of earlier memories, we cannot know what the difference of strength signifies. It may cause greater attention to be paid to the actual impression than to the remembered image; but in this there would be nothing to prevent the latter from seeming equally real.

1. *Kritik der reinen Vernunft*, (Kehrbach's Ausgabe), pp. 130 and 134 [Max Müller's trans., pp. 105, 109]; Berkeley, in his *Theory of Vision*, had already pointed out the complex character of perception.

It must be with dawning consciousness as with dream-consciousness: all that offers is at first taken for current coin, and no grounds are present for arranging the content of consciousness in two different spheres, in the world of possibility and imagination on the one hand, and the world of reality and perception on the other. On the contrary, this contrast is discovered only through experiences in great measure bitter. We must often run our head against reality, before it becomes clear to us where its limits lie.

Let us take as our starting point an exclusive sensation such as that mentioned by Condillac. Every fresh element of consciousness that comes into effect by the side of the given sensation, will have an overwhelming tendency to fuse, wherever it can, with this sensation, and in any case there will be as slight a change as possible, since otherwise the energy and interest would be divided. Now this has the further consequence, that the sensation or percept present will cast its own strong and clear light on the less strongly emerging elements, consequently on the memory-images which it awakens and which are closely connected with it. By association with the real impression, through which they are again called up, the memory-representations will receive the impress of reality, even when they are not naturally so distinct as the impression. In this way what is given is involuntarily supplemented and extended, so long as no distinctly contradictory experiences are known. Without such supplement we should not be able to "see" an apple, for the visual sensation does not give us all, but only one of, the properties of the apple; the others we supply in such a way that we believe them to be apprehended in the perception of the visual properties. In a percept of this kind the representative elements are thus far more numerous than the presentative, but they receive from these latter a stamp of reality which they would not have of themselves.

This power, which the present impression exercises, owes its origin not to the strength of the sensation alone, but also to the active support of all the sensory and motor organs. The primitive impulse to movement, from the nature of the case, is turned principally in the direction suggested by the given sensations. These obtain, in consequence, an effect far beyond that proper to their own strength and efficacy. On this account Bain has, with justice, given the orginal motor-impulse as an important cause of the primitive credulity of consciousness.[1] We stand ready, as it were, to

[1 *Mental Science*, p. 377. (Tr.)]

start off at the first signal, and when we have once started it takes a great deal to change the direction. So long as we are not restrained we entertain no suspicion. An animal follows the scent of his prey, and only when the trap closes over him does it appear that one and the same sensation does not always lead to the same set of circumstances. In instinct there operates an impulse to movement which may often lead astray, as when bees and wasps fly to the flowers in a carpet, or when insects lay their eggs in the carrion-plant on account of its smell. Many animals will hatch any kind of eggs placed under them, or rear the young of other animals; thus a hen has been induced to brood over young weasels, and a cat suckled young rats in the place of the kittens it had lost.[1] A child puts everything he gets hold of into his mouth and sucks it, sometimes sustaining in consequence bitter disappointments. He learns that there are more things and relations than are dreamed of in his simple philosophy. He is thrust back, after his first sanguine attack on reality.

There is more reason to speak of "unconscious judgments" here than in immediate sensations. Logically formulated, it is a positive conclusion "in the second figure," which the early consciousness draws, and through which it makes experiments, which often painfully endorse Aristotle's caution against this description of judgment. *A* is *C*, *B* is *C*—from this is drawn the conclusion that *A* must be *B*. But a finger or a baby's bottle cannot, because it has something in common with the breast, in every respect take the place of this. Not every smiling countenance is a promise that food or play will follow. Because the sheep willingly eats the leaves offered it, it does not follow that a bird will do the same. A small boy once made the direct assertion, "snow is sugar, for snow is white and so is sugar." The sight of white calls up the remembrance of sweet, and this association of whiteness and sweetness prevails at first in consciousness; then experience pitilessly sunders it, with the result that the idea of sweetness receives a special stamp, enters as it were into a special corner of consciousness, to which are gradually referred a whole series of other ideas which have undergone the same treatment (the idea of

[1] *Cf.* Romanes, *Mental Evolution in Animals* (London, 1883), pp. 167, 218, *seq.* I may take a further example from Lyell's *Journeys in North America*. From the mines at the summit of the Lehigh the coals are sent down in a railway impelled by its own weight. Mules are employed to draw the empty wagons up every day, and in the evening are sent down again and allowed to enjoy their food by the way. The same mules, if employed in other tasks, are quite willing to draw heavy loads *uphill*, but obstinately refuse to take a cart *downhill*, make a halt at the slightest decline, and are not to be stirred from the spot.

play in connection with a smiling face, or the capacity for eating grass in connection with the nature of an animal, etc.). In other words: *the first basis is laid of the contrast between possibility and reality.* Then only the *free ideas* enter into a relation of definite contrast to sensation and percept. The primitive confidence is destroyed.

The same facts exert an influence upon the state immediately present during the real impression. The representations called up by this impression no longer blend so closely with it. A certain doubt and a certain disquiet make themselves felt; the state is not so closed in and homogeneous as at first. The representation of that which on former occasions appeared as accompanying or succeeding the impression, is no longer the object of perfect conviction. If the child has learnt that satisfaction does not always succeed hunger, there arises in his consciousness a sense of contrast between his present feeling of discomfort and the idea of the satisfaction of the need. Previously the two intermingled; the transition from the one state to the other was continuous. Now, on the contrary, there is as it were a certain vibration in the ideas associated with the percept present. They are not one with it in the part they play, nor do they aim at the same effect.

If by memory is understood not only the power of reproducing and recognizing elements of consciousness, but also *the power of becoming conscious that the elements reproduced were experienced in time past*, then it is developed later than expectation and hope. At first we attribute to our ideas a practical bearing on the present and immediate future, and it is only when constrained by experience that we recognize their content as something completely past. When free representations have lost their stamp of reality, they often disappear with it; a certain mental development is implied in preserving and dwelling upon representations which can never again become percepts.

In this process it is of course also of importance whether the percept answering to the representation had usually been experienced before or after the present percept. Every state of consciousness has as it were two poles: through the one it is associated with the preceding, through the other with the succeeding element of consciousness (thus B is connected through α with A, through γ with C). Now if C recalls B, B will be situated *before* it in the series, since in this case the pole γ first emerges in consciousness. If, on the other hand, A recalls B, B will be situated *behind* A, since the

pole *a* first rises up. The hungry child is quieted by being taken on the arm (*A*), because this is the first step (*a*) to satisfaction (*B*); *C* comes to be situated, as of itself, behind *A* in the series.

This theory,[1] which of course employs metaphorical expressions, brings out momenta of importance, though only in a secondary, supplementary connection. The chief cause of the separation between hope and memory is the same as the cause of the definite contrast between percept and idea—experience, namely, and the disappointments which it brings. This separation is aided, but not actually effected, by the definite place which the percepts usually occupy in relation to one another. By reason of our practical and sanguine nature, a *progressive* reproduction is at first the most natural. *B* will have the tendency to rouse the idea of *C*, but a lesser tendency to rouse the idea of *A*. The sight of a table being laid excites in a hungry man the idea of a meal; but the sight of a meal will not, on the other hand, except for some special reason, produce the idea of the table being laid. At the lowest stages of consciousness regressive reproduction does not apparently take place. Life struggles forward, and is only moved to look back by experiencing check. So that when a percept (*C*) chances to give rise to the idea of its predecessor (*B*), this latter will at first be frequently presented, not as predecessor but as successor, and expectation will arise. Only when experience has exercised its refining influence, can the distinction between *a* and *γ* become of significance; previously the distinction, under the influence of the impulse to movement and of confidence, will be overlooked.

Even apart from the practical tendency, progressive reproduction is the most natural. Psychologically, it is not a matter of indifference whether we pass from *A* to *B* or from *B* to *A*; we experience the two transitions as different, often as quite opposed. The change from light to darkness is thoroughly opposed to that from darkness to light; this is still more strikingly the case with the change from pleasure to pain, and from pain to pleasure. Even when the contrast is less strong, it is still the case that a different arrangement gives different sensations. The order of the dishes at a feast is gastronomically not at all indifferent. When we reproduce backwards, we really, to be exact, reproduce something

[1] It is found suggested in Robert Zimmermann, *Philos. Propædeutik*, 3rd. ed. p. 223, developed by Taine, *De l'Intelligence*, livre iii. chap. 7 and 9; *cf.* also James Sully, *Belief, its Varieties and its Conditions* (Sensation and Intuition) (London, 1874,) p. 80 *seq.*

other than what we have experienced ; thus in psychology the order of the addenda is not indifferent. It follows that regressive reproduction cannot be so deeply implanted in us as progressive, but presupposes a more advanced development.

From this exposition we see how far from possible it is in reality to carry through the abstraction of the cognitive from the other kinds of conscious elements. And yet we are here ignoring many questions which may be thrown out as to the influence of feeling and will on the course of development above described ; these belong to a later section of our inquiries.

The examples we have employed were taken from primitive and elementary stages. But it will be easily seen that the same process repeats itself, wherever experience exercises its corrective influence on over-confident and pre-conceived opinions and hopes. This is a fiery test which every endeavour, theoretical and practical, has to undergo. The scientific methods of experiment have grown out of the psychological process just described. Every experiment consists in taking the consequences of certain definite hypotheses and so testing these hypotheses ; and to such experiments life constrains us from the first instant.

There is still something wanting to give consciousness perfect clearness. We have distinguished between elementary, implicate, and free memory, and have tried to show how free memory emancipates itself from perception and expectation. But with this free memory may be further combined the definite consciousness, that the representation had its origin in an earlier time. The idea of time and its development will be treated in the next section. Here it is only to be observed, that *this definite reference of the representation to a definite point in time* affords a main point of distinction between memory and free imagination. Imagination alters the content and the combinations of ideas, and creates new arrangements and groups, while memory proper follows step by step the order of the actual percepts. In remembrance as opposed to creative imagination, a recognition, a perception, takes effect among the free ideas. I can *recognize* (*perceive*) *a free idea*, just as much as I can recognize a sensation. The recognition of an idea implies that I have had before, either the idea itself as a free idea, or the sensation answering to it.

5. We have already, in the first chapters of these inquiries (I. 4 and II. 5), found in memory and in the close, and in our experience the only, way in which different elements are through it

combined into a unity, a typical expression of the nature of consciousness. My act of remembering takes place at the present moment, but that which I remember pertains to an earlier moment. In the unity which embraces and holds together the different sensations and ideas, and makes their interaction possible, lies the germ of the *conception of the ego or self.* This conception has therefore as deep a basis as a psychological conception can have, since it expresses the actual fundamental form and fundamental condition of conscious life. The difficulties which have been found in it are due in great measure to the fact that the ego has been looked for as something absolutely simple, which might consequently be given in a certain definite state, in a certain definite sensation or idea.

If we start with the assumption that the ego proper must make its appearance as a single element of consciousness, in contrast to other elements of consciousness, it is no wonder that it is looked for in vain. Thus Hume, in trying to prove that the idea of self is contrary to experience, says: "If any impression gives rise to the idea of self, that impression must continue invariably the same, through the whole course of our lives; since self is supposed to exist after that manner. But there is no impression constant and invariable. Pleasure and pain, grief and joy, passions and sensations succeed each other, and never all exist at the same time. It cannot, therefore, be from any of these impressions, or from any other, that the idea of self is derived; and consequently there is no such idea. . . . For my part, when I enter most intimately into what I call *myself*, I always stumble on some particular perception[1] or other, of heat or cold, light or shade, love or hatred, pain or pleasure. I never can catch *myself* at any time without a perception, and never can observe anything but the perception."[2] In this Hume was perfectly right. But he searches in the wrong place. The nature of the ego is manifested in the *combination* of the sensations, ideas, and feelings, and in the forms and laws of this combination, consequently in memory and comparison, from their purely elementary and automatic forms up to the highest and clearest forms which they are capable of taking. Hume cannot see the wood for the trees. His polemic holds good as against the spiritualistic conception of the "soul" as an individual substance, separated off behind the several elements of consciousness. But he offends against actual psychological experience, when he de-

[1] The expression Hume uses here (perception) includes for him both impression and idea.

[2] *Treatise on Human Nature*, vol. i. pt. iv. section 6.

clares mockingly that, "setting aside some few metaphysicians," the rest of mankind are nothing but bundles or collections of perceptions, which succeed each other with inconceivable rapidity, and in a constant current. He overlooks the inner link between these conscious elements, which enables them to become elements of one and the same consciousness and not of several consciousnesses. And yet he must of course have been led to ask, what holds the conscious elements together and makes them into a "bundle"? To this end there must be a combining force; but with Hume this force was entirely lost sight of for the individual members of the bundle. He even went so far as to attribute independent or substantial existence to the individual percepts. It remained for him therefore an insoluble problem, to account for a combination among "perceptions," each of which exists independently. "I must confess," so he concludes the chapter quoted of the "Treatise," "that this difficulty is too hard for my understanding." And this much is certain, that if the individual elements of consciousness are first represented as quite independent, it will be found impossible to bridge them together.[1]

The assumption from which Hume set out in his criticism, namely, that the ego must make its appearance as a single element of consciousness, is even a contradiction in terms. If the ego and *a single* element of consciousness (sensation, idea, or feeling)—even though this element were quite constant—were absolutely coextensive, all other sensations, ideas and feelings would fall, in all cases where they could not wholly fuse with this constant element, outside the ego, and how could we then *have* them? For to the ego must pertain everything that is in consciousness, and it cannot therefore be exhausted in a constant feeling or in the dominant mass of ideas. The ego must be present in the weak as well as in the dominant feelings, in the ideas which attain only to the periphery of consciousness as well as in those which gather round its centre. It is just the ego, as the expression for the unity of consciousness, which makes interaction possible between the dominant and the weaker feelings, between the central and the peripheral ideas. We distinguish—often a little Pharisaically—between our "real self" and the casual, momentary and transitory thoughts and feelings; regarded psychologically, the self embraces both the one and the other.

[1] Stuart Mill, who in his earlier writings expressed his views as to the basis of the conception "self," with some indecision, seems from what he says in the fourth edition of his *Examination of Hamilton* to have ultimately broken definitely with this view of Hume's.

We must admit that the idea of self cannot be derived from immediate perception, but must be obtained by inference from the general nature and conditions of conscious life. This is a necessary consequence of the fact that it is based on an activity, always (*i.e.* so long as consciousness lasts) continued and repeated; on the synthetic activity which all consciousness presupposes. In each individual state we have the product of this activity, but not the activity itself. It is a fact connected with this, that *we can never be fully conscious of ourselves.* For the very state in which we think of our self, is conditioned by synthesis; self-consciousness, just as every other kind of consciousness, is possible only by its means. The synthesis, the inner unity in us, always hides itself, however deeply we try to penetrate into consciousness; it is the constant presupposition.

And we must admit further, that the unity, the synthesis, is not absolute, but always *relative* and *struggling.* This is apparent, and not least conspicuously, in the very beginning of conscious life, where absolutely scattered and isolated sensations and impulses seem to enter without any inner connection or unity. Some writers have even expressed the opinion that the unity of conscious life does not exist from the beginning. Their idea is that the mental life begins with sporadic and independent sensations, which are only gradually gathered together and brought into reciprocal combination.[1] Or else they attribute to the young child, several egos (a cerebral ego, spinal ego, and an ego for each of the central sensory-organs), which are afterwards merged.[2] The sporadic character of the primitive conscious life could not be expressed more strongly. But no psychological meaning can be given to the merging or growing together of several egos. Views such as those referred to rest upon physical or physiological analogies. Two heaps of sand may by combination form *one* heap, two organic cells may grow into *one* new cell. The merging or combining of two egos or consciousnesses into *one* ego, on the other hand, is a psychological absurdity. The synthesis of consciousness cannot arise from the mere combination of individual parts. It is just this which distinguishes mental from material connection, and precisely for this reason is the origin of consciousness so great a problem.

Hume was not, however, wholly mistaken in postulating a con-

1 Vierordt, *Physiologie des Kindesalters* ("Physiology of Infancy"), pp. 157-169.
2 Preyer, *Die Seele des Kindes*, p. 368, *seq.* (Trans. in Int. Educatl. Series, vol. ii. p. 203, *seq.*)

stant element of consciousness as the basis of the idea of self. For the unity which is expressed in memory and in synthesis, in the inner connection of consciousness, is in itself purely *formal.* It is the condition of *all* consciousness; but each individual consciousness has, besides this formal, a *real* unity. The form of consciousness is common to all conscious beings; *individuality* consists (in addition to the *degree of energy* with which the synthesis is effected) in the definite *content* which is embraced by the formal unity. And this content cannot change every instant. There must be a solid, dominant set of ideas and feelings, in and by which the individual may recognize himself; they need not absolutely fill every instant of life, but they must constantly recur. And in this connection feeling and will are manifestly of greater importance than sensations and ideas. The vital feeling (the feeling of pleasure and pain accompanying general sensation) with the moods, it induces, form a background, often overlooked but not the less important, which plays a greater part in our *real* self-consciousness than any idea or thought whatsoever. The said moods, though for the most part vague, yet lend a stamp and colour to the whole mental content. The more developed and energetic form of our self comes to the fore in our dominant aims, in our desire and our passion. No true personality is developed without a concentration of the life of feeling and will. A man who has no dominant feeling, but flies from one thing to another in a constant search for novelty, has not time and strength enough to gather himself together or to be himself; to know oneself is to *recognize* oneself, and this pre-supposes constantly recurrent elements of consciousness.

The formal unity can only to a certain degree persist without the real; if the contrasts within the content are too great, the mould will burst. In periods of fermentation or transition, contrasts and sudden changes are experienced even in healthy conscious life, estranging the individual from himself and threatening to destroy his unity. Thus at the age of puberty quite new feelings, new desires and wishes, make their appearance; the individual feels himself drawn out of himself. He no longer understands himself. This unquiet frame of mind, this bold soaring of the imagination makes him strange to himself. Mental maturity also, especially in deep natures, is attained through a similar fermentation. Different inspirations, ideas and impulses stir chaotically; mental growth often begins, like the formation of the bones, at scattered points. The sporadic character of development is only gradually overcome,

and not completely in any individual. But the very fact that the inner division and fermentation and the inner doubt are *felt*, bears witness to a unity which embraces the scattered and contending elements. It is only because one and the same self is active in all opposing elements that their mutual relation comes into consciousness.

Even when the prevailing elements of consciousness are not the same throughout the whole of life, but different at different stages of development, the formal unity may still be preserved, if the transition from one standpoint to another is *continuous* and *consequent*. A mental revolution does not destroy the unity of the self if (like most revolutions) it is but the outcome of a process long carried on in secret.

On the other hand, the advancing dissolution of the real unity of the self does at last bring about the dissolution of the formal unity. The study of mental diseases exhibits four principal stages of such a process of dissolution.

Mental disease generally begins with a change in the vital feeling inexplicable to the patient himself. The way in which existence ordinarily affects him is interrupted, his accustomed mood is changed (generally in the direction of pain). The patient doubts his own existence, or regards his own person and everything which happens to him as at a great distance. Experience still forms a bridge between the old and the new feelings (otherwise the patient would not *feel estranged* from himself); but this bridge is insecure, because the fundamental inner experiences do not repeat themselves.

At a more advanced stage of mental disease, the patient is so far estranged from himself, that he attributes his earlier experiences, those previous to his illness, to another subject. He has not forgotten his past, but fails to recognize himself. He speaks of himself as of a third or a dead person, or maintains that he was deranged at that earlier time.

In some cases the conscious memory-connection may be lost periodically. This is the case in the so-called "*double consciousness*." Two states succeed one another, and the individual appears to be a different person in each. Character, memory and disposition are different in the two states. Knowledge which the patient possesses in the one state is forgotten in the other. Sometimes the patient may be conscious of the distinction between his "old" and "new" state. In other cases, when such consciousness is no longer possible, memories from the past still take effect as an

obscure under-current. After a nervous shock, occasioned by an escape from drowning, a lady lost several of her senses, the power of speech and all distinct remembrances, but always became exceedingly agitated at the sight of water, even in a picture. Here the continuity with the earlier state was, so to speak, underground.— A similar underground connection takes effect, when a person who has received an order when hypnotized, executes it when awake at the appointed time, without being able to say why he does it.

But when all the different states and periods are wanting in common elements, then the end is approaching. Repetition of the stimulus is then useless, since the power of reproduction and comparison is lost. Conscious life is then in complete dissolution.[1]

6. As has already been observed (III. 1, 11-12), sensations, looked at *psychologically*, arise out of nothing. They are the primitive elements out of which conscious life is woven, but their explanation cannot be found within this web, if indeed it can be found at all. Ideas in their simplest form are reproduced or recalled sensations. But since we distinguish between ideation and continued sensation, and since an interval intervenes between the original sensation and the idea in which it is renewed, the question arises, whence come the ideas? Do they emerge from a psychological nothing, or do they carry on an existence below the threshold of consciousness?— What may be said hypothetically in answer to this question, in connection with the general problem of the relation of the unconscious to the conscious, we know already (see III.). We cannot help thinking that ideas we have had have a closer relation to our consciousness than those which have never appeared in it. There is, moreover, the wonderful circumstance that ideas, when they re-emerge, may have undergone changes, have been re-grouped or blended. The preservation of ideas, although they are not always in consciousness, as well as that elaboration of them in which consciousness takes no part, justifies us in attributing a positive value to the conception of unconscious mental activity, in spite of all the difficulties attending the application of the law of the persistence of energy to the mental world. When traces, residues, or dispositions are spoken of as remaining after sensations and ideas have disappeared from consciousness, there is

[1] *Cf.* with the phenomena described, Taine in the *Revue Philosophique*, i. 289, *seq.* (taken from Krishaber); Griesinger, *Die Pathologie und Therapie der psychischen Zustände* ("The Pathology and Therapeutics of the Psychical States") 2nd ed. pp. 334-341; Ribot, *Les Maladies de la Mémoire*, p. 86, *seq.*; Richet, *L'Homme et l'Intelligence* (Paris, 1884), pp. 243, 249, *seq.*

involved just this assumption, that there must be something in the mental world analogous to the persistence of energy in material nature. There is, however, this difference between material and mental nature, that, while in the former we can point to potential energy as a definitely given state of equilibrium, in the mental world nothing corresponding to this is possible. (*Cf.* II. 2 and 8.) Physiologically, there is no real difficulty, for in itself it is easy to understand that a cerebral process may arise of the same kind as one which occurred on a previous occasion, and that it will take place more easily the oftener it is repeated and practised. It is possible to represent the molecules concerned as so disposed upon repetition, that their equilibrium is more easily disturbed. But we cannot form any image which would serve to illustrate the meaning of mental tension (potential energy).

The reason for recurring to this observation is, that the theory above criticised, of the independence of ideas, has led to a peculiar conception of the retention of ideas. Some psychologists (of Herbart's school especially) hold that the faithful and constant retention of ideas is the rule, the forgetting of them the exception. The problem would thus be, to explain not remembrance but obliviscence. Every idea would then be supposed to have a tendency to self-preservation, to the maintenance of its existence in consciousness, a tendency checked only by the appearance of other ideas with the same tendency. One idea would therefore be easily driven out of consciousness by other ideas; but so soon as these disappeared, it would reappear of itself, without requiring any help or any motive, just as a watch-spring flies back when the pressure is withdrawn. A distinction will consequently be made between two kinds of reproduction, the immediate reappearance of an idea by virtue of its own force so soon as the hindrances are cleared out of the way, and the mediate recall of an idea into consciousness by means of its connection with other ideas. An immediate reproduction occurs, *e.g.* after sleep, when the ideas of the preceding day present themselves, as soon as the hindering influence of sleepiness passes off. Even when an idea seems to be quite forgotten, it may not be supposed to have wholly disappeared; it remains below the "threshold" of consciousness, and may make its appearance again when occasion serves. Memories, the existence of which was quite unsuspected, may arise again at the sight of the surroundings in which their content was experienced. In old age and shortly before death the memories of youth may be

awakened, and long-forgotten ideas make themselves felt. Great sorrow may recall the past more clearly to memory. It is also known from various remarkable accounts of illnesses, that in fever and other pathological states, the patient will speak of things and utter words which he does not remember at all in his healthy state, a circumstance which can be explained only by the supposition that ideas previously overlooked obtain under these abnormal circumstances an opportunity of obtruding themselves.[1]

It is self-evident that we cannot pronounce any idea to have entirely disappeared out of consciousness. We do not know all the threads by which the individual, to all appearance casual and isolated idea may be united to other elements of consciousness. The union between a certain feeling or a certain general sensation and a certain idea is here of special significance; if the feeling or the general sensation is repeated, the idea may appear as "of itself." The close connection of the conscious with the unconscious mental life, makes it possible, besides, for that which appears isolated so long as we confine ourselves to clear consciousness, to have its underground connection. This is why our knowledge of ourselves is often so purely empirical; we frequently discover a connection existing between certain ideas and feelings, without being able to trace the connecting links. Thoughts emerge, feelings come into play, the previous history of which is unknown to us, although it must have been concerned in our experiences. Thus we may often discover in ourselves something of the existence of which we had no suspicion.

It does not, however, follow that single ideas have a sort of individual immortality. The independence of the single idea is due only to the fact that it is a special form of the ideational activity, that it marks one of the paths which mental activity takes under certain definite circumstances. When conscious life has received new force through sleep, it is quite natural that it should first and with greatest ease take the accustomed course. Our constant line of thought is to our conscious life what the type is to the organism, the form under which in ordinary circumstances development proceeds, and out of which it can be turned only after a

[1] Some special instances are quoted by Carpenter, *Mental Physiology*, pp. 436-439. After the use of opium also, long forgotten memories may suddenly emerge. Thus De Quincey relates (*Confessions of an Opium-eater*) that "the minutest incidents of childhood, or forgotten scenes of later years, were often revived; I could not be said to recollect them; for if I had been told of them when waking, I should not have been able to acknowledge them as parts of my past experience. But placed as they were before me, in dreams like intuitions, and clothed in all their evanescent circumstances and accompanying feelings, I recognized them instantaneously."

certain resistance. The emphasis is not, then, to be laid on the single ideas as such, but on the general activity of consciousness. No individual idea is preserved and recalled, unless the conditions for the general course of conscious life bring it in their train. There is here, as it were, an inner mental system of nature, which underlies the individual manifestations of life. The single ideas may very well help to determine the further development of conscious life, without being themselves retained. In reality, then, it is the conditions of the *retention* of ideas, into which psychology must inquire. The Herbartian psychology introduces anarchy into conscious life, in attributing to the individual ideas imperishable existence. Consciousness is not merely a platform on which ideas carry on their struggle for existence, it acts itself in and through the individual ideas.

It accords with this, that we learn to remember, not so much by impressing each of the individual ideas as by taking note of their combination and connection. The greater the rational connection among ideas, the more easily will they be preserved.

7*a*. *The free memory-image* is distinct not only from the immediate percept and from the immediate after-effects of sensations (*after-images*, *after-sounds*, *etc.*), but also from certain representations which emerge without external cause,—the so-called *hallucinations*. Hallucinations enter, like percepts, with the mark of reality, and it is often difficult, if not impossible, for an individual to distinguish them from actual percepts. In this respect there are many differences of degree. While one mentally deranged will obstinately maintain the reality of his hallucinations, there are other cases where the individual knows clearly that what he sees are mere phantoms. A man, of whom Bonnet[1] tells us, used to see from time to time, without the smallest external cause, men, women, birds, carriages, buildings, etc. These figures moved, grew or decreased in size. Sometimes all the walls of his room seemed to be hung with landscapes. All these made as strong an impression on him as if they had been real objects. And yet he did not mistake these appearances for realities; at any rate he was always able "to correct his first judgment." They were to him like a play, of which he was a spectator, not knowing what scene the next instant would bring.—This stamp of involuntariness and externality (exteriority) brings the hallucination, as also the *dream-image*, close to the sensuous percept. The physiological process

[1] *Essai analytique sur l'Âme* (Copenhagen, 1760), chap. 23.

in the dream-image is indeed partly the same as in hallucinations, namely the action of the altered condition of the blood on the sensory brain centres,[1] consequently an automatic stimulation, by which the brain is affected in the same way as in normal and waking states by impressions of the external world only. However, in dream-images the actual impressions received during sleep play so great a part (see III. 8), that the images may be classed rather with *illusions* than with hallucinations. By illusion is meant a mistaken subjective interpretation of an objective impression, as when a white towel in the moonshine is taken for a white figure, or wreckage on the coast for men. According to the schema we have already employed, an illusion is psychologically characterised by the fact that the implicate idea obtains the upperhand over the sensory element in the percept (a over A, so that a at once leads to b, c, d).[2]—This distinction between hallucination and illusion was first drawn by Esquirol.[3] There are, however, many intermediate forms, and since there must always be a minimum of sensuous impressions present, the difference is only one of degree.

The hallucination has this in common with the memory-image, that it is sometimes produced voluntarily. An English painter possessed the power of calling up the images of his sitters, even when they had sat to him for only half an hour, with as vivid colours and forms as the reality, so that he could paint from the images. From time to time he glanced from the painting to the imaginary person and compared the likeness. He ended, it is true, by losing the power of distinguishing imaginary persons from real, and had to spend thirty years in a lunatic asylum. But there may be a power not in the least of a pathological character, of creating images with the stamp of reality. Thus Goethe was able, when his eyes were closed and his head bent, to see a flower, out of which new flowers kept growing, for as long as he liked.[4]

Hallucinations are sometimes memory-images, which suddenly take on the stamp of reality. Their most startling and deceptive

[1] *Cf.* Wundt, *Physiol. Psychol.*, i. pp. 178-181. (3rd ed. i. pp. 194-197.)

[2] An illusion based on an hallucination is described by Benvenuto Cellini in his autobiography (2nd book, ch. 12). In his subterranean prison he had for a long while yearned and prayed for the sight of the sun, in a dream at the least. At last one morning he had a vision of the sun. But presently the disk of the sun changed into a golden disk, within which appeared Christ on the cross, and presently Mary and the child as embossed work. As Goethe has observed, his attitude to this visionary sun was that of an artificer in metal. Had his imagination been accustomed to move in a different direction, he would have made something quite different out of the same vision.

[3] *Des Maladies Mentales*, i. 2-3. [*Cf.* Sully, *Illusions*, p. 11 and footnote. (Tr.)]

[4] Brierre de Boismont, *Des Hallucinations*, pp. 27, 462.

appearance is, however, when like actual percepts they suddenly interrupt the "horizontal" series of free ideas.

As regards strength and vivacity, there is only a difference of degree between hallucinations and memory-images. In this respect there are great individual differences.[1] While in some people the memory-images are very vivid and highly coloured, in others they are without colour and vague in outline. In some people the memory-image approximates to a real percept or an hallucination. They see things as clearly and strongly in idea as they are in reality, so that the remembrance of the sun may even be dazzling. Others, on the contrary, declare that in memory they are not able to see any individual objects, but merely have indistinct and uncertain ideas of what has been seen; their memories are not vivid enough to deserve the name of images.— Not only natural endowment, but also age and exercise, are of importance in this connection. The memory-images are most vivid during childhood and youth. A child who had been absorbed in the memory of a person dear to him, said, "I have been dreaming." Poets, students of nature, and travellers have more vivid memory-images than students of abstract subjects. There is in general an opposition between power of imagination and abstract thought, similar in kind to that between real percepts and the course of free ideas, and between the two elements in perception (sensation and implicate representation) (see V. *B.* 2—3).

Those who have no individual and lively memory-images may yet have a good memory. They remember *the fact that* they have experienced something, although they cannot picture it in memory. Very strong sensations have indeed to be remembered in this way by every one. A shot from a cannon, a sudden blow or a flash of lightning is remembered indirectly rather than directly. Even colourless and feeble memories may very well be accurate, and serve perfectly to form the basis of a description and estimation of the thing experienced.

Memory is not equally easy and distinct in all the departments of sense. To those who have sight, visual memory is commonly the most important. The capacity of obtaining distinct ideas from the other senses is very differently developed in different individuals. The patient of Charcot, already mentioned, (1) possessed before his illness a quite extraordinary visual memory; this he lost

[1] *Cf.* Fechner, *Elemente der Psychophysik*, ii. pp. 469-491; Galton, *Statistics of Mental Imagery* ("Mind," 1880); also in *Inquiries into Human Faculty* (London, 1883), p. 83, *seq.*

during his illness, and after recovery a lively memory for sounds took its place. Many people have no knowledge whatever of representations of smells and tastes, and certainly very few people (possessing sight) have distinct motor-representations (corresponding to motor-presentations).[1] As Galton has shown, sharp sight and clear visual memory do not always go together; just as little are lively visual memory and great faculty of recognition necessarily combined.

As the illusion and the dream-image come between sensuous percept and hallucination, and very strong and lively memory-images approximate to hallucinations, so on another side there is an intermediate link between sensuous percept and memory-image, in what Fechner has called "*memory-after-images.*"[2] This is a memory-image called up immediately after a sensuous impression, before its effect has ceased. Even persons who do not otherwise have lively and coloured memory-images, may in this way obtain them, at any rate for an instant. Their memory-faculty needs as it were the helping hand of actual sensation. Here again many individual differences are found. With some the after-image, with others the concentration of attention upon the after-image, plays the greatest part. After observing an object in ordinary daylight, Fechner received a complementary after-image; but when he concentrated his memory upon this image, it gave place to a memory-image with the natural colour of the object and without complementary after-effect.—Observations which I have made, show that even the after-image may be recalled. After looking at a window (dark cross on light ground) I received a negative after-image (light cross on dark ground). This disappeared gradually, but in the spot where it had vanished from the visual orbit of the closed eye, there remained a white spot of mist, and by concentrating attention on this mist, I recovered the after-image. This was properly, then, a *memory-after-image of an after-image.*—The further the memory-image is in point of time from the direct sensuous percept, the greater the difficulty with which it acquires a lively character.

b. With regard to the conditions most favourable to the preservation and rise of memory-images, three things must be

[1] When the power of writing is lost (*agraphia*) without being accompanied by word-blindness or word-deafness, that is due to the loss of the motor-memories. Although the hand itself is all right, the power of recalling the movements which produce the letters is lacking. Such a case of "motor-agraphia" is mentioned in the *Hospitalstidende* (the Danish hospital journal), December 24, 1884.

[2] *Loc. cit.*, p. 491, *seq.*; Newton had already noted the phenomenon; Brewster, *Life of Newton*, i. p. 327.

specially noticed; the circumstances under which the original experiences take place, the circumstances during their reproduction, and finally the nature of the memories themselves.[1]

Since memory has its physiological expression in the power of the organism to preserve traces of received impressions, it is self-evident that *the fresher and more energetic the general vital process* the better may things be learnt, *i.e.*, the sensuous percepts will leave behind more permanent and deeper traces. This is the reason why childhood and youth are the proper time for learning, and why what is learnt then is more easily preserved than the experiences of later years. In old age the events of childhood are consequently remembered better, while the events of later years and of quite recent occurrence fall into oblivion. "The glasses of an old man are cut so as to enable him to see what is near." The brain-process lacks the energy to preserve fresh impressions. This more speedy dissolution of later acquisitions is a general physiological law. (*Cf.* also IV. 4.)

Things we have learned and experienced in an unusually energetic and cheerful frame of mind are more easily retained than things we have taken in when enervated and out of humour. Increased vitality counts thus to the score of the newly apprehended elements of consciousness. In apoplectic and epileptic cases the same circumstance is sometimes found as in old age: while earlier memories are retained, the later ones are wiped out. When exhausted with fatigue, the mind is not in a position to collect material for memory.

Time and *repetition* are required, for memories to be firmly established. What is hastily taken in, is as a rule hastily lost. Actors who have learnt a part in a short space of time, do not remember it so well as a part properly got by heart. What in England is called cramming, does not produce the same thorough results as proper study. Connected with this is the remarkable fact that in pathological loss of memory the words first forgotten are those denoting concrete and individual objects, while names of abstract concepts and relations are remembered better. Proper names and nouns in general are therefore most frequently forgotten, and afterwords verbs, adjectives, and pronouns. Kussmaul[2] explains this

[1] *Cf.* in connection with what follows: Spencer, *Principles of Psychology*, i. part ii. chaps. 5-6; Carpenter, *Mental Physiology*, p. 441, *seq.*; Ribot, *Les Maladies de la Mémoire* (Paris, 1881). [Also Ebbinghaus, *Memory Experiments*, "Mind," vol. x. p. 454. (Tr.)]

[2] *Die Störungen der Sprache* ("Affections of Speech"), pp. 163-165.

by the fact that while we can easily picture to ourselves persons and things without the help of words, abstract notions and relations are only firmly established in consciousness by the help of words. And since in the cellular tissue of the cerebral cortex, certainly far more numerous processes and combinations are required to produce an abstract than a concrete concept, the organic links which connect the concept with its name must be far more numerous in the case of the abstract than of the concrete concept.

It might seem to contradict this, that so little is remembered of the very earliest years of childhood, when the brain must be at its freshest. Memory seldom indeed goes back beyond the third or fourth year. To account for this, Preyer observed, much to the point, that our earliest childish experiences are very different from those of later years.[1] What a child learns in his first year or so: to sit up, to walk, to speak, is a sort of self-contained course of training; when once he has passed through it, the road is opened to the wider experiences common to all adults. There is thus a want of continuity and harmony between the experiences of the earliest and those of later years, and as a rule therefore a want of interest in retaining those older events fresh in the memory.

Other causes may, however, be pointed out as conducing to this result. The earliest sensuous percepts have as yet a chaotic and sporadic character, are but little arranged and organized, and a certain definiteness and order is a condition, as will presently be shown, of the retention of experiences in consciousness. In the consciousness of the little child, the "ascending" current predominates, just as in dream-consciousness. And dreams are but seldom remembered. The cerebrum, with which the memory-activity is linked, plays generally but a small part during this period (see IV. 4). The impressions have a greater tendency to break out in reflex-movements, than to install themselves in memory.

(*c*) Just as a fresh and healthy brain is essential to the collecting of material for memory, so is it also a condition of the *reproduction* of this material that there should be sufficient energy in the organism, especially in the brain. Sir Henry Holland, an English physician, while visiting the mines in the Harz mountains, suddenly forgot his German in consequence of over-fatigue, and it returned to him only after he was rested and refreshed. In happy moods, especially in strong excitement, memories rise up which cannot be

[1] *Die Seele des Kindes*, p. 226. (Eng. trans., vol. ii. p. 9.)

commanded under ordinary circumstances (*cf.* 6). The use of opium and similar drugs has sometimes the same effect. There must, besides, in some way or other, be something in the organic state and in the prevailing mood corresponding to the state and mood which were present during the actual experience; though in this connection contrast may sometimes be of great importance.

Besides this, it is a question of what sensations press in upon us at the moment. The stronger the effect produced by these, the greater the difficulty with which the memory-images develop (see 2). The more closely they are related to the memory-images, the more will they interfere with the independent entrance of these. We may have memories of colours or sounds while touching an object, but hardly of red while experiencing blue, or of sounds different from those which we hear at the time.

(*d*) Not all that we experience is equally well suited to be remembered. The more simple and less complex it is, the more easily does it disappear. That which has many strongly marked and distinctive sides is better retained. On this account feelings and states of mind are, as we shall see in a later connection, remembered only through the ideas with which they are connected, and we recall the oscillations and transitions of feeling more easily than the feeling itself. The general sensations, the most obscure and inarticulate of our sensations, are thus not easily reproduced. We can remember the fact that under such and such circumstances we felt hungry or thirsty, but no memory-image is formed of the actual hunger or thirst. The higher senses, on the contrary, touch, hearing and sight, afford clear and distinct memory-images, and the world of memory, for those who can see, is certainly peopled chiefly by visual ideas. We remember relations better than the individual members of the relation, the form better than the content. Among forms again, those are best remembered which are most distinctly differentiated. Thus the space-relation is remembered better than the time-relation, and this better than the general relation of difference. Because of the ease with which it is retained, the space-relation is employed as the basis of so-called mnemonics, as a frame (*memoria localis*), which might contain and support all material for memory.

8. (*a*) When we yield ourselves up to the flow of ideas, the emerging images seem to come "of themselves" just as much as sensations. We have at any rate the feeling that they are as little produced by us as immediate excitations. The one as the other

must be accepted, as they are and as they come. Especially where there is a considerable contrast and difference between the emerging and the preceding ideas, is their appearance inexplicable. The effect then seems to bear no relation to the cause. If to this is added the suddenness with which ideas sometimes make their appearance, it is little wonder that many, who in the physical world will admit no break in the series of cause and effect, nevertheless hold the mental world to be subject to no invariable laws. We have already seen (III.) that the world of consciousness is not a self-contained whole; it becomes intelligible only on the assumption of an interaction between conscious and unconscious activity. Not all the conditions for the production of a mental state are given in the life of conscious ideation and feeling; unconscious, inherited or acquired dispositions and instincts often play the most important part, and the observer learns to know them only through their effects. The laws of the interaction of conscious ideas are thus only clues, which may serve to guide us when we try to understand the changes among the phenomena of consciousness, empirical rules by means of which we arrange the chaos of our experiences. But so far as we are in a position to establish these rules by the closer examination of psychological phenomena, we find corroborated the assumption of a causal connection, with which the student of the inner as of the outer world may start. And in so far as a phenomenon cannot be satisfactorily explained by these laws, we merely conclude, either that there must be laws which we do not know, or that the connection is too complex to admit of reduction to simple points of view.

(*b*) We have already, in what precedes, encountered the laws which govern the association of ideas. We have seen how a sensation fuses with the traces of earlier sensations (*A* with *a*), and how a firm and repeated combination of sensations (*A*, *B*, *C*, *D*) brings about also a firm combination of the corresponding representations (*a*, *b*, *c*, *d*), so namely, that when one of these is recalled it has a tendency to bring the others after it. In the *growth of sensuous perception and in the freeing of ideas* the same laws are at work as in the *association of free ideas*. The difference is this, that in the latter case, the individual members are known to us as independent elements of consciousness before the association takes place, while in the association between sensations and implicate ideas we know only the product. The complex character of sensuous perception

is learned only by analysis. Associations of ideas may also be so firm and constant that it is forgotten out of what elements they have arisen. Some of the greatest mysteries in the province of psychology owe their origin to such deeply rooted associations of ideas, the beginning and history of which have been forgotten. The theory of *indissoluble association* is the most powerful weapon of the English school against the appeal to *à priori* and original forms of consciousness and ideas. This theory is founded on the just assumption, that that which presents itself to us as a unity and as necessarily coherent, may yet have arisen from the fusing of different elements. It demands therefore a deeper and more extensive psychological analysis than the dogmatising psychology enters into. Such an analysis finds an especial application in associations which have not been formed in the actual consciousness of the individual, but are the bequest of earlier generations, whether by inherited organisation or by tradition and language.

Given a certain idea (a), it may occasion other ideas in two directions. It may either call up ideas similar in kind and content to itself ($a_2\ a_3\ a_4 \ldots$), or ideas, the objects of which usually appear in conjunction with its object (a, b, c, d corresponding to A, B, C, D). The two principal rules are: *the law of similarity and that of external connection* (contact, contiguity). Things related by nature belong together, and things which make their appearance in conjunction belong together for consciousness. It will appear that between the two principal laws there is a transition-form, in which both meet.

I. *Association of Ideas by Similarity.*

(Psychological formula : $a_1 + a_2$).

(1) The first relation to be mentioned under this head is that of sameness (psychological identity) or similarity of congruity.[1] This is the relation which comes into effect in sensuous perception, when the sensation arouses an (implicate) idea and fuses with it. Here lies the starting-point of all the influence which a sensation can

[1] [In the articles already referred to, Prof. Höffding distinguishes the three degrees of similarity as Deckungsähnlichkeit (similarity of congruity), Qualitätsähnlichkeit (similarity of quality), and Verhältnissähnlichkeit (similarity of relations), and the terms are introduced in the text at his request. For a fuller explanation of them see Arts. 2 and 3 (*Vierteljahrsschrift*, xiv. (1890) 1, 2). (Tr.)]

exercise in consciousness. For whatever states and farther effects it may be able to call up afterwards, the first condition is that there shall be an instinctive recognition, in other words that the sensation shall have a point of attachment in consciousness. This point (a_2) then forms the starting-point of further operations.—There may be recognition, as already mentioned, in the case not only of a sensation which is repeated, but also of a free idea which is repeated. In the first case A and a_2 intermingle, in the latter a and a_2 (denoting as above sensations by capital, and ideas by small, letters).

(2) The next simplest association by similarity consists in recognition leading to the idea of an earlier experience *of the same kind.* When I have recognized a man, the image of him as he was when last I saw him (similarity of quality) naturally comes to my mind. The apple that is on the table in front of me, excites in my idea the picture of the fateful apple on the tree of knowledge (as represented in an old engraving). "A big ball of wool reminds me of my first lesson in physical geography: a ball was made to revolve on a knitting needle, and moved round a stationary object in the middle of the table."[1] The portrait of a person suggests to me the person himself. A step further removed is the idea of people like the one actually seen, *i.e.* of persons who resemble him in feature (as when Lady Macbeth is kept from murdering the old king, because he is like her father), or in character and fate (as when Napoleon reminds me of Alexander and Cæsar, or the Bourbons of the Stuarts).

(3) The examples last quoted lead us naturally to more remote relations of similarity, to *analogies*, parallels, *metaphors*, and allegories, which play a great part especially in the primitive stages of consciousness (similarity of relations). We have already observed, that all expressions for mental phenomena are borrowed from analogous material experiences (see I. 3). There is, according to Max Müller, a period in the development of the race which may be styled the mythological, because "all the thoughts which went beyond the narrow horizon of our everyday life had to be expressed by metaphors, and these metaphors had not yet become what they are to us, mere conventional and traditional expressions, but . . . were felt and understood half in their original half in their modified character." From roots which signify "gleam, glitter," are formed in this way appellations for the sun, the moon, the stars, the human eye, gold, silver, play, joy, happiness, and love. Max Müller

[1] Example taken from an interesting collection of associations of ideas kindly sent to me.

distinguishes between radical and poetical metaphors. It is a radical metaphor, when a series of words with definite meanings are developed from a root with a somewhat indefinite meaning, each word having its special analogy with the original vague meaning, as when, *e.g.* a root which denotes "to shine" is made use of to form expressions not only for the sun and fire, but also for the spring, the morning light, the clearness of thought, and the hymn of praise. Poetical metaphor arises from a word with a definite meaning being borrowed to denote other objects, as when the rays of the sun are called the hands and fingers of the sun, the rain-clouds cows with full udders, the lightning an arrow or a serpent.[1]—Even at the present day, the poet finds in this way a connection, where the prosaic eye is blind. In the control of rhythm over dancers, he sees, *e.g.* the symbol of the law of the universe, to which the heavenly bodies are obedient. (Schiller: *Der Tanz.*)—In noting down a series of associations of ideas out of my own experience, I have been surprised to find how quickly a metaphorical meaning creeps in, even where the similarity is not quite obvious (*e.g.* with the words swell, mist, gild).

II. *Association of Ideas by the Relation between the Whole and the Parts.*

(Psychological formula: $a_1 + [a_2 + b + c]$).

The transition between association by similarity and association by contiguity is made through those cases where an idea, which has been called up by another idea or sensation by way of similarity, brings with it a group of further ideas with which it is conjoined.[2]—When the sight of the fire (A) arouses the idea of a smithy, the connecting link is the smithy fire (a_2), but the images of the other objects in the smithy ($b + c$) emerge with it.—Mad King Lear tries to comfort the blind Gloucester in his misfortunes; comfort suggests to him a sermon, in which, after the manner of the Puritans, the preacher holds his hat in his hand; from the felt of the hat he is led to think of a possible stratagem of war: to shoe the horses

1 Max Müller, *Lectures on the Science of Language*, 2nd ed. (1885) ii. pp. 388-390.

2 Wundt places this relation under the head of association through external connection, (*Physiol. Psychol.*), ii. p. 300 [3rd ed. ii. p. 376]; Sibbern under association by similarity (*Psychologie*, 1856), p. 230; it is with most reason regarded as a transition form.

with felt, so as to come upon the enemy noiselessly.[1] He is thus led by subordinate features to construct one scene after another.—In complete derangement (*démence*), where the entire circle of ideas is on the verge of dissolution, association is determined purely by similarity in the sound of the words (*assonance*);[2] similarity of sound may bring with it all the ideas associated with the word. Even in normal states the sound of each word arouses certain associations.[3]

When ideas of qualities or actions give rise to ideas of things or persons, there is similarly an association between part and whole: a whole group of ideas is constructed through the calling up by similarity of one of the group. When the idea of the cause arouses the idea of the effect, the procedure is the same. We construct the whole connection, of which both cause and effect are members. From the idea of the movements of the planets we are led to the idea of gravity, because we picture the planets as members of the solar system. The like is true of the association between the idea of the end and that of the means.

III. *Association of Ideas by External Connection* (*Contiguity*).

(Psychological formula : $a + b$).

Sensations which always appear together, give rise also to conjoined ideas. It is in this way that the idea of an individual object is formed. Certain visual ideas (yellow colour), ideas of smell, ideas of touch (smoothness), and ideas of taste are associated to form one idea (of an apple). Those things which in respect of space and time appeared together in our experience, will in general be represented together in our thought, even if not formed into a self-contained whole. The idea of a man leads naturally to the idea of

[1] "Thou must be patient; we came crying hither.
Thou know'st, the first time that we smell the air,
We wawl and cry; I will preach to thee . . . mark.
. . . . . This is a good block!—
It were a delicate stratagem, to shoe
A troop of horse with felt. I'll put it in proof;
And when I have stolen upon these sons-in-law,
Then, kill, kill, kill, kill, kill, kill."
King Lear, Act IV. Sc. 7.

[2] Griesinger, *Pathol. und Therapie der Psych. Krankheiten*, 2nd ed., p. 374.

[3] Tegnér, *Språkets makt öfver Tanken* ("Speech often Determines Thought"), Stockholm, 1880, p. 25, *seq.*

his house, his friends, etc., the idea of a gambler to that of a green table, the idea of a wreck to that of a coast, etc. There is, besides, a natural association between an event and the time and place of its occurrence.

An important instance of association by external connection is that between the thing and the sign for the thing. An emotion and its external expression are naturally associated in idea. If, *e.g.*, the word "terror" is looked up in a dictionary, the imagination pictures involuntarily the image of a startled movement, of growing pale and so forth. The Greek word for flight (φόβος) acquired later the meaning of fear. Language is a sign of this kind, originating partly as involuntary outburst at the sight of an impressive phenomenon or of one affecting the weal and woe of the individual, partly from involuntary imitation of sounds emitted by phenomena (thunder, splashing, ringing, cries of animals, etc.), but afterwards employed by individuals as a means of mutual understanding. "Just as the subject was himself disposed, in his poverty of ideas and of self-determined forms of expression, to have recourse with the same idea to the same expression (the same sound), so too the sound became familiar to others by being repeated as a response, and by that instinct of imitation which is in operation just at this stage of life and before the sound has as yet acquired a hard and fast meaning; in this way a link common to several persons was at once formed between this sound and the idea in the mind . . . the means of sharing and understanding the idea was formed."[1] Why it should be sound that is the universal sign for all sensations and feelings, may be explained perhaps by the fact that it commands the greatest wealth of shades for the expression of the feelings. Even in the animal kingdom, a cry is at once the involuntary result of anything that makes a strong impression on the individual, and a signal for other individuals. The cry of pain serves as warning, and enticing sounds attract the sexes. According to Darwin, the habit of uttering musical sounds was developed in the progenitors of man during courtship, and was thus associated with the most powerful emotions: ardent love, rivalry, and triumph. This faculty must have arisen, therefore, before the faculty of articulate speech.[2] The several sensations have this in common, that they all, in their different ways, influence feeling; it is consequently not surprising that they are all ultimately translated into the language of feeling.

[1] Madvig, *Om Sprogets Väsen, Udvikling og Liv* ("On the Nature, Development, and Life of Language"), (*University Program*), Copenhagen, 1842, p. 9, *seq.*

[2] *The Expression of the Emotions*, London, 1872, p. 27 [2nd ed. (1890) p. 92].

(*c.*) It is the first and third of these laws of association that have chiefly attracted attention. And attempts have been made to simplify the matter yet farther by the rejection of one of the two, or by the reduction of both to a single law. For a long time the dominant tendency of English psychologists was to regard the law of contiguity as fundamental, and to explain all union within consciousness by habitual union in space and time. This was the case even with Thomas Hobbes, the founder of English psychology (*Human Nature*, 1640), and later, with *e.g.*, James Mill.[1] This is the principle of the extreme "associationist psychology,"[2] which conceives of consciousness as a series or bundle of sensations and ideas, and can in consequence admit no other associations than such as rest upon external contact. Association by similarity thus becomes only a special case of association by external connection, accounted for by the fact that similar and allied experiences, from the nature of the circumstances, frequently occur simultaneously or in immediate succession. The artificiality of this notion is obvious. It is contrary, moreover, to the experience, that it is often the relation of similarity which causes us to bring together objects remote in time and space. Cæsar, Alexander, and Napoleon, are indeed often presented together in our thought; but this is so just because they have been so often compared with one another. The steps of a mathematical proof easily follow in our memory, but only after thought has united them.

So far from association by similarity being resolvable into association by contiguity, every association by contiguity on the contrary presupposes an association by similarity, or at the least an immediate recognition. In order that A may excite the ideas of B, C, D, with which it usually arises simultaneously in consciousness, it must first, so to speak, establish its identity. Thus A must give rise to a, and only then will a bring with it b, c, and d. The relation of similarity is thus the innermost germ of all association of ideas; the external connection can take effect only on presupposition of the internal. When the apple on the table before me carries my thoughts to Adam and Eve, this is because first—perhaps so quickly that I do not remember or am hardly conscious of it—I have thought of the apple on the tree of knowledge. The association by similarity, lying at the root of the association by contiguity, may easily escape

[1] [*Analysis of the Human Mind*, i. p. 111. (Tr.)]

[2] The expression "association of ideas" was introduced by Locke, who indicated by it, however, only certain individual peculiarities, and did not, like Hobbes and the later school, make the "association of ideas" the one governing psychological principle.

our attention. As we may have after-images of sensations which we have not noticed (see III. 6), so a series of ideas may be aroused without our observing that they are linked to an earlier idea through association by similarity. Once, while taking a walk, I was surprised by the vivid memory-image of a Swiss mountain view, and on closer reflection found that it must have been called up by the sight of heavy banks of clouds in the horizon; the resemblance of the clouds to the mountains had—while I was thinking of something quite different—aroused a whole series of associations, which at last drew my full attention. Such an association by similarity may, like recognition, be effected so easily and quickly (especially when what is identified is well known, and has no special interest), that it scarcely rises above the threshold of consciousness. But it is a link which cannot be dispensed with, however much it may vanish into the unconscious.—Here reference may again be made to the fact that the "psychical relation" of a stimulus —*i.e.* its interest for, and connection with, the consciousness of a sleeper—is able to rouse from sleep; this is another case in which we stand at a transition stage between the conscious and the unconscious (see III. 9).

The fact that the relation of similarity lies at the root of association by contiguity, does not deprive this latter of its independent weight. Mere recognition and identification would carry the life of ideas no farther. Through association by contiguity an abundant material is appropriated and preserved in consciousness; the material taken in is then gradually arranged according to the principle of similarity. In every association of ideas two laws are at work: a centrifugal and a centripetal tendency. The two make their appearance in different degrees according to the nature and gifts of the individuals. Some strive to accumulate a large and varied material of ideas and percepts: the aim of others on the contrary is to arrive at as many simple and clear points of view as possible, for which reason they concentrate their interest on the general and typical. Historical research and scientific specialization exemplify the one direction; mathematical and philosophical study the other. Only the artistic genius is in a position to bring into unity the special and the typical.

There is however a psychological point of view, from which the two laws may be brought under one and the same fundamental law.[1]

[1] Kant, *Kritik der reinen Vernunft*, Kehrbach's, ed. p. 116, *seq.* 125.; Fries, *Neue Kritik*, I, p. 114, *seq.*; William Hamilton, *Lectures on Metaphysics*, ii. p. 233.

For however many different sensations and ideas may come simultaneously, or in immediate succession, into our consciousness, they neither are nor remain quite separate. They are all embraced by one and the same consciousness, through whose activity they have arisen. The manner in which they act upon one another and are combined, is determined by the form and direction taken by the synthetic activity of consciousness at the given moment. On the other hand, they react, each one of them, upon the general condition of consciousness. Now when one of these sensations or ideas is renewed and brings the others with it, what really operates is the tendency to reawaken the general state, or the general activity, to which all these ideas belonged. The innermost basis of all association of ideas should thus be looked for in the unity which is present in every mental state and every mental activity, and which stamps all simple elements with a common characteristic. From this point of view the association between the parts and the whole would be the typical form of all association. This fundamental law of all association of ideas might be called the *law of totality*.

From this point of view association by similarity and association by contiguity do not figure as two special and mutually exclusive forms, but merge one into the other, since it has been shown above that there is an intermediate form related to both,—a form which now appears as the type of all association. For starting from the formula $a_1 + (a_2 + b + c)$, it may easily be shown that association by similarity and by contiguity are only extreme cases of the law expressed in this formula. Thus when b and c decrease in strength and distinctness until lost in indefiniteness, we are left with the formula of association by similarity: $(a_1 + a_2)$, as the extreme case.—And again in another way, association by totality may be reduced to association by similarity. The more the idea of the common elements (a_1 and a_2) preponderates, the stronger will the differences seem between the other elements (through such effects of contrast as are quoted in pp. 122, 123).[1] The totality is thus divided as it were into two parts (a_2 and $b + c$), and

[1] *Cf.* with the above the interesting observation of Stumpf, *Tonpsychologie*, I, p. 114.—"The similarity seems to us to be most distinct, when the whole is apprehended as a whole. The more we direct our attention to the resembling parts, the more we lose the impression of the similarity of the whole. I observe the likeness in two faces, inquire into the reason and find that the eyes are alike. So soon as I observe this, the difference of the other features attracts attention, even more than the likeness of that feature, and the likeness of the whole as such seems almost to disappear. In the same way, when two sounds possess the same partial tones, the similarity of the sounds is more evident to me the less I pick out these common tones."

an association is effected with the former only.—But when on the other hand, a_2 is recognized and merged with ever greater rapidity and inattention, we arrive at the formula of association by contiguity $(a + b)$.—In our experience it is scarcely possible to point to a case where similarity and contiguity are not both at work. The law of totality is thus properly *the* law of association.

But we must go a step farther. For what lends its special character to every mental state, and at the same time forms the constant common element (a), is chiefly the mood which prevails in it, which determines and is determined by it. As with the immediate sensations, so too in the flow of ideas, the interest, and the attention determined by the interest, play an essential part. We are never wholly passive in associations of ideas, any more than in our sensations (pp. 108–112). The combination among our ideas is consequently in each moment conditioned, not only by relations of similarity and contiguity, but also by the prevailing feeling. We have an approximation to the pure, absolute validity of the above laws, only in instances where the mood is neutral, or rather where it is so concerned in a certain direction as to make it its actual object that the ideas should arrange themselves according to their relation and their connection. To begin with, definite practical ends and interests weigh down the scale in favour of definite sets of ideas. Thus a sort of choice among possible ideas takes place, and here opportunities are afforded to many unconscious influences, which make themselves felt even when we think we are following, and not directing, the current of our thought. From interest we are brought back to impulse, instinct, and temperament, hidden sources which are often only recognized from their effects. The union between feeling and idea lies deeper than that between the ideas themselves. If all mental connections depended on the actual experiences of the individual and on their combination according to the laws of association of ideas, the consciousness of each individual would be much more clear and penetrable than it actually is.—This is not to be understood as implying that mere want of intelligible connection is to be attributed to the influence of feeling. Feeling can on the contrary give rise to firmer connections than there would otherwise be. The strongest feeling is that with which men embrace their ideal or practical aims; this feeling leads to search for the means to realize the aims, and so lays the foundation of a firm connection between a whole set

of ideas.[1] This leads us to the consideration of the *real* unity of consciousness (V. *B.* 5) and its importance for the continuance and healthiness of mental life.

The closer investigation into the influence of feeling and will on cognition must, however, be postponed to the following chapters (VI. *F.* and VII. *B.* 2). Here it shall merely be added, that though association by contrast has sometimes been postulated as a special form of association of ideas, the phenomena which come under that head may find a natural explanation through the influence of feeling, in so far as they are not to be explained quite simply by the laws of similarity or of contiguity. It is characteristic of the life of feeling, to move in opposites; from first to last it is determined by the great contrast between pleasure and pain, and we find in it far stronger effects of contrast than among sensations. After great tension in one direction there commonly succeeds a relaxation, if not a tendency to turn the interest in the contrary direction, just as the eye when fatigued with one colour seeks the contrasting colour. This would explain the necessity of passing from the idea of light to that of darkness, and from the idea of great to that of small. But it is not necessary in all cases to revert to the bent that feeling has for contrasting states; the explanation is often contained in a relation of similarity or of contiguity.[2] Contrasts often belong to the same general conception, just as two poles which are removed each in its own direction from a common centre. Dwarf and giant both deviate from the ordinary medium height. And moreover it chances in the natural course of life, that opposites succeed, depend upon and pass into, one another; as day succeeds night; and joy, sorrow. So that here external connection may give rise to the association.

(*d.*) Even if it cannot be admitted that those psychologists are right, who regard obliviscence as the difficulty to be explained, and

[1] Hobbes had already drawn attention to the attaching and arranging power which the thought of an aim exercises in the association of ideas (*Human Nature*, Chap. 4; *Leviathan*, Chap. 3). In later times William Hamilton laid down the law of interest, as supplementary to the law of similarity and contiguity.—(*Cf.* Mansel, *Metaphysics*, Edinburgh, 1875, p. 241, *seq.*). In Wundt's theory of apperception (concentration of consciousness) as act of will (*Physiol. Psychol.* ii. p. 205, *seq.* [3rd ed. ii. p. 235, *seq.*]) the law of interest is ingeniously combined with the notion of apperception as propounded by Leibniz and Kant. Wundt appears to draw too sharp a distinction between association and apperception, between active and passive connection of ideas. No association, whatever it may be, takes place quite passively, just as generally, in every department of mental life, it proves impossible to draw a sharp line between passivity and activity.—In Fries (*Neue Kritik der Vernunft.—Psychische Anthropologie*) are to be found sound and interesting observations on this point.

[2] *Cf.* James Mill, *Analysis of the Phenomena of the Human Mind*, 2nd ed., London, 1869, 1, p. 113, *seq.*

reminiscence as a matter of course, it cannot on the other hand be maintained that ideas are forgotten "of themselves." It may be as great an art to forget as to remember, whence the reply of Themistocles when Simonides offered to teach him the art of memory, that he would rather learn to forget: "for I remember even that which I do not wish to remember; but cannot forget what I wish to forget." What is indifferent or of little importance disappears as of itself; but the painful ideas are the very ones which, as a rule, are associated with such impressive experiences and circumstances, that the involuntary flow of ideas does not carry them away. Moreover, there may even be in the nature of the individual a tendency to cling with a certain obstinacy to painful ideas. Under other circumstances, the problem may be of course to forget ideas which are associated with pleasure. Here will only be noted briefly the various ways and means by which an idea may be more or less completely expelled from consciousness. These will be the laws of obliviscence as opposed to those of reminiscence.

(1) It is not of course possible to oppose an idea quite directly. The art of forgetting (or as it has also been called, of abstracting) can only consist in the suppression of certain ideas by means of others. One who wishes to forget must look for powerful and great series of ideas, in which his thought may be fully occupied. The nature of what he seeks (pleasures or penances, work or fancy) will depend on his character and on the mental resources at his disposal.—The capacity for self-education depends in great measure on the power of exercising the art of obliviscence. Fortunately, as will appear, nature comes to the help of the art.

(2) In many cases an idea is associated from the first with another idea of such strength and importance as gradually to obscure or suppress it. If something is pointed out to a little child with the hand and the hand then taken away, the eyes of the child usually follow the hand instead of being fixed on the object. But if this object attracts the attention for any reason, the child no longer troubles himself as to what has become of the hand. This is the history of all true education (see III. 4); authority leads the pupil to a truth, which ultimately acquires independent validity and weight, and the original authority is forgotten, just as the scaffolding is removed when the house is finished. If the house can be built without the use of scaffolding, of course so much the better. Both the science of education and so-called "mnemonics" have often laid too much stress upon the use of

means which it may afterwards be difficult to drive out of consciousness.

(3) In other cases the first idea does not disappear completely, but becomes a subordinate element in the one it has aroused. In reading, the letters call up a host of ideas and feelings, but for all that the signs themselves do not wholly vanish from consciousness. In metaphorical and symbolical descriptions, the original meaning often remains obscurely in the background. When, for example, the fire of inspiration is spoken of, there is still, to those not much accustomed to rhetoric, a glimmer from the notion of actual fire.

(4) An idea, then, may be suppressed either by an idea quite foreign to it, voluntarily aroused from another region of consciousness ($a < x$), or by an idea which it itself occasions ($a < b$), or it may become a subordinate element in the victorious idea ($\overset{b}{a}$). But there remains a fourth possibility. It may preserve its independence as against the other idea to which it is attached, and yet be so closely combined with it that a new idea arises, which is determined by both of the former, although neither is to be distinguished in it. The formula for this would be $ab = c$. Here a sort of psychical chemistry[1] is exhibited: in chemical composition the product has quite different properties from the substances of which it is composed. The history of compound words affords examples. The word "meat-broth" scarcely calls up the two ideas "meat" and "broth" as distinct in consciousness; but it was originally formed to distinguish this kind of broth from any other.—Human speech seems to have passed through three stages of development. At the most primitive, every word is a root and every root a word. This stage, at which every root has preserved its independence, Max Müller calls the *radical*; we have an example of it in ancient Chinese. At the next stage two roots coalesce to form a word; one of the two has then usually the chief weight, and the other becomes a mere ending, for which reason this is usually called the *terminational* stage.[2] Here the two constituents of the word still seem to excite their own independent ideas, even when the original meaning of the termination is lost. On the other hand, at the third stage, which is represented by the Aryan and Semitic languages and called the *inflexional* stage, the roots may be so welded

[1] Hartley, in his *Observations of Man*, was the first to call attention to this phenomenon. It is a special case of "indissoluble association."

[2] [Max Müller cites the Turanian family of speech, which is however no longer recognized by philologists as a distinct family. (Tr. at author's request.)]

together that only the educated are able to separate them.[1]—The idea of distance seems to us simple and immediate, and yet (as will appear in the next section) it is undoubtedly the product of sensations which no longer take effect independently.—The same holds good of every conception of a totality, which has been reached through the laborious working up of details; the totality stands out as the object of immediate intuition, of an "intuitive knowledge," from which all discursive elements and processes have vanished. Here custom co-operates; the oftener we have gone through the details, the more completely and easily can the totality come instantaneously before us. Successive apprehension precedes simultaneous (*cf.* p. 114, *seq.*).

Such a transformation may be effected more or less mechanically. The expression in words may precede and induce the thought, as in the development of language seems to have been the case in the transition from termination to inflexion. But there may be an intermingling of the actual ideas mainly conditioned by the impulse —grounded in the nature of consciousness—to unity and close combination among the conscious elements.

9. The idea in its simplest form is a reproduced sensation. As such it is uncompounded, in the sense in which a sensation is uncompounded (pp. 102–106), and may be called *simple idea.* Out of such simple ideas are formed, through association by contiguity (V. *B.* 8 *b.* 111), complex ideas, which correspond to the complex percepts; they concern objects, persons, relations and events, and may be called *individual ideas.* In these, the simple sensations are united into ideas of individual totalities. The connection between the simple ideas, of which the individual idea is composed, may be so firm and close, that we are disposed to regard this latter as corresponding to a certain mystical unity in the objective world, namely, to what we call the "thing itself" as distinct from its qualities.

These individual ideas are, however, by no means firm and invariable. Their elements may change, and often they are in one moment something different from what they were in the preceding. My idea of the table, at which I am seated, is formed by a combination of various simple ideas (a certain colour, and certain degree of hardness, form, position, etc.). But every single time that I have seen the table, I have seen it in a different way: point of view, light, position have not been exactly the same on any two

[1] M. Müller, *Lectures on Language*, 1, pp. 331, 336, 370.

occasions; now the one, now the other element (now colour and hardness, now form and position) has, from the special circumstances, attracted my attention. If, however, I say I have an idea of the table, and if I recognize the table by means of it, it seems that my idea, if it is to apply to every experience I have had of the table, can contain only certain general points or features, which recur every time that the table is before me. We can have a really individual image of an object or of a circumstance, only if we have experienced it merely one single time. If there have been more experiences, the differences will make themselves more or less felt; we picture our home, *e.g.* now in one, now in another setting, and a certain conflict may arise among the elements as to which shall have the decisive influence upon the character of the idea, and this so much the more, the richer and more varied our experiences.

As it is not in our power to retain one and the same memory-image for any length of time (for which reason also, what we call dwelling upon an idea is in reality a constant letting go and reproducing of the image), so the same individual idea has a tendency, every time that it re-emerges, to change of form. The elements preponderating in the one moment will, by force of the law of contrast, give place to others which have greater freshness. The question is then, Have we really ideas of individual objects and circumstances, which are more than mere repetitions of the several experiences and percepts? Have we general or typical ideas, which apply to all the single percepts experienced by us?

The difficulty of the question consists in this, that every complete representation of an object must give it to us with all its traits and qualities. Our ideas always tend to become complete and individual, and so much the more, the more vivid they are and the more the attention is directed to them. Since, however, the individual traits and qualities vary with each experience—for an absolute repetition never occurs, but there are always differences in degrees and surroundings—I have consequently not one individual idea of an object, but many. We may therefore distinguish between a concrete individual idea (of the table in this light, from this side and so forth), and a typical individual idea (of this table as opposed to other tables). Now in what sense do we have typical individual ideas?

The psychological difficulty involved was faced long ago. It

was not, however, the individual, but the *general* ideas which drew attention to the difficulty. It was not observed that our ideas of single objects and circumstances, which have been presented more than once in our experience, are abstract ideas quite as much as general ideas proper. My idea of a table in general bears the same relation to the different tables which I have seen, as my idea of this particular table to my different experiences of this table. The general idea arises out of a continuation of the same process, by which the typical individual idea is formed. As the concrete individual ideas struggle for the decisive control of the typical individual idea, so the different individual ideas struggle for the decisive control of the general idea. When I try to picture to myself a triangle, I think now of an isosceles, now of an equilateral triangle and so forth. The common features do not suffice to constitute an actual image. Just as we cannot eat fruit in the abstract, but eat only apples or pears, etc., so we cannot picture fruit in the abstract. But, then, have we, psychologically, really general ideas?

Berkeley first called attention forcibly to this psychological difficulty (in the introduction to his *Principles of Human Knowledge*). The ordinary theory of abstraction postulates, without more ado, a capacity of "drawing out" general qualities and laws, and of forming, out of these, new "abstract" ideas. Berkeley denied altogether that he had such ideas, although by other philosophers, such as Locke, *e.g.*, the power of forming them was given as one of the chief features which distinguished men from animals. "It is impossible for me," says Berkeley, "to form the abstract idea of motion distinct from the body moving, and which is neither swift nor slow, curvilinear nor rectilinear; and the like may be said of all other abstract general ideas whatsoever." Every idea has reference to something quite individual and particular. There are typical or general ideas, only in the sense that we can make a concrete individual idea serve as an example or representative of a whole series of individual ideas. The generality of an idea will, then, mean nothing more than its fitness to be employed as example or representative.

Berkeley has here undoubtedly laid his finger on the crucial point. But it still remains to be asked, What is the psychological process by which an idea comes thus to be set up as representative?

In the formation of the idea of a particular object (the concrete

individual idea) the law of contiguity operates; in the formation of the typical individual idea and of the general idea, the law of similarity. The several experiences and the several individuals have in common certain universal elements, which come into contrast with the elements peculiar to each experience, to each individual. Supposing $A = ax$, $B = bx$, $C = cx$, to be three experiences, then, according to the law of similarity, the special idea x will be something more in consciousness than a, b, and c. The light of recognition will fall on it more clearly, x will form a clear and constant nucleus round which a, b, and c will move as obscurer, looser elements. The error of the old abstraction theory lay in supposing that x could be detached and represented in isolation. x (one or more special properties) is not enough to give us an individual idea, but must be represented in conjunction with a, or with b, or with c; which of these possibilities makes its appearance, will depend on the special circumstances.

It might seem as though the simplest psychological explanation of this matter were that which makes the interaction of the ideas themselves the determining force. Repetition, from the nature of the case, brings x much more frequently than a, b, or c, and x acquires in consequence greater strength and constancy, while a, b, and c, on the contrary, check and obscure one another. The common elements keep above the threshold of consciousness, while the struggle of the other elements takes place at the threshold. In this way the individual traits would be worn away and only the general retained. This account would bring us back, however, to the old abstraction theory. The process must end in only the common elements being left, and this is contrary to the individual character of all distinct ideas. Let us think, *e.g.*, of the horse, the sheep, and other ungulata. The common property (x) is given in the definition of ungulata; "mammalia having the incisors and canines often absent in one or both jaws,—molars all similar, when present,—toes large, covered with hoofs." In attempting to form an idea answering to this definition, we have first to make a choice as to the number of incisors and canines absent and in which jaw or whether in both, the presence or absence of molars, and the nature of the hoof, and then to supplement the properties given with others, belonging either to the horse, the sheep, or some other special kind of ungulata.[1]

[1] [The definition of ungulata is substituted for that of pachydermata at Prof. Höffding's request, the latter being no longer recognized as a special order. (Tr.)]

The individual ideas might be thought of as merged into a *generic idea* (*ax*, *bx*, and *cx*, yielding *px*), as it is possible to have generic photographs of members of the same family or class.[1] But even if it were possible to have such "cumulative ideas," they would have to be limited to cases where the differences are not too great. The merging of related ideas is therefore at any rate confined within narrow limits.

The theory of generic ideas, as well as the old abstraction theory, presupposes that the reciprocal interaction of ideas is the determining force in the formation of typical and general ideas. But it has already been shown (V. *B.*, 8 *c*), that we cannot carry through the doctrine of the association of ideas, without taking into consideration the other sides of mental life.

We are indeed often so passive, that the involuntary play of ideas seems entirely to prevail. Many dim, vague, and casual general ideas are undoubtedly formed by purely mechanical fusion. But for the most part we have a personal interest in the course which the ideas take. We have a definite practical end, and seek the means to it, or a definite theoretical problem, and seek its solution. Our attention is consequently concentrated round the elements which point in the desired direction, and will address itself to the other elements no more than is necessary to apprehend the ideational image. And concentration will bring to the fore those particular elements, as attention in general brings to the fore our sensations and memories. This will be not least the case where the points of similarity are held fast in spite of strong differences. *a*, *b*, and *c* all try to divert the attention to themselves, and it is only when the end and the motive determining the movement of thought are sufficiently strong, that the interfering associations of ideas are kept at a distance. In the idea *ax*, we thus note principally the *x*. We may demonstrate the general properties of the triangle by means of any triangle we like, because we can avoid taking into account the special properties of the triangle described (whether it is right or obtuse-angled, etc.). General and typical ideas exist therefore in the sense that we are able to concentrate the attention on certain elements of the individual idea, so that a weaker light falls on the other elements.

It would, however, be an error (an error in which Berkeley partially involved himself in his zealous and important dispute with the ancient theory of abstraction), were it to be supposed that we

[1] Galton, *Inquiries into Human Faculty*, p. 349, *seq.* (*cf.* 12, *seq.* 183, *seq.*).

begin with special ideas, then form concrete individual ideas, afterwards typical individual and finally general ideas. It is in fact a great art, and presupposes much practice, to know how to apprehend the concrete and individual, and mental development must be measured no less by its progress in this respect than by the power of concentrating the attention on the typical and general. Distinctness and individuality are relative conceptions, and our ideas may in this respect pass through a whole scale. The ideas of children and of primitive men have often a certain abstract, vague, and general character, because they do not distinctly apprehend and hold fast the individual shades and differences. At the first, only particular sides of the object are apprehended and preserved; it is connected with this, that the primitive consciousness, which in its sanguine nature has a tendency to attribute reality to all its ideas, suffers so many disappointments, since it argues from agreement in one particular to complete identity (V. *B.* 4). A child, *e.g.*, calls every man father. Many of the happy hits and good sayings of children are connected with the abstract and one-sided character of their ideas. In primitive zoology the walrus is classed with fish, the bat with birds. The Indian calls iron "black stone," and copper "red stone." The Bushman calls the carriage of the European traveller "the big animal of the white man." Our provisional ideas of a thing in like manner have, as a rule, a vague character, are given only in the most general outlines. In this connection have been cited with justice the ideas we have of things or circumstances about which we are asking or which we are trying to find, and in particular the ideas that express tendencies, the general bent of which is determined, but not the special form of the thing aimed at.[1] In agreement with this is a fact noted by Leibniz, that primitive roots in language have an indefinite and general meaning, which is only gradually rendered precise and special.[2]

The strong and simple confidence in ideas once formed leads, however, to an over-rating of the differences as well as of the resemblances. A child, who had learned his letters, saw a book with Greek characters on the one side, Latin on the other. Thereupon he exclaimed: "This is Greek, but these are letters."[3] He

[1] W. James in *Mind*, January 1884, p. 15.
[2] Leibniz, *Opera Philosophica*, Erdmann's edition, p. 297. Max Müller, *Lectures on the Science of Language* (2nd ed.) i. pp. 425-445.
[3] Egger, *Observations et Réflexions sur le Développement de l'Intelligence et du Langage chez les Enfants*, Paris, 1879, p. 22.

could not enlarge his general idea of letters. Similarly, many nations have regarded their own as the only real language; the language of foreign nations appeared to them as murmuring or stammering, as the lisping of children, or the cries of animals. Barbarians, the Greek word for all who were not Hellenic, signified really persons who speak harshly and inarticulately. Corresponding words and ideas are to be found among the ancient Indians, Hebrews, and Arabians; indeed even the people of the Herero (a Kaffir race in South Africa) consider that they alone speak, and all other nations stammer. It was only on closer acquaintance with the "barbarians" that the Greeks discovered, that (to quote Strabo's expression) the difference turned "not on a defect in the organ of speech, but on peculiarities in the language."[1] And similarly with the conception of "the State," which the Greeks would not apply to the associations of the barbarians.—The Greeks were more liberal in recognizing the divinities of other nations; yet the first Christians were styled atheists (ἄθεοι), and in later times those whose conception of God has differed from the ordinary conception have often been stigmatized with the same name.—How many struggles with limited general ideas did it not cost, before it began to be recognized that the earth is a planet and the sun a fixed star!—The development of the life of ideation consists, then, as much in generalization as in specialization, and in both respects great resistance may have to be overcome.

10. General ideas cannot be formed and retained in consciousness without the help of language. To the association by similarity of the homogeneous elements in percepts and ideas must be added, then, the association by contiguity between the idea and its symbol (8, *b*. III.).

Even if language is from the first essentially a medium for the communication of formed ideas, and not for their formation and retention, and even if the combination of ideas may advance to a certain degree without the aid of language, there yet arrives a point in mental development where language is necessary to any further advance.

In proof of the independence of the ideational processes, appeal might be made to the facts,—that children have ideas and think before they learn to speak,—that the power of speech is lost in certain pathological states without the reason being in any way

[1] L. Geiger, *Ursprung und Entwickelung der menschlichen Sprache und Vernunft* ("Origin and Development of Human Speech and Reason"), 1, p. 300, *seq*.

impaired,—and finally, that in certain languages expressions are wanting for ideas, which cannot themselves be unknown to the nations using those languages.

But even if no speech can be ascribed to a young child, there is at any rate no lack of signs and tokens which may serve as a means of retaining the ideas, being associated with them by contiguity. At this stage, instinct and feeling have the upper hand. These obtain a vent in involuntary expressions, which become, as soon as the child is able to notice them, a sort of mark by which the percept or idea causing the feeling receives an impress distinguishing it from others. Thus the very first formation of ideas is not wholly without extraneous support, even though it is not the word which affords it. The child begins life with a cry, but does not himself hear this cry. It is not long, however, before he begins to find a great satisfaction in the sounds made by himself. Out of these sounds, brought forth involuntarily, the child forms his first speech. Even at the age of six months he can often give answer in this language when he is spoken to. Afterwards there comes a period when this instinctive speech is used and modified with more freedom, so that an imitation of the speech he hears around him is attempted.[1] At this intermediate stage the speech of each child is quite individual. It is only at the third stage that language, as historically developed, obtains a hold on the child, and then the combinations of ideas also become easier and livelier.

It is no wonder that men are able to dispense with speech, after having availed themselves of it for a whole lifetime. The ideas have then naturally become strong enough to be able to endure, for at least a time, without the help of the symbol. Besides, they have gestures and actions, by which the ideas may be held fast. A striking example of the fact that ideas, when once formed, are independent of words, is afforded in a woman of seventy years of age, whom Kussmaul mentions.[2] In consequence of an apoplectic seizure, she had lost the power of speaking and writing, and could give vent to sounds only when she was affected by violent emotion. She could read, however, and displayed great energy and intelligence in the recovery of her right to manage her property, which had been taken from her under the mistaken idea that she was weak in mind.

[1] I base this account on the store of words possessed by a two-year-old child.—*Cf.* also the work cited of Egger's, p. 20; Preyer, *Die Seele des Kindes*, p. 259, *seq.* (Eng. trans. ii. p. 99, *seq.*)

[2] *Die Störungen der Sprache*, p. 22.

When a language lacks expressions for an idea, which is yet probably possessed by the people—as *e.g.* in the case of the Samoyedes, who, according to Castren, have no term for gratitude—this may be explained in several ways. It may be that the feeling exists as an instinctive, involuntary emotion, which has not become an object of consciousness; it is characteristic of savage races, that in their friendly as in their egotistic feelings they are children of the moment. Castren adds that a Samoyede will risk death for any one who has made him a present. Or the explanation might be that the Samoyedes do not have quite the same general idea as we have formed, the elements of what we called gratitude being perhaps included in the expression for a related virtue. Thus we, for example, have no one word to express the Latin "pietas."[1]

The primitive cognitive functions, sensation and perception, do not require the definite symbols of language. The memory-image, if not perfectly fresh and vivid, may, however, be in need of the name. The more the memory and the idea renew the reality for us and approximate to intuition, the more they are independent of the word (see 7, *a* and *b*). But with more faded and especially with typical and general ideas, the word is an essential help. With some people thought is an inner speech to the extent that intense thought makes them hoarse. For this reason thought has been called "a process of speech imperceptibly carried on in the central parts," which stands in the same relation to actual speaking as the will to actual movement.[2] This is especially the case with persons whose ideas of words consist mainly of motor-representations.[3] With other persons ideas of words are mainly auditory or visual ideas, *i.e.* they are reproductions of words as seen or heard.[4] Still there seems to be with everybody an innervation, more or less strong, of the articulatory muscles in every representation of a word.[5]

In the general idea the word is of especial importance. For here there is no longer anything which can be intuited, and even the need for something to intuit introduces a danger, for it may lead to the confounding of the typical with the individual. Only by means

[1] Tegnér, *Sprakets makt öfver Tanken*, pp. 100-101.—Thus the natives of Hawaii appear to have only one word for love, friendship, gratitude, kindness, and respect; they denote all these feelings by the word *aloha*. Max Müller *Lectures* (2nd ed.) ii. p. 343.

[2] L. Geiger in the work cited, 1, p. 58.

[3] Stricker, *Studien über die Sprachvorstellungen* ("Studies on the Ideas of Speech"), Vienna, 1880, p. 20, 33.

[4] *Cf.* my treatise "Ueber Wiederkennen, Association und psychische Activität (*Vierteljahrsschrift f. Wissenschaftl. Philosophie*, vol. xiv. (1890), p. 178).

[5] [The text has been changed at Prof. Höffding's request. (Tr.)]

of the name can the clear and firm nucleus escape confusion with its obscure and changing surroundings. The name is, as it were, a substitute for the impossible intuition, and by misuse it may even take the place of the general idea.

The deaf and dumb, even if they have not learnt to talk on their fingers, describe objects and experiences in the liveliest and most individual way by gestures and imitative movements. But this very individuality and concreteness of their expressions makes it impossible for them to form clear and definite general ideas; these do not get properly disjoined from individual ideas. Thus they indicate meat and food by pointing to their own body, red by touching the lips. They can express the special way in which a thing is made (a wall built, a dress cut out, etc.), but not the general idea of making. This is why the want of hearing and speech so greatly interferes with mental development.[1]

11. The definite limitation of the idea, which is rendered possible by the concentration of attention, assisted by the symbol of the name, makes possible in its turn the transition from idea to *concept*, and from mere association of ideas to *thought proper*.

Thought proper is not absolutely opposed to the involuntary flow of ideas (any more than to sensuous perception, see V. *A*. 5 and *B*. 3). From two sides relationship is apparent. In thought proper is exercised, only in a more regulated manner and according to certain definite principles, the same activity that manifests itself in all sensation, sensuous perception and association of ideas: the comparing activity, which we have described in its elementary, its implicate, and its free form. And this application of the comparing activity *according to definite principles* is possible only because there is a definite *interest* in combining ideas in a way that can stand the test of experience. This interest leads to the search for a certain standard, by which every combination of ideas may be tested. This presupposes a critical moment, a special awakening of the attention and of the interest. And such a critical moment, again, presupposes that so abundant a material is involuntarily found and provisionally arranged, that consciousness acquires a freer attitude towards its elements. The simple, primitive consciousness feels no need to form concepts, but goes passively from disappointment to disappointment (V. *A*. 4). Thought proper pre-

[1] Tylor, *Anthropology*, London, 1881, p. 119. Oehlwein, *Die Natürliche Zeichensprache der Taubstummen und ihre Psychische Bedeutung* ("The Natural Language of Signs of the Deaf and Dumb, and its Psychical Significance"), Weimar, 1867, (quoted in Preyer, *Die Seele des Kindes*, p. 406). (Eng. trans. ii. p. 22, *seq.*)

supposes a power of abstracting from the immediate present, and of taking into account more distant elements and relations. There must thus be exercised on the one hand a self-control to keep down the elements which spring up involuntarily, when they are not to the point, and on the other hand a positive striving to call up and collect everything which bears on the matter in hand.

Thought is to this extent an affair of the will. But the will cannot create something out of nothing; it can only form and change what is involuntarily given. Logical thought has essentially a critical character; it examines, weighs and estimates the relation of similarity, which is always the final condition of the association of ideas, but a condition about which the involuntary activity of consciousness is not so particular. Thought does not, however, merely examine the given associations of ideas; it always endeavours to put in their place new associations, more in harmony with experience. It holds fast by its standard, and continues to reject until a combination of ideas arrives which satisfies it. This selection rests, like all selection, upon an association by similarity or a comparison: that is selected, which most closely and completely answers to the requisitions of the standard.

Thought proper has at its command no means and no forms, which have not been already employed in the involuntary flow of ideas. The difference is one of degree only, depends on the closeness with which the relation of similarity is apprehended. The circumstance that the association of ideas becomes the object of express interest and conscious choice, cannot alter the laws of association. Thought proper can no more be emancipated from these laws, than any artificial machine can arrest the laws of external nature. But we can employ psychological laws in the service of our aims, just as the physical laws.

That thought proper is an affair of the will, must not be taken to mean that the act of thought is always executed with full consciousness. Thought, if free and energetic, takes its course with such haste that we forget ourselves. When we really reflect, "we are sunk into thought," are overpowered by it. But the will is not quite the same thing as self-reflection and self-constraint. We may very well wholly forget ourselves, and yet guard against casual and unwarranted combinations of ideas, may avoid falling into inconsequence and error. Practice takes effect in thought as in every other activity. Before practice is acquired, opposition may often have to be overcome, and in the effort necessary, the

part played by the will is clearly apparent: the principle to be applied, the standard to be observed, must be kept hold of as the guiding thought (centre of association). When the practised thinker gives himself up to the course of his thoughts, there is not less concentration of attention, but the agency of the will is more hidden, because its energy is now at one with the energy of the flow of ideas. Only if difficulties and opposition appear, will it again become distinct.

It is the business of logic, not of psychology, to set up a standard for combination of ideas, and to indicate the rules which such a standard affords for the association of ideas in harmony with experience. Logic is an artificial, psychology a natural science. But art grows out of nature and is a continuation of it. And it is also of interest psychologically to see that the standard for valid combinations of ideas is no other than an ideal expression of that which enters more or less distinctly into all involuntary association of ideas. Logic judges all associations of ideas according to the degree in which they satisfy the principle of identity, *i.e.*, in which they fulfil the condition, that each idea, wherever and whenever it occurs, must have the same content ($A = A$). This principle corresponds to that recognition which is the presupposition of all association (V. *B.* 8 *c.*). In the logic of concept, judgment and inference, is manifested the importance of this principle.[1]

The first condition of thought proper is that the ideas (simple, individual, or general) dealt with, shall be severally held fast and made precise. In the involuntary flow of ideas, the ideas have a vague character, and pass easily one into the other. By definite limitation (definition, determination of the concept), the content of the several ideas is established, and the ideas are thus converted into concepts.

In judgment two or more concepts are combined, the one being shown to be a closer determination of the other, to present a part, a side, or an effect of what is contained in the other. At the root of the judgment is the percept or the idea of a connected whole which the judgment analyses. I make the judgment "the man is good," when I see or conceive that the man acts in a certain way; and in my judgment I bring to the fore that definite side from which the man appears to me on this occasion. If I pass from the subject of the judgment to the predicate, and transfer my attention from the idea of the man to the idea of goodness, I still do not let

[1] *Cf.* my *Treatise on Formal Logic*, Copenhagen, 1884.

go the subject, the idea of the man ; for supposing that I *had* let it go, by the time I reached the predicate (of goodness) the combination of the two concepts would not have taken place. The judgment is a closer determination or analysis of the subject-concept, and the predicate-concept is thought only in its connection with the subject-concept. The mental operation, undertaken in judgment, is thus a dividing into parts, a special calling out of those elements which to the immediate apprehension were given in unresolved unity.—In the development of language there is a stage at which concept and judgment are not expressed in different forms. Root-words expressed originally events, actions or circumstances, they were "propositions in embryo." The word then signified indifferently, the subject of the action, the action itself and the object of the action.[1] The need for a distinct term for each several part of the main idea could arise only after the attention had been directed to them separately. The earliest words of children are similarly "propositions in embryo." Bow-wow denotes "the dog," "there is a dog!" as well as "the dog barks." Preyer describes as follows, how his child (at the age of twenty-three months) pronounced one of his first judgments :— "The child drank some milk which was too hot for him, quickly put the cup down, and said loudly and distinctly, gazing at me earnestly with eyes wide open, 'Hot!' This one word was meant to signify 'the drink was too hot.'—The cry 'tool' may mean either : (1) Where is my stool ; (2) My stool is broken ; (3) I want to be lifted on to the stool ; (4) Here is a stool."[2]—When I am about to make a proposition, at first only the main thought is clearly present ; the formulation of the proposition takes place by differentiation of the subject- and predicate-concepts from the unity of the main thought. A speaker absorbed in his subject may never perhaps undertake the full analysis of his main thought ; the half involuntary mechanism of speech provides, however, for its presentation in detail, without any express act of consciousness being required.[3] The attention and the energy of the speaker would be far too much dissipated if he had to divide them between the main thought and its presentation in particular judgments. These facts seem to confirm the view of the judgment as an analysis.

[1] L. Geiger, *Ursprung und Entwickelung der menschlichen Sprache und Vernunft*, 1, p. 205.
[2] Preyer, *Die Seele des Kindes*, p. 279, 310. [Eng. trans. ii. pp. 144, 154.]
[3] *Cf.* Kussmaul, *Die Störungen der Sprache*, p. 196.

The determination of concepts and the formulation of judgments are for logic only preliminaries to the inference. The inference is the clearest form of thought proper. By its means a judgment is proved; *i.e.* deduced from one or more other judgments. Inference comes in, when doubt has been cast on the validity of a judgment, and it cannot be established by immediate reference to the percept. The assertion A is not $= C$, must be withdrawn if $A = B$ and $B = C$. The demonstrative force of the inference is based upon the principle of identity; for if *e.g.* $B = B$ does not hold good, an inference is impossible. Unless the principle of identity is presupposed, thought can make no progress. This principle is therefore the highest law of thought, the postulate on which all science depends. It is, however, no arbitrary or accidental postulate; the relation of similarity underlying all association of ideas is expressed by the principle of identity in an ideal and absolute form, to which our actual associations attain at best only approximately. Psychologically the strict principle of identity can be realized only to a certain extent; in reality there is, as frequently noted, no absolute repetition. The principle of identity is a logical abstraction. But still there is here a point at which logic and psychology so far approach one another, that the growth of logical thought becomes psychologically intelligible.

If, on the contrary, the relation of similarity is not admitted as the presupposition of all association, the origin of logic is incomprehensible, and the principle of identity is given as an absolutely arbitrary principle. For whence should thought derive its standard, its principle, if this is not the idealized expression for the true nature of thought, and to be found consequently in imperfect and vague forms at all stages of intellectual life?

John Stuart Mill, in his celebrated *Logic*, went a step farther, and tried to carry out a theory of inference not based upon the principle of identity. According to him the original inference is from particular to particular; when a child has burnt itself, it cries at the sight of the fire, because it expects the pain to follow; it thus argues from one particular phenomenon (the fire) to a different one (the pain). This inference can be based only on habit or instinct.—Mill overlooks, however, that there is a definite condition, without which the child's inference would not be possible. If the fire is not, as before, alight, then the child is mistaken. But if it is as before, he will get burned if he touches it. The principle of identity is thus involved, if the inference is

correct. The primitive consciousness gives itself, however, on account of its sanguine tendency, no time for confirming or weighing resemblances (*cf.* V. *B.* 4). Only after repeated disappointments does it learn "to be careful," *i.e.* to try how far the identity goes. It is through such experiences that the transition from the involuntary flow of ideas to thought proper is effected. To the involuntary flow of ideas any resemblance, any contact, suffices to establish a combination of ideas. Mythologies, dreams, the fancies of children, the delirium of the mentally deranged, and the changes in meaning of one and the same word, all seem to show that no combination of ideas is impossible. Thought proper reviews and tests the resemblances and tries to build up a structure of thought, in which by force of the principle of identity each several member is combined with the others.

12. While a development from the concrete individual, through the typical individual, to the general, idea, leads us from the mere association of ideas to thought proper, another process of development may take place, which does not lead away from the concrete individual ideas, but rather results in the formation of new ones. The *creative power or imagination* (in the narrower sense) [1] grows out of the same root as thought, but in a different direction.

In order to understand this process of development, it must be borne in mind that even the concrete individual idea is complex in nature, a product of association (V. *B.* 9). Hence the possibility that the same elements may be linked in other ways, presented in other combinations. By the exchange of even some of its elements for others the individual idea may acquire another appearance. This happens more or less with all our memories. Special features get wiped out, and their place is taken by others without our noticing it. In the very cases where we keep secure hold of the essential features, this kind of transposition and shifting may take place in the subordinate features without attracting our attention, when we have no opportunity of comparing the memory-image with the percept. Dreams, whether dreams proper or waking dreams, go still further and transform the dominant and determining elements of the individual idea, thus creating ideas of individual persons,

[1] Imagination in the wider sense is identical with the power of ideation: this was the original meaning of the Greek word φαντασία. If we keep to this, then the whole doctrine of memory and of ideation is a doctrine of the imagination.—In the narrower sense, imagination is the power of forming new concrete ideas, and this is the sense in which we now employ the word.

things and events, which have never been presented in experience. We may dream of persons, as standing clearly and vividly before our eyes, whom we have never seen.

We employ this power of free combination [1] daily when we try to get at the gist of something of which we do not know the full and complete facts. When we understand an allusion, we enlarge the given scattered elements into an individual totality. The inventor of a new mechanism combines given elements, the laws of whose activity he knows, into a totality and a connection which has no complete parallel in experience. The scientific discoverer in like manner looks round among his elements of experiences, tries their possible combinations in order to find the one which accords best with other experiences. During this process there is formed in his consciousness a succession of individual ideas, which are rejected one after another, until that one appears which best grasps and fits in the given elements. What is marvellous in scientific genius is the mental freedom with which it is able to abstract from experience, and to picture the different possibilities with all their consequences, in order to find by this means a new reality, not accessible to direct experience. Kepler cited this mental freedom as a significant feature in the genius of Copernicus.[2]

The freedom in respect of what is given, which scientific imagination presupposes, appears not only in the new combinations, but also in the power of discovering agreements, of finding the same fundamental relations, in the midst of very changed or complicated conditions. Such more deeply penetrating apprehension of similarity lies at the bottom of the association by contiguity at work in the combination ; starting from the single recognized or identified characteristic, a whole new connection (according to the law of totality) is constructed, as when Newton, according to the story, obtained from a falling apple the idea of the fundamental law of the planetary system. Free combination leaves the differences as they are, but brings the manifold elements into a new harmony. When, however, it works in the service of scientific inquiry, it always requires, as a corrective, thought proper with its power of weighing similarity and difference. The formal or abstract sciences (logic and mathematics) form therefore the basis and the corrective of the real

1 This power is scarcely to be found at the lowest stage of human existence. The imagination of savages is reproductive, not constructive. Spencer, *Princ. of Sociol.*, pp. 39 and 47.

2 "Copernicus vir maximo ingenio et, quod in hoc exercitio magni momenti est, animo libero." (Reuschle, *Kepler und die Astronomie*, Frankfurt, 1871, p. 119.)

or concrete sciences (natural science and history). The development of scientific knowledge has for its end the discovery of a unity and similarity so deep that all differences may be contained within it, and on the other hand the arrangement of all differences in such clear and definite forms that the laws of similarity appear as of themselves.

Imagination, while in the service of scientific knowledge, is only a by-way, which the ideational process takes because the direct road is impracticable. Sometimes this by-way cannot be pursued to the end; but it may still be admissible if its general direction, the curve which it makes, indicates an agreement with experience. Cognition then ends with an hypothesis. There is, however, a mode of free combination in which such reference to given experience is not possible, and the thing aimed at is rather an independent and new creation, similar in kind to the involuntary productions of dreams. Artistic imagination differs from the imagination of the scientific student in this, that its final aim is not agreement with certain definite percepts, but is attained by the creation of a concrete and individual form, quite apart from the question whether or no an absolutely similar form exists in reality. Its creations should bear the character of reality, but need not accord with any definite reality.

The psychological property of the imagination depends in the individual cases in part upon the degree of consciousness or spontaneity with which it works, in part upon the species of association of ideas which controls it, and in part upon its relation to the actual percept.

(*a*) With regard to the degree of express consciousness with which the imagination works, three forms may be distinguished. It may act almost unconsciously and involuntarily, so as to approach the nature of dream-consciousness. The interweaving of the elements of the picture in the imagination takes place in great measure below the threshold of consciousness, so that the image suddenly emerges in consciousness complete in its broad outlines the conscious result of an unconscious process (*cf.* III.). Goethe relates that "for several years his productive talent never left him for a moment;" it must thus have been active without conscious exertion on his part being demanded. He relates of "*Werther Leiden*" (The Sorrows of Werther): "Having written this little work almost unconsciously, like a somnambulist, I marvelled at it myself when I read it through." In the introductory poem to the

Roskilde Rim, Grundtvig[1] says: "I have sung of that which I have never known."—A step nearer to imaginative production with a conscious end, we have improvisation, where a given motive and the movement of idea and feeling which it sets up gives the impulse to new combination. Madame de Staël, in *Corinne*, strikingly compares improvisation with a lively conversation—one reply calls for another when once the ice is broken. In the description of Corinne's improvisation, the influence of the passing motives and moods comes out; after Corinne has first praised "the glory and happiness of Italy," the theme given by the audience, she is moved by the sad expression in the countenance of one of the audience to strike a more serious key and "to speak of happiness with less assurance."—Finally, the activity of artistic imagination may bear a certain resemblance to the scientific attempt to solve a problem. In contrast both to instinctive creation, which does not know what it does, and to the free evolution of images as they spring out of the passing mood, stands the energetic working to mould a refractory material to a new form. The poet, as little as the student, tolerates the self-contradictory and disconnected. But for the poet the greatest contradiction is the refusal of the elements to combine into an individual form. Every one receives impressions, experiences mental states; but it is only apparent to a few that these may be made use of as the stones of a new structure. The majority accept the several experiences as they chance. The imagination of the poet, on the contrary, continues to work at them until they are formed into one individual image, and only then feels clear and at ease.

(*b*) As a faculty of free combination, the imagination acts by means of association by contiguity, when it combines elements which from their nature either are, or may be, connected in time and space. The strength and liveliness of the imagination depend on the power of forming images full and complete in every detail (together with the capacity for presenting each separate element with impressive force). Men with little imagination do not give any such individualized character to their images, but leave them to be presented in a more indefinite form (like the primitive ideas mentioned in § 9). Or if they do form definite and individualized ideas, these are quite fixed and unchangeable, whereas the artistic imagination is able to take the elements out of their original combinations and to place them in new combinations as parts of

[1] A celebrated Danish poet.

new concrete individual ideas. In association by contiguity, again, the association of what is given simultaneously plays in artistic imagination the greatest part, while for the student of science the succession of events and phenomena has most interest.[1]

The artistic (and especially the poetic) imagination is distinguished, however, not less by the energy of the association by similarity. A slight hint, an insignificant occasion, suffices to call up the idea of the greatest relations, and the poetic imagination, which discovers the operation of great laws in even the smallest relations, has a certain kinship to the scientific imagination.—As Bain observes, association by similarity plays an important part only in the imagination of the poet, not in that of the painter or musician, (*cf.* p. 153, on the associations which rest on analogy and are expressed in the metaphors of speech and in poetic imagery).

(*c*) Artistic imagination in its simplest form is imitation of reality, and in a certain sense it never goes beyond this. To grasp and to reproduce the real in all its individual fulness is a problem which can be solved only when the intuitive and imaginative powers have reached their highest development. This is the *realistic* element in all art, appearing now as a sober, scrutinizing penetration, now as a sympathetic absorption in the material given. Without this impulse art would beat the air. Artistic interest makes here an approach to scientific; the difference between them is that what to the one is an end, is to the other a means.

The concrete individual idea, which to the thinker is only an example or a symbol, often even a distracting symbol, is to the artist the highest end. Neither thinker nor artist, however, leave the given material as it originally is. All art is distinguished from mere tracing or reduplication of reality by this, that it bears the stamp of the mind whose work it is. This stamp does not come from the artist's personality being made apparent to the spectator, but from the fact that the artist makes a definite choice, whether himself conscious of it or not, of what he will give and how he will give it. Here the influence of the will comes to light, just as in the psychology of thought. And here, just as little as there, does this influence of the will imply voluntariness. It is the expression for the effort inspired by a dominant feeling, which guides the artist in his work. With the way in which this feeling develops, the psychology of cognition has nothing to do, any

[1] *Cf.* the interesting remarks in John Stuart Mill's *System of Logic*, iii. 13, 6.

more than with the question as to what determines the value of the work of art for the spectator.

In the selection of material and treatment, lies the *idealistic* element of all art, an element from which even so-called realism can emancipate itself only in appearance. This is the open side of art, by which it is connected with the stirrings of mental life in other provinces. But whatever deep movements may be concerned, the question, from an artistic point of view, is as to the results to which they lead. The poet may, *e.g.*, be a thinker and a scholar; poetically, however, it is important that his work should be something more than abstract thoughts translated into verse—that image, feeling, and thought should really harmonize from first to last. The idealism which seeks to individualize that which has lost vital connection with the concrete individual reality, is unpsychological. On the contrary, in that idealistic element present in all artistic creation, there may be the germ of an idealization of actual facts. Goethe was struck by Merck's description of his aim as contrasted with that of the brothers Stolberg. "Your endeavour, your fixed aim, is to give poetic form to the actual; the others make the attempt to actualize the so-called poetic, the imaginative, and that results only in absurdity." (*Aus meinem Leben*, 18 Buch.) The poetic form may cast a light on reality, which it does not naturally or always possess, and the dominant feeling of the poet discovers an order of the universe, in which his ideals find their satisfaction. In this way art seeks to spin out the threads which may be already traced in nature; it becomes the ideal continuation of natural evolution. Thus, *e.g.*, the art of sculpture completes that subordination of the vegetative to the animal life, which a comparison of the higher with the lower forms of organic life clearly exhibits.[1] Through its very idealism art is again related to nature; for nature makes directly or indirectly a selection (natural and sexual selection), by which the transition from lower to higher forms is effected. A conception of the artistic aim, which should narrow it to the construction of a mosaic of the particular percepts of real things, would be opposed to nature itself, for nature is incessantly engaged in "idealizing," inasmuch as in the struggle for existence forms and characteristics are always becoming more strongly marked, in

[1] J. C. Schiödte, *Det Vegetative og det Animale i den Dyriske og Menneskelige Form* ("The Vegetative and the Animal Elements in the Structure of Animals and Men"). *Nordisk Tidsskrift, udg af den Letterstedtske Forening* ("Northern periodical, published by the Letterstedt's Union"), 1878, p. 345.

close connection with the sphere within which the struggle is carried on.

Unpsychological realism gives fragments or patched-up images, while nature itself is incessantly forming new individual types. *Unpsychological idealism* partly wastes its energy over the insoluble problem of giving flesh and blood to abstractions, partly turns effeminately away from the inharmonious and ugly in existence. True art teaches us to use our eyes, but at the same time to fasten on the broad suggestive features and so learn to understand reality better.

C.—Apprehension of Time and Space.

1. It has been already implied in the provisional account of conscious life, that mental phenomena make their appearance in the *form* of time. Change, transition, alternation—and inner connection throughout all change—these were the most important characteristics of consciousness. But in these the form of time is already given. Psychology must therefore come to a pause at this form, as something originally given, a psychological ultimate presupposed in all conscious phenomena, which cannot be itself made an object of explanation.

It is different when the question is of the *idea* of time, of temporal relations. This idea has its psychological history like every other. The mental states may continuously succeed one another without an idea of this succession necessarily resulting. The more nearly consciousness approximates to a series of different and mutually independent sensations and ideas—which as already shown is the same thing as an approximation to the dissolution of consciousness—so much the smaller is the possibility of an idea of time: the seconds change, but each second completely takes possession of consciousness, without any energy remaining for that which went before or will come after. Not only in its dissolution, tá also in its origin consciousness comes near to being a series whp. 138, *seq.*), and for this reason the idea of time is scarcely to howced in children before the third year. We have seen in an earlier just ation, how expectation and free memory arise, as special there, ly gradually during the conflict of experiences with ex- expressinsation and with native sanguineness (*B.* 4). We now guides this account of the development of memory, adducing develops, t feature in it, the reference, namely, of the content of

[1] *Cf.* the in finite points of time.

The simplest form of consciousness would be one in which two states (*a* and *b*) succeeded one another without intermediate links. Now so long as *a* and *b* each independently occupy consciousness, no idea of time can arise; *a* is forgotten when *b* appears, and *vice versâ*. Something more is required which shall so yoke together *a* and *b*, that the change from the one to the other may appear as the different filling up of one and the same schema. This common bond can be no other than a sensation or a feeling, which remains constant while *a* and *b* alternate, and which affords in consequence the relatively constant background, in contrast to which alternation, succession, may be plainly apparent. In addition to the alternating *a* and *b*, we must have then a third relatively invariable element, *x*, to make possible a contrast. This recalls the fact, that the unity of the self, of consciousness, is sustained not only by the formal connection and the formal interaction between everything in consciousness, but also by a ruling feeling (*B.* 5.) This fundamental feeling, which is in a great measure, and as regards the lowest conscious life exclusively, determined by the general or vital feelings, is thus a necessary presupposition of the apprehension of time. The immediate apprehension of the difference or contrast between what is constant and what is variable is, however, only a *sensation of time*, and no *idea of time*.

2. The apprehension of time becomes clearer when intermediate links are inserted between *a* and *b*, so that in order to get from *a* to *b*, the consciousness must pass through *m* and *n*, always with *x* as the background for the whole series of changing states. It is, however, essential that *m* and *n* should not be of so much strength and interest as to cast *a* and *b* into the shade, but that *a* and *b* should always remain the principal points. The recognition of *a* and *b* as the starting and final points of a series of states or elements must be added, if there is to be not only a sensation of time, but a real consciousness of time, an idea of time. Let *a*, *e.g.*, be the sensation of hunger, *b* the sensation of satisfaction, while *m* and *n* represent the means which lead from hunger to satisfaction (the sight of the prey, securing it, etc.). There will thus be formed a firm connection, *a*, *m*, *n*, *b*, and a rhythmical alternation takes place which becomes gradually familiar to consciousness and easily surveyed. Now the more numerous the states become through a higher development, the more necessary it is to have certain points which always recur as raised places in

the succession, which may be recognized and from which the others may be surveyed and measured.

The idea of time involves therefore two things: (1), *the consciousness of change*, of succession; this arises through contrast to a constant sensation: (2), repetition of certain states which have a strong hold on consciousness; the *recognition* of these makes a certain measuring and grouping possible in the series of changes.

It would not be possible, from a simple constant sensation or a simple constant feeling, to have the idea of time. The more we are absorbed in a single thought, the more we are "rapt," as it were, out of time; for which reason the mystics call eternity an "enduring present." On the other hand, the idea of time could not possibly be derived from mere succession of sensations; something would be needed that might lead to the surveying and measuring of the succession.

The larger the number of rhythmical series, and the more practice consciousness has in surveying them, the more clearly the idea of the temporal series stands out with a certain contrast to the sensations occupying the series. The space between *a* and *b* may be filled up in different ways: *a*, *m*, *n*, *b*, or *a*, *p*, *q*, *b*. What fills up the space between *a* and *b* may reappear in a different setting: *a*, *m*, *n*, *b*, or *c*, *m*, *n*, *d*. And the same number of particles of time as are occupied by the series *a*, *m*, *n*, *b*, may be occupied under different circumstances by the series *c*, *p*, *q*, *d*, etc. Here then are the conditions for the formation of a *general* idea of time.

3. That general outline, or pattern, which we think of as filled up in different ways, cannot in itself be pictured. It shares the fate of all general ideas, and requires an individual representation. But the time that we can immediately picture or bring together in one moment is very short. It has been shown by experiments (made by Vierordt), that we have a tendency to over-estimate the duration of very small intervals of time, and to under-estimate the duration of long intervals. More recently it has been shown that the actual and the estimated difference of time coincide when the interval is 1·25, or 1¼ second. It has further been proved that there are several of such "points of indifference," so that there are various little sections of time, which we can employ as a standard for the larger. Curiously enough, among longer periods the uneven multiples of 1·25 seconds seem to be the most accurately

apprehended.[1] This bears out the effect attributed to the rhythmical change of sensations: we employ a certain short rhythm in measuring succession. Exact estimation and survey is not possible in longer intervals, even though practice may sharpen the sense of time in no small degree. Should the idea have as its content a temporal series which extends far beyond the present instant, this content is bound to undergo contraction. With perfect clearness I can picture to myself only the transition from one second to another; the idea of portions of time which comprise myriads of seconds, can be had only symbolically. If we were to remember past time as clearly as we picture the minutes that form what we call the present, memory would become an impossibility. We always therefore apply in thought a standard of measurement to the past, different from that applied to the present and immediate future. It is only when we want to *re-live* the past, that we try to renew the distinctions of time in our remembrance, and even then never so fully as to give it the extension of the present. It is with time as with the strength of sensations (p. 146), both the duration and the strength of the original experiences are only indirectly remembered.—It is due to this symbolic character of the idea of time, when it has attained to a certain development, that it is formed only relatively late, and is so long confined within certain limits. It attains to full clearness only when it becomes possible to represent it in a distinct symbolic form, to secure the transitory ideational rhythm in an image at rest. And this can only be when the apprehension of space comes to its aid. Only in the form of space is an intuition of time possible. We then apprehend time as a straight line, indefinitely extended in either direction.

The idea of time is a typical individual idea. Wherever we observe time, we have before us portions of the same time. It is like a river looked at from different aspects. Often it is hidden from our view, as when we sleep, are unconscious, or from any other reason do not know "how the time has gone." But as soon as the attention is again awakened we reconstruct the lost course of time. Thus time is not merely related to individual times as a general concept to the individual cases included under it, but also as our

[1] Glass: *Kritisches und Experimentales über den Zeitsinn* (Wundt's *Philosophische Studien*, iv. p. 423, *seq*).—Earlier treatment of the same question is to be found also in Wundt's *Studien*, i. p. 78, *seq*. and ii. p. 576, *seq*. According to the experiments of Glass, Fechner's law (*cf*. p. 110) also holds good for the estimation of time. [The alteration here of text and note is made at Prof. Höffding's request. (Tr.)]

predominating idea of an individual to our several experiences of that individual.

4. So long as the idea of time is grounded only on the change of our inner states, the estimation of time is very uncertain. Two circumstances are in this connection of especially great importance; the interest in the content of the experiences and the number of traits experienced.

The interest in what is experienced may have very diverse influence. In concentrating the attention and so preventing consciousness from noticing the succession, it shortens the time both during the actual experience and in the remembrance. Seven years passed for Jacob like a few days, because he loved Rachel. But interest may also lengthen the time, since we involuntarily argue from the importance and significance of the content that a long time must have elapsed. We give symbolical expression to the fulness of content by extension of time. It is connected with this, that anything that precedes a very important crisis in our life recedes in time: it appears to us so foreign and at the same time so faded, that we can understand it to be a part of our experience only by referring it to a remote date. We have a general disposition to attribute faint memory-images to a more distant, and lively remembrances to a more recent time, than properly belongs to them.

The more varied the experience (apart from the question of interest), the more quickly it seems to pass,[1] but the longer the time seems in our memory.[2] Conversely, the more monotonous the experience, the more slowly the time passes, but the shorter it seems in memory.—In dreams, or in states especially favourable to the recall of the past in memory (*cf.* p. 149 *seq.*), it sometimes seems as though a great space of time had elapsed, because a multitude of images have been spread out before us. Persons who have been in danger of death from drowning or other causes, have seen their whole life pass before them in a few instants. De Quincey describes how, after taking opium, he often thought he had lived eighty or a hundred years in a single night, sometimes indeed it even seemed to him as though a thousand years had elapsed

[1] It agrees with this, that when something is moved with uniform speed over the surface of the skin, the movement seems to be quickest on those parts where the sense of localization is finest.

[2] This may perhaps afford the answer to a question which was asked in the first volume of the *Revue Philosophique*, why the content of a memory which is in its turn remembered, is referred to a more distant time than a content remembered at first hand. The first remembrance forms, in relation to the second, a station, an intermediate term, which serves as a point of division and so makes the perspective plainer.

between the one day and the next. Time seemed to him to swell.[1] To the ecstatic seer, time and eternity are unrolled in vision, although the vision is really over before the hour-glass is emptied.

Each individual brings his own scale of measurement, depending in part on the more or less energetic interest with which he spends his life and attends to the passing events, in part on the speed with which his ideas are accustomed to move. A less interesting content and a slower action than usual excite weariness and tedium.—The sense of time affords also simple examples of the effect of contrast, for it has been shown that an individual, if he has first tried to calculate a short space of time and then tries a long one, will judge this latter to be even longer than it really is; and he will judge a short one to be shorter than it is after previously apprehending a longer one. In this latter case the effect of contrast is even stronger than in the former.[2]

The need of substituting an objective scale of measurement for the subjective, the uncertainty of which must easily have been noticeable, made itself early felt. The great, regularly recurring phenomena of nature afforded a good scheme of measurement. The movements of the sun and of the moon, day and night, morning, noon and evening, served as a basis. For finer division the sand of an hour-glass, the water of a klepsydra, or even a burning candle were employed. But great precision became possible only by means of the pendulum and the chronoscope. Wheatstone measured the rate of an electric spark, and found it to be $\frac{1}{115.200}$ of a second. With Siemens's chronoscope it is possible to calculate even $\frac{1}{1000.000}$ of a second.[3]

We may think of this exactness as carried to even higher degrees. A final point is not, however, conceivable. We measure time by the help of uniform movements in nature. But this uniformity has itself to be established, so that we move here in a circle. Absolute time might be thought as realized in nature, so long as it was believed with Aristotle that the heavenly bodies revolved with eternal immutability and uniformity; but, this belief once abandoned, the idea of absolutely uniform time loses its basis in reality. This consequence, the *relativity* of time, was perceived by Giordano Bruno.[4]

1 *Confessions of an Opium Eater*, p. 161.
2 V. Estel, *Neue Versuche uber den Zeitsinn* ("Recent Inquiries into the Sense of Time.") (Wundt's *Studien*, ii. p. 55).
3 Jevons, *Principles of Science*, 4th ed., p. 307, *seq.*—A. Paulsen, *Naturkräfterne* ("Forces of Nature") iii. p. 129.
4 *Cf.* Brunnhofer, *Giordano Brunos Weltanschauung* ("Giordano Bruno's Conception of the Universe,") Leipzig, 1882, p. 187, *seq.*

An absolutely uniform time is an ideal, requiring that every possible estimation of time shall be subjected to a further correction. Every standard which has been tried with a view to absolute uniformity, has proved to be variable. Only in the symbolical representation of time as a line is absolute uniformity to be found. But here idealizing abstraction has put its hand to the work. The conception of absolute time is a mathematical abstraction. Absolute time is quite continuous and quite uniform; its connection is never interrupted, and each instant of it is exactly like every other. Psychological time, *i.e.* the time which we can really apprehend and picture to ourselves, has to be perpetually reconstructed, for we apprehend it immediately only in fragments, and its seconds are of different specific weight, according to the importance and variety of content. Psychological time is always limited; we always make a pause at a certain point, when we look forwards or backwards. But we have the consciousness that every limit is accidental and subjective, and has its cause in fatigue of the imagination. Every beginning and every end is only relative. Absolute time is unending, *i.e.* must be conceived as continued beyond every limit.

5. That the form of time is present from the beginning of consciousness cannot be called in question. The psychological examination of time has to do therefore only with the idea of time and the estimation of time. On the other hand, it is a disputed point whether even the *form* of space is original. That it cannot at any rate stand in the same intimate relation to consciousness as the form of time is evident from the general character of consciousness. The states of consciousness succeed one another in time; but there is no sense in which they can be said to be extended in space. What appears in the form of space can be only the object of consciousness, not consciousness itself. This at once implies that the form of time is psychologically more original than the form of space; the latter does not seem to be absolutely necessary to consciousness. The present question is, whether experience teaches that in reality the form of space is a psychical product formed according to general psychological laws. There would then be, or have been, a stage in the development of consciousness when sensations and ideas were only presented with a certain distinctness and a certain quality, without having their content framed into extended images.

It is difficult for us to conceive a consciousness without any apprehension of space. We ourselves think constantly in images.

We cannot clearly apprehend and express even our moods and feelings without the help of intuitions and images. It might be concluded from this that the form of space must be original; it might even seem as though the symbol was nearer to us than the thing symbolized, and the intuition of space consequently more original than the intuition of time. Albert Lange, an acute thinker, did actually come to this conclusion. He says, "The empirical perception of our inner states can certainly not be effectuated in the mere form of time. We have always a number of simultaneous sensations, which can be brought into synthesis only in the form of a spatial image. . . . . All our empirical ideas of time are associated with ideas of space. A line symbolizes the course of time. Movements in space afford the means of measuring time. Should it not be concluded that the idea of time is altogether secondary to the idea of space?" (*Logische Studien*, Iserlohn, 1877, p. 139).—In answer to this it must first be observed that the idea of space is not necessarily the more original because it is presupposed in the higher and clearer development of the idea and measurement of time (see 3—4). Lange infers too much from the necessity of a symbolic representation. The thought must be more original than the name, although the name is necessary to its full clearness and precision. However closely the feeling may be connected with its expression, it would be putting the cart before the horse to conceive the former as secondary to the latter. Only in the higher stages of the conscious life is there a wide field of symbols at its service. It is only in two of our senses, sight and touch, that the form of space plays an all-important part; in hearing, smell, and taste there is originally no localization; in these we have to do only with the distinctness and quality of the sensation. The real definite intuition of space is, as will be seen in the following section, linked with the visual sensations. The visual images play so great a part in our ideational world that we with difficulty abstract from them. The more we fix the attention on sounds, on impressions of taste and smell, the more we approach to a consciousness endowed only with the form of time. We begin to perceive the possibility of having in consciousness an inner variety not united in the form of space.

This appears still more clearly in respect of states of feeling. These are, indeed, for the most part accompanied by localizations (*e.g.*, in the breast, in the heart); but it is easy by introspection to distinguish between the actual feeling and

consequences. Pleasure and pain, joy and sorrow, hope and fear may stir in us, without being at once symbolized. Though we may require spatial images for the clear apprehension of our feelings, yet what these images express is not the feeling, but its occasion or its effect. The idea of joy consists, for most people, in the idea of something cheerful and smiling. But the more intense the emotion, the more it suppresses all such symbolic images. In every feeling there is something inexpressible, incommensurable with any expression. The feelings drive us to search for forms and expressions, but are not themselves arranged in the form of space. If in a dejected mood there gleams a ray of hope, we do not set it above or below, to the right or the left, of the dejection, as with simultaneous sensations of different colours. Different elements of consciousness may thus be experienced simultaneously, without being arranged in the form of space. The want of clearness and difficulty of immediate psychological perception are in a measure connected with this (see p. 22). We lack a form of intuition for simultaneous internal phenomena, while for simultaneous external phenomena we possess one.

6. We apprehend space in three dimensions; up and down, left and right, forwards and backwards. These three may be reduced to two: to distance (or depth) and superficial extension.

It will easily be seen that the apprehension of distance cannot owe its origin to any single sensation. Every sensation pre-supposes, psychologically, that a physical excitation reaches the sense-organ. But distance does not in itself make any physical impression upon us. We measure distance by a line from the ject to us; but no excitation can directly inform us of the tence of this line. The line denotes the direction of the excita- but does not itself give rise to a sensation. We can apprehend e only by in some way or other measuring out such a line: measuring is no single sensation, but a process of com- which either already involves a certain idea of space or unded on the degrees and kinds of sensations which we we approach the object or move a part of our body

act thus asure out by movement, whenever we 119). The eye involuntarily accommo- tation of light may fall on the yellow becomes more convex, the nearer the s are so placed, that the visual axes

converge more or less, according to the distance of that which attracts the attention: if I look at a near object, my eyes are turned inwards (by means of the muscles attached to the inner side); if I then turn my gaze to the distance, my eyes are turned outwards (by means of the outer muscles of the eyes).[1] We grasp at an object, or move towards it, in order to touch it. In these several ways we receive motor-sensations, which are definitely connected with the position of the object relatively to us. With the appearance or feel of the object comes then to be connected, by association or habit, the reproduction of the motor-sensations, a necessary presupposition to the most distinct apprehension of the object. More or less clearly, distance signifies to us the greater or smaller series of motor-sensations, which we have because our sense-organs (especially the organs of sight and touch) are moved so as to receive the most distinct excitations possible,[1] or which we should have if we moved from our standpoint to the object. It agrees with this, that the apprehension of distance is clear and plain only in the case of near objects, and that in the case of distinct objects it is the plainer the more familiar they are to us. The very plainest apprehension of space is obtained from what we have directly measured with our own hands. Greater distances (like greater portions of time) are understood only symbolically, being regarded as a sum o smaller distances directly measurable.

The sense of touch and the motor-sensations linked with activity, are the original basis of the apprehension of dista We take the true measure of an object by actively feeling it. distances thus learned, we always mentally read into our v apprehension. Distant objects, which seem small to sigh estimate immediately according to the size they would to the sense of touch. Then, but in a secondary way size of known objects as presented to sight, become a means of estimating their distance.

This theory, first propounded by Berkeley[2] (*The* Dublin, 1709), is partially confirmed by observation infants and on persons blind from birth w

[1] As Stricker (*Studien über die Assoziation der V* has observed that we have such motor-sensations even v from the idea of something distant to the idea of som something takes place in the eye.

[2] Berkeley, however, does not lay so much stress or the above exposition. Bain and Spencer have espe motor-sensations in the apprehension of space —H theory further.

sight. Although a child turns very early towards the light, it scarcely apprehends distance so soon. The movements of the two eyes are as a rule not co-ordinated, so that the visual axes do not at first always meet in the point which is the object of apprehension, and that they should do so would be an indispensable presupposition, were the apprehension of distance to depend upon an innate mechanism, coming at once into activity.[1] Only gradually (in the course of the first three months) is practice in co-ordinating the eyes obtained, and squinting no longer frequent. And even after accommodation has been acquired, the secure apprehension of distance is wanting, as appears from the fact that the child grasps after things which are out of reach. Even in the second and third years, the estimation of distance is imperfect.[2]

Even in later years the combined action of the two eyes is not quite harmonious. With practice we may obtain double images of objects. This is most easily effected by fixing the gaze on a point in the back-ground of the field of vision while attending to an object lying in a straight line in front of the point; this object will then be seen doubled.[3]

It is not quite certain, whether it is the same with new-born animals as with human beings. Spalding's[4] experiments with hickens just hatched, and with pigs just born, show that these imals are at once able to find their food with great certainty. e chickens run quickly to the corn or to an insect,[5] and the to their mother's teats. A young pig which was placed chair, ten minutes after the bandage which had been over es from birth was removed, appeared to measure the dis- to the ground, knelt down and jumped off.—This might show an immediate apprehension of distance; but we on our guard against attributing too much importance

[1] already subscribed to this view, maintained in our times by the called Descartes allowed, however, that in the immediate apprehension of simple it might appear, there yet lay involved a comparison ta, similis illi, qua geometrae per duas stationes diversas loca inaccessa *Optrica*, ch. 5, § 13). Here is at once implied the theory of unconscious certainly not by an empiricist, but by a nativist.

[2] *Les*, pp. 24—29, 38, *seq.* 112. (Eng. trans. i. 34-41, 50, *seq.*,

[3] r.)]

[4] r the head of his chickens as soon as they crept out of e use of their visual power. He kept them thus for two e about. (Romanes, *Mental Evolution in Animals*,

[5] by Adam Smith ("On the External Senses" in his dited by Dugald Stewart), that this sure knowledge h is only found in birds which build their nests on n trees and in other less accessible places.

to these facts, for it is conceivable that an immediate instinct comes into play, which, under the guidance of sensations of sight, of smell, or of hearing, leads the animal to its food, and something similar may be the case as regards the jumping. It is scarcely, therefore, permissible to postulate an actual *apprehension* of distance before experience and practice, even though the course of education may in this, as in so many other respects, be much shorter for the animal than for man. Even with respect to man, the ease and speed with which the apprehension of distance is developed, is scarcely to be explained without supposing that inherited tendencies and powers play a part. The sensations, by combination of which the apprehension of distance is conditioned, are more familiar to the individual if they have played an important part in the course of the evolution of the whole race.

The experiences of the blind from birth who have recovered their sight likewise exhibit features, which bear out the theory founded by Berkeley. The blind man operated on by Cheselden (1728) was, after recovering his sight, so incapable of judging distances, that he thought all objects "touched his eyes" (as he himself expressed it), just as that which he felt touched his hand. The patient operated on by Franz (1840) apprehended a cube as a square, a sphere as a disk, and a pyramid as a triangle; he came to understand these things only by the sense of touch. Everything looked to him perfectly flat. Dufour's patient (1876) could judge of distances without help of the hands. He went with hands stretched out in front of him to the shining door-latch which his attention had been directed, but came to a stop away from it, and made several vain attempts before he succeeded in laying hold of it.—If it is said, with respect to this last, that any one who moves towards an object must have learned its distance, this is an unwarranted inference. It is only by so to direct the movement, that the guiding visual sensations do not lose, but gradually gains, in strength, and this implies knowledge of distance. There is a game, in which an object is sought for with the help of music, the music growing louder as the object is approached, softer as it is left in the distance. In this game it is clear that the persons searching are guided by no apprehension of distance; the movement is immediately regulated by the sensations of music.

If the view now presented is right, the apprehensi

results from *association* between the sensations and representations of sight, of touch, and of movement. This association is supported by an innate and inherited basis, which in the case of many animals may perhaps be so perfectly developed that the influence of experience plays only a subordinate part, but which does not seem, in the case of man, to exclude the necessity of a course of experience, so to practise that association that it may become indissoluble and to give to the apprehension of distance the stamp of an immediate and simple act of sense. This is a classical instance of "psychical chemistry" (V. *B.* 8*d*). If we think that we immediately "see" distances, it is only in the same sense that we "see" joy immediately in a man's countenance.

7. (*a*) In respect also of superficial extension, the attempt has been made to explain the apprehension of space through association of visual sensations with representations of touch and movement. What is immediately apprehended would then be composed of sensations of a certain quality, and the apprehension of space would result from the fusing of these with certain representations. It is natural to believe, and the belief is confirmed by observations of new-born infants, that sight at first embraces only light and colours. The excitations which are clear and bright, but not too dazzling, are sought out and the endeavour made to retain them; it is only later that the form of the object is apprehended.[1] Through ·cepts and experiments made with touch and by the movement ne or several organs, the limits of individual objects come to be ·n to us. The language of the visual sense becomes perfectly ·nly by means of sensations of movement and touch. On the · d, sight, when once it has developed hand in hand with ıamed senses, plays quite the greatest part in our appre- space. There now arises the question, whether the re confined to sensations of touch and movement, do e an intuition of space similar to that of persons with ·who can see, conceive of space as a visible surface at ·· from us; but how can a blind man actually picture e?—Here appears the real paradox involved in :e is a psychological product. For if the exclusion ıages leaves only a something which is not the same ble space, we shall not be able to say what space is in this case no definition can be given which will

[1] reyer (pp. 36, 41) (Eng. trans. pp. 42, 52), a child's seeing is in the first ıscure sense of bright and dark

serve for both the visual and the tactual space. There would then be no more natural connection between the visual space and the tactual space, than between the name and the things denoted by it.

There is actually to be had a definite observation on this point. Ernst Platner writes in his *Philosophischen Aphorismen;*[1] "As regards the idea of space or extension acquired without sight, the observation and examination of a person blind from birth, which I have carried on for three weeks, have more than ever convinced me that the sense of feeling (touch) is in itself absolutely ignorant of what pertains to extension and space, and knows nothing of a local separation between things. I am convinced, in brief, that the sightless man perceives absolutely nothing of the external world, except the existence of something acting, which may be distinguished from the feeling of self (general sensation) suffering it, and for the rest merely the numerical difference—shall I say of impressions or of things? In reality to the blind, time serves instead of space. Nearness and distance mean to them nothing more, than the shorter o longer time, the smaller or greater number of feelings [sensations which he requires, in order to get from one feeling [sensation] t another. The fact that the blind person employs the language · sight, may very well deceive, and did deceive me when I fi began my investigations; but in reality he knows nothing of thi as outside one another, and (this especially I have observed plainly), if the objects and the different parts of the bod which they come in contact did not make *different* kinds pressions on the sensory-nerves, he would regard every' ternal as one thing, that acts successively upon him, strongly when he places his hand on a surface thai lays a finger on it, more faintly still when he strok with his hand or passes the foot over it. In his distinguishes between head and feet not in the le but merely by the incredible fineness with which differences in the feelings [sensations] experienc the other of these parts, and also by time. In distinguishes the form of other bodies purely feelings [impressions on the sense of touch], through its corners and sides, affects the sens differently from a sphere."

We have an approximation to the space-perc

[1] Leipzig, 1793, p. 466, *seq.*

when we try to find our way in a dark room. Only we have the advantage, that the visual space lies ready in the background, and may be brought to our assistance in the interpretation of the sensations of touch and movement. It is something similar when we concentrate attention on the tongue and—with the visual sensations as far as possible discounted—observe what apprehension of space it affords us. For the tongue is like a blind man, and yet has an excellent acquaintance with its surroundings.

(*b*) However, there still remains a possible way of maintaining the originality of the apprehension of space. Motor-sensations are, indeed, always successive; but by means of the sense of touch we can receive several impressions simultaneously. In like manner several rays of light may fall simultaneously upon the retina. Now may not this afford the possibility of an immediate apprehension of the excitations as arranged in space? It might seem even necessary to suppose this. For sensation of a colour really means sensation of a coloured surface; if the coloured object ere only a mathematical point, it would afford no excitation. en if larger objects are apprehended only through movement of e organs of sight and touch, it might still be thought that small iects could be apprehended immediately, without successive cess. There must be an immediate distinction between the ression of a shilling and that of a threepenny bit. The appre- on of small surfaces would then be the minimum, to which ism," the theory which maintains the originality of the nsion of space, would be reduced, the final stronghold from could not be expelled.[1]

ot, of course, be denied, that we may receive and con-

[1] *Der Psychologische Ursprung der Raumvorstellung* ("The Psychological a of Space,") Leipzig, 1873, p 56—71 —Professor Mahaffy of Dublin a letter in *Mind*, 1881, p. 278, *seq.*, of an interview with the blind nz. This man, a doctor in Kingstown, declared that he saw and mmediately after receiving sight, and that outlines and forms were had led him to expect. Mahaffy regarded this as the testimony of avour of the originality of the power to distinguish form through er this interpretation nor the facts of the case accord with the en shortly after the operation, in *Philosophical Transactions*, ove, the patient perceived a cube as a square, and a sphere as a ged him to describe the impressions which the objects made on d at once a difference between the cube and the square, but was a square or of a disk, until he had felt in his finger-tips a touched the objects (*Phil. Trans.*, 1841, i, p. 65) He had ranslation of the language of the one sense into that of the gnize forms. There remains in favour of nativism, only the d a difference in the forms. But even in this the experience of ve helped. His attitude towards the forms was not that of a y experience; not, that is to say, the attitude of the earliest

tinually retain a host of simultaneous sensations of light and contact, and that we perceive them immediately as arranged in space. On the other hand, it is not so certain that the earliest consciousness has the same perception. A great variety of simultaneous impressions will at first take effect rather as a collective mass, will yield one single chaotic sensation. And as the quality and the strength of the impression cannot be at once distinguished, so also the space-relation cannot be from the first apprehended in its own right, but would so to speak conceal itself in a higher degree of strength, or, to make use of Bain's expression, in a greater massiveness of the impression. The account quoted from Platner points in this direction, for it shows that only qualitative differences of impression induced the blind patient to recognize diverse phenomena distinct from self. Reference may also be made in this connection to Weber's experiments, which proved that the degree of warmth seems higher when the whole hand is immersed in warm water, than when the finger only immersed. As it cannot be supposed that there is an innate i of the difference between the fingers and the hand, this differ in strength would be at first the only thing apparent.

A purely passive apprehension of simultaneously give pressions can only be momentary. The activity is a excited, the eye moves along the surface, or the hand it. At once, then, simultaneity passes into succession, tuition becomes discursive. We apprehend moving obj quickly and easily than objects at rest, and when the c not move, we move relatively to them. Two successive on the skin can be distinguished with a smaller distan them than two simultaneous excitations. The lowest new-born infants do not notice any simultaneous their surroundings, while they can apprehend s ences (changes) (*cf.* p. 114). By movement thing and apprehended, which would otherwise remain first chaotic sensation will consequently be dete of succeeding sensations, in which from the na motor-sensations take a prominent place.

It might even be maintained, that succ apprehension is a necessary presupposition c space. Space signifies a relation. By some meant, that it occupies a certain position in re and that its several parts occupy certain posit

another. Instead of speaking of space in general as an integral unity, it is better to make use of the more elementary conception "position." It is then apparent, that the apprehension of space rests on a comparison or a combination. It cannot therefore subsist as given from the first, but presupposes a certain psychological activity.

(*c*) It is not a matter of indifference, which part of the body meets with an excitation from the external world. As it is by successive experiences that we learn to know our own body, as well as the world surrounding us, it cannot be supposed that we can originally know or feel on which part an excitation lights. If, then, the excitations do, nevertheless, act differently on the different parts, this difference can appear to consciousness only as a certain shade, a qualitative side-determination of the sensation. The special character which the sensation receives, from the fact of the excitation lighting upon one single definite point, Lotze calls *local sign*. The conditions are different at every point of the skin of the retina; there must therefore be a variety of local signs. As regards sight, these local signs may consist either in the motor-impulses, different for each point, which aim at turning the eye so that the excitation of light may fall on the yellow spot (Lotze), or in the different quality of the sensations at the different parts of the retina (Wundt). In respect of the sense of touch Lotze finds the local signs given in the different secondary sensations, which one and the same touch produces by reason of the difference in thickness and tightness of the skin and the different underlayers which are found at different points.[1]

Suppose that the excitation A falls upon a point in the retina at some distance from the yellow spot, and that it then attracts our attention. The eye will then be moved in such a way that the image falls upon the yellow spot. Answering to this movement there arises a motor-sensation, which we shall call π. Now let the excitation on a future occasion fall upon a different point in the retina, and let the excitation which will be similarly occasioned, will be K. We may then compare $A + \pi$ and $A + K$, and the difference, resulting from the difference in the position where the excitation has fallen, can now be apprehended. Let, further, B fall upon the same point in the retina as A and be combined with the same motor-sensation.

[1] For accounts of his theory of local signs, the last in *Grundzüge* [illegible] regards Wundt, see *Physiol. Psychol.*, II, pp. 25, 28, 163

Between $A + \pi$ and $B + \pi$, there will then be found a likeness connected with the point in the retina concerned.—In this way consciousness corresponding to the local relations is gradual framed.[1]

These local signs can at first take effect only by success apprehension. Consciousness cannot experience them all at o only after the whole series has been gone through, can each o sensations with its local sign be assigned to its definite place their determination is to be perfect, therefore, the local signs make up a connected system. Excitation of a single point skin or the retina may then lead to a determination of localit out the whole series of local signs being gone through for it is in this as in all cases where we have often gone t series of different sensations or ideas, as the result of pr whole series comes at last to seem the object of an intuition or of an intuitive knowledge (*cf.* p. 163, *seq.*).

8. But in spite of all this, the real apprehension of spa explained. We have obtained a coherent group of moto local signs, and sensations of light and contact, comb to the laws of association. But no arrangement given, which would give rise to the intuition of ar several parts placed one outside the other, and i (or rather outside the image of our organism); f tions were qualitative and intensive, not extensiv

Here it appears that all theories of the appre at a loss. The so-called "nativistic" theory regar of space as given with the very first impressions all psychological explanation of the developme sion of space is as superfluous as impossible; space must be accepted as *a priori*. But the above (6, 7 *a* and *b*) seem to contradict this t fection and every error in localization and a

[1] *Cf.* my treatise on "Lotze's Doctrine of Space and Tim *schr.* (1888), p. 126, *seq.* The Swedish writer, Rein (*Philos Monatschr*, 1888) pointed out gaps in Lotze's endeavour to fill up in the way above indicated. [The inserted at Prof. Hoffding's request. (Tr.)]

[2] [*Cf.*, however, the later recognition of "extensity "massiveness") as a property of sensations, and the new the discussion. (Dr. Ward in *Ency. Brit*, vol. xx., Art Prof. W. James's articles on the "Perception of Space," *A*

[3] The most important representatives of nativism are at the side of psychology (*Der Psychol Urspr. der Raumvor* physiology (his last work is *Der Raumsinn und die Beweg Handbuch*, iii, 1).

really contradict it, while they are to be explained very easily if
he apprehension of space is itself a result of experience. For this
ason the genetic theory regards space as a psychological product,
used by combination of intensive and qualitative sensations
ording to the general psychological laws of the association of
.s. But there still remains an unexplained residue, for the
hological product has a property not possessed by the ele-
:s out of which it has arisen, that very property which gives
o the problem, namely, the extensive form. The attempt
deed, been made to explain the transition from the apprehen-
successive stimuli to the intuition of the extended, by
that the intuition of space forms of itself when it is
it from which end we begin the reproduction of a series of
; for time has but one direction, space on the other hand
Ultimately the whole series would be presented to us at
ver we might begin. But the utmost that we should
this way, would be simultaneity in time (co-existence)
e. And a series of sounds may be repeated forwards
, without being arranged as simultaneous—or as
sformation must therefore be admitted, a psychical
ous to the chemical synthesis, out of which arise
ances with properties not possessed by the ele-
In this synthesis the visual sensations play, for
, the most important part, and are the customary
h the contributions afforded by the other senses
Whether a corresponding synthesis also takes
with the sense of touch in the ascendant, seems
unt to be doubtful.
e case, that tangible and visible minima were
nded, it would still be necessary to postulate a
space-images are continuously, uninterruptedly
her the retina nor the surface of the skin
h a continuity. In the retina, there is even
us to excitations of light, the "blind spot,"
enters the eye ; but there is no similar gap
e thus involuntarily fill up the gaps in the
. Every theory, therefore, which does not
sion of space as given from the first "at one
orm or other call in the constructive power

ot without its dangers. To a psychological

conception, which finds the essential character of consciousne expressed in synthesis, in the bringing together into unity and c nection (II. 5. V. *B.* 5), it might seem highly probable that fundamental form should be repeated in the separate me processes. But it is one thing to hit upon the true characte of consciousness as a whole, quite another to utilize th characteristic as a *deus ex machina* in special psychologic blems. An opening might thus be easily afforded to ar judgments; into such a psychical synthesis anything m read. For this reason Lotze sets to work with the utmost spection, maintaining that his theory of local signs is not to explain the actual apprehension of space, but only tl and aids of the mind when it gives shape to its spat That the mind forms spatial images in the first inst certain of its sensations, Lotze regards on the othe capacity which must be accepted as a fact, or as an i is open to no further explanation.

The genetic theory is then only in complete op nativistic, when it goes so far as to hold that a for the development of the apprehension of sp the experiences of the single individual. Tl ever, improbable, on account of the unexplai remains over, when we compare the element the fully developed apprehension of space. to which this owes its definitive origin, we rec of a constructive power operating instinctive as to the origin of this power will refer u dividual back to the system of nature with rise. The experiences which cannot lead to individual life-time, may during the evolut gradually led to such an accommodation o inherited dispositions supplement what is dividual experiences. The evolution hyp this province by Herbert Spencer (1855), tracing the problem farther back than was p was confined to the experiences of the ind

How close the genetic and nativistic is to be seen from the fact that, while allowed that the immediately given know infinitely small as compared with what is and that in the original sensations there

ibility of definite apprehension of space (Stumpf), on the other it is intimated that everything may be so prepared in the ism, that the time between the first excitation of light on etina and the origin of the idea of space may become infinitely (Wundt).[1]

ut whether the "nativistic" or the genetic theory is adopted, ains a necessary presupposition for the apprehension of space, definite organic basis should be present. The conflict of concerns, or should concern, only the point, whether the conditioned by the organization come *at once* into action a preparation and practice of a certain duration.

the more exact account of the organic structures which rtance to the origination of the apprehension of space, ss of the physiology of the senses.[2] Here reference ade, in addition to what has been already implied, nce of the central mechanism, which makes a close ween the sense-stimuli and the muscular movements ans possible. As regards the sense of touch the s regards sight the *corpora quadrigemina*, seem through which this association, and with it the ession of the psychological synthesis, is accom- rebrum probably plays a part also.

s lying ready is perhaps able with some animals nmediately after birth, so that the experiences prehension of space are at once and easily n beings, as it seems, several months elapse ined.

spoken of the actual form of space and of the rtial images. As to the *idea of space*, as a a typical individual idea, this is evolved

[1] *Ursprung der Raumvorstellung* ("The Psychological p 114, *seq.*, 184—Wundt, *Physiol. Psychol*, ii., p. 164 Spencer, *Principles of Psychology* ii., p. 203, *seq.* num, *Sanserne og de Vilkaarlige Bevægelser* ("The ts"), pp. 234–238; and Wundt's very full account (ii., investigations only the most important psychological sideration. We must refer any one who wishes to enter physiological questions opened up by the theory of the it's work, where the whole material is to be found —The question whether the axioms of geometry are as determined by our organization, or whether with n an idea of, and clearly describe, space with other logy, not under psychology. From the purely logical cannot of course be disputed, but as a matter of fact, we characterized by the axioms of Euclid's geometry, until ained a change by accommodation to other conditions of

in the same way as the idea of time (1—3), by the attention being directed to the schema common to all individual spatial images, and to its possible expansion. At first the idea of space is limited. The patient operated on by Cheselden, could not picture to himself lines in space extending beyond the limits of his visual orbit. He knew that the room he was in was only part of the house, but could not grasp the fact that the whole house might look larger than the room. The power of applying the individual ideas symbolically, was still wanting. When this power is developed, it is discovered that no limits can be set to the subdivision or to the expansion of space, any more than of time.

The infinity of space (as of time) sig
space is accidental, and can be ov
Absolute space, all the points and pa
homogeneous and continuous and whic
is a mathematical abstraction withou
logical intuition. Psychological space
certain points of reference as given, a
with strict continuity and homogeneo
of space, we make always greater
letting the eye stray from one point t
in content gives to each part of space
in our apprehension and intuition.

D.—The Apprehension

1. Sensations, ideas, and concep
cognitive elements of the conse
arranged. We have traced this
stage in the interaction of sen
the activity of thought and
problems. The governing
throughout. The motive
arrangement in the play
thought and artistic imagi
brought in with growing exp
trasts require fresh activity, th
be maintained and chaos over
the æsthetic rules, though it is
lay them down, develop, neverth
logical laws and prove thereby

human nature; they do not make their appearance abruptly as something externally imposed.

But here the question arises, how is it that, in the content of its sensations and ideas and in the connection given to this content by the activity of thought, consciousness recognizes a reality independent of itself? It does not follow, because our knowledge develops according to definite psychological laws of nature, that it leads to a reality. The phantasies of the insane and dream-images are equally subject to psychological laws, and for that reason we have often been able to employ them as aids in our inquiries.

's it mad nifest to consciousness, that it has in its dream? Can some definite activity— ht—be indicated, through which we are before us a reality?

ndpoint of highly developed conscious- s up. It is really incessantly presented consciousness. It is not permitted to s ideas as he likes. There is carried ough disappointments, which may be The first disappointment affords the tween the possible and the real, or We are here recurring to this point, hought further.

ent, so early stirring in conscious ily to make inroads into nature. heir movements may not proceed they encounter resistance, and in evented movement, the individual ng which is not itself—whatever oeat the attempt to overcome olly succeed. Fresh barriers e.

he special sensations is a cal excitation takes effect ce of the organism, prin- e receptivity for the special ped (as the eye for rays of But just on account of their great part in the development -operate, but presuppose a firm ther, and this nucleus is given in

the sensation of a resistance against our movement. A being who had sensations of sight, hearing, smell, taste, and touch only, would lead as it were an ethereal existence, would stand outside the tangible reality. The very word object signifies resistance ; object is that which is thrown against us (or as in the German *Gegenstand*, which stands against us).

Reliance can, however, be placed in no single percept, whatever it may be. We have seen that the percept is always complex, since in it fresh sensations blend immediately with memories. This contains the source of a multitude of illusions, which arise through false interpretation of the given sensations (*B.* 7*a*). Perception is an attempt at interpretation ; but how is the correctness of the interpretation to be guaranteed ? Sensations may call up incorrect memories. Moreover, the brain may be put by processes within the organism in a state similar to that which arises when excitations reach it from the external world. There then result hallucinations, false sensations and percepts, which can often not be distinguished from normal sensuous percepts. Not only sight, but the other senses also, may suffer from such abnormal states. It is noteworthy, but accords with what has been observed above as to the relation between the sensation of resistance and the other sensations, that, while hallucinations of sight and hearing do not always lead to hallucinations of touch and resistance, these latter do on the contrary, as a rule, introduce hallucinations of sight and hearing.[1] And since sensations of resistance afford the strongest presumption of a reality, the hallucinations of resistance are the most disturbing and destructive to the mental health.[2]

The question is just this, how to distinguish in individual cases between mental health and mental disease. If the sensations of all the senses accord, and if the victim to hallucination at once and with great ingenuity answers all the objections which can be raised against his imaginary world, how is it to be decided who is right ?

Single sensuous percepts cannot decide the question. They may every one, taken alone, rest upon illusions or hallucinations. The only possible mode of decision is by looking to the connection among the various sensuous percepts. The several points at which sensation of resistance (to keep to this) makes its appearance, are not isolated, but appear in reciprocal connection. The

[1] Brierre de Boismont, *Des Hallucinations*, 3rd ed., p. 507, *seq.*

[2] *Cf.* E. Kraepelin, *über Trugwahrnehmungen* ("On Illusive Perceptions"), *Vierteljahrsschr. für wiss. Phil.*, v., p. 365.

individual has then the problem given, to arrange his ideas in accordance with this connection. If he does not find the proper arrangement, he will encounter resistance, and finally suffer practical disappointment or pain. Supposing that the right arrangement of the ideas, as things were, is found, but that it conflicts with new experiences, then doubt arises as to the accuracy of the first percepts. If doubt does not arise, and if the intercourse with the external world is continued, a sure destruction follows. It is for this reason that children and the insane are removed from the struggle of life ; they are not in a position to correct their ideas by experience.

The real is that which we apprehend as real,—which in spite of all effort to the contrary we must ultimately leave as it is,—which we cannot but recognize. This "can't help" is a negative and subjective criterion, and there can be no question of any other. To the dreamer his dream is reality ; on awaking he discovers that the dream was only illusory reality, conditioned by a more comprehensive reality and finding its explanation within this. So far as we can go in dreams without encountering sharp contradictions and contradictory experiences, to that extent we believe in the reality of the dream. There arrives a point, however, when the threads give way. Even the most systematic of dreams is but a fragment as compared with the totality into which progressive experience conducts us. In this way all of our ideas which have not their root in reality are corrected ; sooner or later their limitations will appear, and it will be discovered that there are more things in heaven and earth than are dreamt of in our philosophy.

In this way the knowledge of each individual has its consummation in a complete image of the system of which he is a link. The individual's own powers cannot, however, effect much in this respect. He cannot correct all his illusions if he depends on himself alone. Equally little can this be done by the individual nation and the individual age. The pictures of the universe formed by the several individuals, nations, and ages, conflict in turn among themselves, and in this conflict man's conception of the universe is slowly evolved to greater clearness and certainty. The psychology of the individual leads here partly to the psychology of races, partly to the history of all the sciences.

This does not determine whether the end can be reached at all. Before we touch upon the large problem to which this gives rise, we must call attention to an important concept, to which the preced-

ing inquiry has brought us, and of which this is the place to state the psychological basis.

3. The evidence of reality is given, then, according to the results we have just reached, in the firm connection of the percepts. We can never therefore be so strongly convinced of single percepts, of the reality of single things and occurrences, as of connected series of things and occurrences. The more there is "method in our madness," the more dangerous it is.

The firm bond by which things and events are brought into the system of the real, we call the causal relation. We assume a causal relation, wherever we discover that two phenomena are linked together in such a way that the one unavoidably makes its appearance when the other is given.

According to the popular conception of the causal relation, one thing is the cause, another thing the effect. The difficulty which might be found in things, supposed to exist independently, having yet so much to do with one another as must be the case with cause and effect, is from this standpoint easily overcome. A creative or constraining power is attributed to the thing called the "cause." The causes are personified, have ascribed to them something analogous to the personal exertion of will.

David Hume was the first to make the popular conception of causality a subject of thorough criticism. What do we really mean—he asks—when we say, one thing is the cause of another? If it is replied that the cause produces the effect, then what do we understand by "producing"? Can an explanation of this be given which means anything but—causation; so that we again move in a circle?—But if it is said that the causal relation is only a necessary connection between two things, how is this necessary connection to be proved? Not by way of inference. All our distinct ideas may be kept separate, and it is quite easy for us to picture an object one moment as not existing, the next as existing, without any idea whatsoever of a cause or a creative principle being required. If we look at the things each for itself, no one of them necessarily presupposes another. Nor can we come to the causal concept by way of experience. We see the one phenomenon exist at the same time as the other or follow after it, but we do not see it follow the other. The production or causation itself we do not see.—The firm connection postulated between two things, which are called cause and effect, does not itself belong to these objects. The necessity exists only in con-

sciousness, not in the things. But what can that be which unites our ideas in such a way? This is in itself just as mysterious as the union between the objects. The only possible explanation is this, that repeated experiences create a habit, an instinct, a disposition, to pass from an idea to other ideas with which it is usually combined. This subjective impulse, which we experience in the course of our ideas, we then anthropomorphically ascribe to nature.[1]

Hume disposed of the popular notion by carrying its assumptions to their legitimate conclusion. His criticism was based on the supposition that something distinct from the effect is the cause. This isolation of the several members of the causal relation stands in close connection with his psychological theory, which conceives consciousness as a sum or series of independent ideas (see *B.* 5).

Instead of saying with Hume, that we cannot see in a thing or infer from our conception of it that it is the cause or the effect of another thing, we must on the contrary maintain that we only know a thing at all in so far as it is cause or effect. Things are always given to us as members of a system. If they are taken out of this system in which they live, move, and have their being, it seems indeed wonderful that they have anything to do with one another. Hume says, a thing remains always the same, whether it is a cause or not. But the thing which is a cause, *i.e.* from which a change proceeds, must be in a state different from that in which it would be if no change were determined by it. It cannot bring about a change without being itself changed. Instead of starting with the idea of independent things and marvelling over the causal relation, it would be more reasonable to start with the causal relation and to marvel over the independent things.

Hume saw plainly the connection between the theory of the causal concept and the psychology of cognition. "The uniting principle among our internal perceptions," he says (I. 3, 14), "is as unintelligible as that among external objects." If Hume's psychology were corrected, his theory of causality would sustain a corresponding correction.

Difference and contrast are conditions of the existence of phenomena (*cf.* II. 5 and V. *A.* 5). But, on the other hand, whatever is new and varied excites astonishment and sets in motion our cognitive impulse. While things or phenomena are presented to us as in all respects different, they are not intelligible. We then exert ourselves to get rid of the difference and the contrast, by tracing

[1] *Treatise on Human Nature*, book i., part 3, sects. 3–14.

the new phenomenon back to one that is familiar, and showing how it is its continuation or conversion in another form. When it appears that the phenomenon *B* inevitably succeeds the phenomenon *A*, we are then really learning to know *A* from a new side. While we confine ourselves to mere perception, *A* and *B* appear to be quite different things. The thunder-cloud and the flashes of lightning have absolutely no points of resemblance to our perception. But the more we can penetrate into the relation between the two phenomena, the more we discover a continuous system which embraces both. The lightning, that phenomenon occurring so suddenly, and so strongly contrasting with the dark cloud, is only a continuation (a discharge) of the electrical current already passing in the clouds ; this current makes the air glow as it flashes through it. The continuity extends yet farther, for the atmosphere, even when no thunderstorm threatens, always contains more or less electricity. The sudden phenomenon is thus only a special and concentrated form of a something that is at work to a lesser degree at every instant. Cause (in the example given, the electricity of the air or the clouds) and effect (the flash of lightning) are thus presented as members or stages of one and the same process ; and when we trace back from the differences given in perception to a more comprehending system, we find the identity behind the differences.

The connection between the relations of identity and causality appears also in the fact that when the same thing and the same relations are given, we expect the same effects. This expectation Hume explained as the mere result of a habit, and Stuart Mill, who starts from the same premises as Hume, was similarly unable to find any other reason for it, than that it has arisen from the generalization of a very large number of experiences. It is, however, clear that if the same thing and the same relations are really given, the same effects must follow, the effect being nothing else than the way in which the nature of the thing and of the relation finds expression. If the effect were something quite distinct and different from the cause, then the proposition, like causes like effects, could indeed be based only upon habit and collective experience. Certainly it is often difficult, if not impossible, to establish the extent to which relations and things are really the same. Scientific work has to a large extent for its aim, to establish by measuring, weighing, and counting, what is really given, or, as it has been put, "to describe things in all respects numerically."

The nature of the causal relation may, then, be expressed by these two main propositions: (1) Cause and effect are members of one and the same process, parts of one and the same whole; (2) like causes have like effects.

Now what of the proposition, that every phenomenon has a cause?

A close affinity has been shown between the relation of identity and that of causality. A corresponding affinity exists between the *principle of identity*, the highest law of thought, the validity of which is the pre-supposition of all inference and consequently of all proof (*B.* 11), and the *principle of causality*, which requires the firm and inevitable connection of real phenomena, and the validity of which is the pre-supposition of all explanation of nature. The principle of identity might, however, hold good, even if the principle of causality did not. We should then be able to classify and draw conclusions, but should not be in a position to explain the origin of the different phenomena. The principle of causality shows us the way in which, in accordance with the nature of our cognitive faculties, we must look for the reason of the real phenomena. It is a special kind of proof, but cannot be deduced *a priori* from the general principle of proof. Both principles are derived from one and the same fundamental property of our thinking and cognitive consciousness; the same activity, searching for similarity and unity, finds expression in both principles. They set the problems for our research, conformably with the nature of our cognitive faculties.

As a principle of knowledge, the causal principle contains a problem, a postulate, but does not in itself justify any assertion as to how far the problem can be solved and the postulate satisfied in actual experience. Kant, without further preliminaries, founded the law of causality upon the principle of causality, and conceived this law, the proposition that every phenomenon has a cause, as an *a priori* law of nature, because, as he held, all experience (as distinct from dream and illusion) pre-supposes it. The question is, however, (as Maimon already urged against Kant), how far we really have experience in this sense: namely as necessary connection among phenomena.

It may even be maintained that we can never obtain absolute corroboration of the law of causality by experience. The causal principle sets up an ideal, which can never be fully realized in our cognition.

In the first place, experience can show us no absolute continuity. In every course of development to which we can point, there are gaps, variations unexplained. Any one who wishes to deny the real validity of the causal law, will find no lack of material. In fact this material is even constantly added to ; for when we have explained the transition from *A* to *B* by indicating *C* as the middle term, we are left with two new questions in place of the one which we have answered, namely : how may the transition from *A* to *C*, and the transition from *C* to *B* be explained? The farther science advances, the more numerous are the riddles it finds and creates ; continuity is an ideal that can only be approximately realized.

In the second place, experience shows us also no absolute repetition. There are always collateral circumstances and degrees: quite the same situation never comes again. This is particularly true of organic, psychological and historical phenomena, on account of the complex and complicated conditions under which they make their appearance ; but even in the inorganic province it is only approximately possible to establish the identity of the conditions in different cases. So that repetition also is an ideal.

In the third place, the series of causes is infinite, in the same sense as time and space are infinite. It is always an accidental or arbitrary point, at which we bring our inquiry to a close. According to the causal principle, every cause is in its turn effect. Though we are obliged even in our boldest hypotheses to come to an end at a certain point, yet the limit is only one of fact. We always leave off with a mark of interrogation.

In the strictest sense therefore no single phenomenon is completely explained. On the other hand, the principle of knowledge that could not be at least approximately confirmed by experience, would contradict itself. We should share the fate of Tantalus if we were condemned to inquire without ever being able to find. And as Tantalus would soon die of hunger and thirst, so our postulate of causality, like every useless organ, would die of atrophy, even if under such circumstances it were psychologically possible at all.

Now in fact continuity and rhythm are exhibited in nature; movements and processes lead from link to link (even when we cannot reconstruct all the intermediate links), and have a periodic character. And if we cannot bring the series of causes to a conclusion,

we can at least work through a great stretch, as far as our view extends. A relative proof of the causal principle is contained, indeed, in the bare fact that there is such a thing as exact experiential science, however great or small the range of its results. To this extent the causal principle is not merely a postulate, but also a result.

From the psychological point of view we may add, that in a world of purely absolute differences, a world where consequently the law of causality would not hold, conscious life, as we know it, would not be possible. Neither perception (V. *B.* 1) nor self-consciousness (V. *B.* 5), nor association of ideas (V. *B.* 8), nor logical thought (V. *B.* 11) would be possible, if there were no rhythm and no continuity in the sensations, through which the content of existence announces itself in consciousness.

4. The full development of the causal concept belongs to the philosophical theory of knowledge, not to psychology. In what precedes, we have overstepped the limits between these two departments. We now turn back to the psychological province, in order to inquire into the psychological origin of the causal concept. With regard both to motive and to form, the causal concept proceeds originally out of a practical interest.

It is only at an advanced stage that men take an interest in the system of nature, apart from its power of serving their ends. The instinct of self-preservation first leads to the knowledge of the external world; need teaches thought, as it teaches prayer. The knowledge which cannot be immediately utilized, is not needed. A missionary, who narrated to an Indian the story of the creation, received for answer: "My father, our grandfathers and our great-grandfathers were wont to contemplate the earth alone, solicitous only to see whether the plain afforded grass and water for their horses. They never troubled themselves about what went on in the heavens."[1] And even later, science and knowledge are means by which man adapts nature to his ends. Thus, Bacon, the prophet of modern natural science, and of industrialism, says: "The knowledge and the power of man coincide, because ignorance of the cause makes it impossible to produce the effect. For we can only conquer nature by obeying her. And that which in investigation is presented as the cause, in action appears as the rule."[2] The cause is thus originally the means, a by-path which

[1] Lubbock, *Origin of Civilization*, 5th edition, p. 385.
[2] *Novum Organon*, i. 3.

must be taken if the end is to be attained. It is only in pure instinct that an obscure impulse immediately produces action. Reason (in the widest sense of the word) is raised above instinct by the fact, that with the impulse is united an idea of that which must first take place before the impulse can be satisfied. In this idea of an indispensable middle term, we have the germ of the conception of necessity and of the causal concept; and when this idea obtains a comprehensive content, and becomes the object of independent interest, the causal concept comes to be emancipated from the concept of the end.

Closely connected with the originally practical motives determining the causal concept is the original form in which it is apprehended. From its close connection with the nature of consciousness, the causal concept is to be found at all stages of human development; but the cause may be sought in very different directions. What will be regarded as a good and valid cause at the several stages of mental development, depends entirely on the standpoint. When an Australian native sees one of his tribe die without having been shot or having met with any other external injury, he concludes that witchcraft must have been practised, and in order to discover who has slain his comrade by witchcraft, he goes in the direction in which the first insect seen leads him from the scene of death; and the first person he then encounters must be the murderer.[1] Given his premises, this is valid, rational thought. And that similar premises are in a measure held even at the present day may be seen from the fact that millions of people in the most highly civilized countries ascribe the so-called spiritualistic phenomena to the influence of spirits.[2] While the gods of mythology or similar beings are accepted by consciousness as realities, they provide a capital and easy means of satisfying the desire for causality. From such a standpoint this is easily satisfied without further preliminaries. When the imagination has gone back a couple of steps in the series, it requires a rest and draws the conclusion. The Greeks regarded the gods as the creators of natural phenomena (at any rate, of all important or obvious phenomena). But whence did the gods come? This question Hesiod answers in his *Theogony*, where he describes how the dynasties of the gods were gradually evolved out of chaos.

[1] Fr. Müller, *Allgemeine Ethnographie*, 2. *Ausg. Wien*, 1879, p. 214.
[2] *Cf.* Girard de Rialle, *La Mythologie Comparée*, Paris, 1878, i., chap. 14. *Le Fétichisme chez les Peuples Civilisés.*

But he did not ask whence chaos came, although he expressly declared that it began to be. ("First of all chaos began to be." v. 116.) From the mythological to the scientific account of nature is a continuous series of stages. The anthropomorphic form is sacrificed as more and more intermediate links become necessary, the more the conviction grows that these links are independent of personal caprice. The scientific causal concept is characterized by this, that the explanation of a natural phenomenon is found in its reduction to a set of other natural phenomena. Nature is explained by itself, not by something outside it. The observer who is skilled in medicine inquires in a case of sudden death into the constitution, mode of life, descent, etc., of the dead person. He perhaps finds in the autopsy, a stoppage (a clot of blood) in one of the arteries, and then explains the death, either as the result of an inhibited supply of blood to the brain, or through stoppage of the heart. In this way he forms the image of a connected process, in which link follows link; the mysterious and sudden phenomenon is then presented as the natural conclusion of this process.

5. There is another epistemological question which may be raised here, since it stands in close connection with the psychology of cognition, that, namely, of the limits of our knowledge.

The study of sensations proves them to be subject to the *law of relativity*, since a sensation is, in respect of its existence and its quality, determined by its relation to other sensations. A corresponding law holds good for our ideas and concepts. These also are relative, *i.e.*, they express relations, and consequently have validity only for what may be apprehended as the member of a relation. Our knowledge attacks an insoluble problem when it tries to grasp something which from its nature cannot stand in any relation to something different from it—something therefore that is absolute and self-contained.

A brief examination of our most important concepts will make it clear, that the law of relativity holds good not only for sensations, but also for ideas and concepts.

(*a*) It has been shown that comparison is the fundamental form of cognitive activity at all stages of development: in the interaction of sensations, in perception and association of ideas, just as much as in logical thought and in the search after material causes. But that which is to be an object of comparison must be confronted with something else, either similar to or different from it. That which has nothing outside it—or rather, which has nothing besides

(*praeter*) itself—cannot be either assimilated or understood by our faculty of cognition.[1]

(*b*) All proof is from several given premises. From a single principle or a single premise nothing can be inferred—any more than from several absolutely different principles. Thus our knowledge can never be inferred from a single premise ; it arises through combination of several given premises. If $A = B$ is given and nothing more, I am not led a single step farther. But if on the contrary $B = C$ is given too, then I conclude $A = C$. And if I wish to get beyond this result again, I must find a new premise which I can combine with it—and so on.

(*c*) Time and space are in reality always relative. Every determination of time and space presupposes a certain starting-point as constant. This point is, however, always arbitrary ; it must be itself determined through other starting-points, and so again *ad infinitum*.

(*d*) That the causal concept expresses a relation, needs no proof. The causal series forms, from a logical point of view, a parallel to the temporal series, and to the several dimensions of space : every phenomenon which in a certain connection is presented as cause, from another side is effect, just as that which, regarded from the one side, is past, has been, regarded from the other, future, or as that which from one position is on the left, from another is on the right. With this relativity is connected the infinity (*i.e.* the indeterminateness) of time, of space and of the causal series.

(*e*) Finally, all knowledge rests on the relation between the knowing subject and the object known : the objects of knowledge exist for us only through a series of sensations which are elaborated by activities of thought ; and the object can be known only as it exists for us.—This gives rise to the question, in what sense, then, is our knowledge *true*, if the aspect in our eyes of the object known is always determined by our mental organization ?

The popular answer to the question as to what makes the truth of our knowledge, is : " our knowledge is true when it accords with reality." But how are we to determine this ? We only know reality through our sensations and ideas.—Because of our sensations we attribute to objects certain qualities (light and darkness, colour, sound, warmth, cold, smell and taste, etc.). But these qualities do

[1] This point of view has in our day been especially insisted on by Sir William Hamilton and Herbert Spencer. But Spinoza had already been obliged to enter a protest against it. *Kurzgefasste Abhandlung*, i., 7.

not belong to the objects themselves; they are a language in which we describe them according to the way in which they affect our organism. Purely physically, colours consist only of oscillations propagated—perhaps through an extremely fine substance, the ether—from the objects to us; sound consists of waves of air, etc. If there were no eyes and no brain, the light, as we experience it, would not exist. We do not really, then, have sensations of things, but our sensations correspond to the condition produced in our brain when effects are transmitted to it from the object. Even the sensation of resistance does not take us farther than this; we always measure resistance by our own exertion of force; we cannot experience what it is in itself. Also out of reach are the spatial relations, in which objects (among which may here be reckoned the organism, including the brain) make their appearance. We know spatial relations only through intuition of space, and intuition of space is a psychological activity. For whether we adhere to the "nativistic" or the genetic theory, the intuition of space belongs to the subjective forms, in and through which objects are given to us and without which we should know nothing of them.—And what applies to the qualities applies also to "the objects themselves"; for we form the idea of an object through association of the ideas of its qualities. And as it is impossible to apprehend anything about an object except through sensations and ideas, so it is impossible to think anything about the object except through ideas and concepts. In order to make use of the popular criterion for the truth of our knowledge, we should need to get behind our own consciousness and to be able to compare the object with the image or notion, which we have of it in consciousness: but this is impossible, for it is self-contradictory.

Ordinarily we are not pulled up by this difficulty, because we are always occupied with the reciprocal play of our ideas and sensations. When we say that we correct our notions by comparison with "reality," we mean by "reality" not something independent of consciousness, but only percepts more definite and comprehensive than those we have hitherto had. If, however, we take the sum of all our actual and possible sensations and ideas, and ask, how are they related to reality, we reach the limits of our knowledge. We cannot directly disprove the teaching of Berkeley, Fichte, and Stuart Mill, that the not-self, the sum of all the hindrances to our action and of all the objects of our cognition, is a product of a mental activity of which we are unconscious. We

cannot therefore, to put the thing in an extreme light, know that life is not a dream, a great, connected, and consistent dream. Or, more accurately, the contrast between dream and reality would here cease.

The epistemological significance of the theory of subjectivity rests upon its energetic insistence, that an account must be given of the source of the traits with which we endow reality. But it becomes itself dogmatic when it maintains that our consciousness produces its whole picture of the universe from itself.

Such an absolute production would in fact be contrary to the law of relativity (*cf. b*). There must be something given, which determines, or serves as a motive for, consciousness in the production of the definite picture of the universe. This picture finds reason and explanation only when we postulate an x outside the subject, whose influence on the subject stirs up and determines its cognitive activity. What this x is, no experience can tell; every answer to this question is a metaphysical hypothesis.[1]—That our cognition presupposes in this way something which can never be subjected to its manipulation is closely connected with the fact, that it must always have something as *given*,—that at every point it is not only active but also passive, although on the other hand an absolute passivity is only an extreme case, which cannot be pointed to in experience (*cf.* p. 117).—

If, then, it proves impossible to apply the popular definition of truth as agreement of knowledge with reality, since reality itself exists for us only through our knowledge, we must seek the criterion within, and not without, the world of consciousness. It can, then, be nothing else than the inner harmony and consistency of all thoughts and experiences (*cf.* 2). If we cannot escape from the dream, we can at least (as Calderon desires in *Life a Dream*) "live well in the dream," which in this connection means, that we can always extend the sphere of our experiences and thoughts and can establish a deeper and firmer connection between them. It is only the single and immediate phenomena of our own consciousness of which we have a direct and immediate certainty. As soon as we have to do with complex phenomena, the only possible criterion of reality is in the firm causal connection. This holds good of internal, mental reality as well as of external,

[1] The subjective systems have, as a rule, assumed an x, and propounded, in accordance with their other assumptions, some hypothesis as to its nature. (*Cf.* especially Berkeley Fichte and Schopenhauer.)

physical reality. This practical validity of the criterion of reality is quite independent of the question whether the subjective theory is correct or not.[1] Our knowledge must always, from the nature of the case, bear both in form and content the impress of our mind and be confined by its limitations. But this does not deprive knowledge of either its validity or its value. If there be a truth higher than that attainable by human knowledge, the truth known by us is a part of it. In availing ourselves of the means and the standard which are given us by the nature and the organization of our mind, we can therefore really advance in the knowledge of objective truth.

[1] *Cf.* the treatise of Leibniz: "De modo distinguendi phaenomena realia ab imaginariis" (*Opera Philosophica*, ed. Erdmann, p. 442, *seq.*).

VI

The Psychology of Feeling

A.—Feeling and Sensation

1. In opposing feeling to cognition, we do not, as already explained, postulate any opposition between different faculties or powers of mind. The psychological distinctions concern only the elements out of which the psychical states, as appears on closer observation, are compounded, and it has been already shown with what right we distinguish in every psychical state between elements of feeling and elements of cognition. It was seen to be impossible to derive all forms of conscious life from a state of pure feeling (IV. 7, *c.*): although elements of feeling greatly preponderate at the primitive stage, yet close observation revealed the presence of cognitive elements.—It now remains to exhibit the laws and ways by which the higher forms of the life of feeling develop out of the elementary feelings accompanying the immediate sensations.

The attempt has been made to deny absolutely that any such development takes place. As in the province of cognition there has been a disposition to draw a sharp contrast between sensuous perception and thought, so it has been conceived a degradation of the higher, ideal feelings, that they should be related with the primitive feelings. Hence an ethical valuation was unjustifiably made to determine the psychological conception. As an instance of this tendency we may cite Nahlowsky's work, so admirable in other respects, *Das Gehfühlsleben* (1862). This psychologist, of the Herbartian school, distinguishes between the way in which sensations determine our general organic state, and the way in which internal movements and stirrings of our ideas affect

us. The latter affection only will he consent to call feeling. Sensations, he says, have indeed their peculiar "tone," but this concerns only the bodily state, not the mind. It is here seen how a spiritualistic theory of the relation between mind and body may prejudice a special psychological question. According to Nahlowsky, physical pain is a "sensation" which is conveyed to the mind from the body, while mental pain, on the contrary, is a real "feeling," an expression for the actual internal condition of the mind during the interaction of ideas. The sensations are consequently explained through the relation between the mind and body, the feelings through the relation of the ideas to one another.

In answer to this it must be remarked, that every feeling, whether high or low, is characterized by the strong contrast between pleasure and pain. These two poles make themselves felt as far as the life of feeling extends, and the first mark, by which to indicate the nature of a feeling, is its pleasurableness or painfulness. The fact of this contrast determines the special character of the element of feeling as compared with the other elements of consciousness. Here, then, is something which is common to all feeling.—And all feeling must be *mental*, since a mental life only is immediately experienced by us as conscious life. The differences among feelings we must try to explain through the different cognitive elements which may be combined with them. The so-called physical pain, *i.e.* the pain which arises from immediate sensations, is less complex, and contains fewer and simpler cognitive elements than the so-called mental pain. Toothache is a simple, elementary feeling, while sorrow and repentance are feelings which involve ideas and memories. On the other hand, there is no reason to doubt that the higher feelings have their corresponding physiological process just as much as the lower. The difference can only consist in this, that the central processes, passing in the brain, play a greater part in the higher than in the lower feelings, these latter being mainly determined by the effect of the individual impression.

It is consequently possible that the "tone" of the sensation, or the way in which it immediately affects our frame of mind, may psychologically be a germ, out of which the higher feelings are developed. Before treating of this development, let us examine somewhat more closely the relation between the sensations and the feelings of pleasure and pain accompanying them.

2. Feeling stands out plainly, as an element different from the

actual sensation, in certain experiences, which prove that the pain caused by an excitation takes longer to be produced than the actual sensation, and that sensation may arise without corresponding feeling, and *vice versâ*.

According to Beau, from one to two seconds elapse between the sensation of touch and the feeling of pain, when a corn is hit with a stick. E. H. Weber found that if the hand is dipped in very cold or in very hot water, there is first of all a very strong sensation ; this then decreases, but only at once to increase again and to become painful. He finds something similar in the fact that when we are startled by a sudden clamour (*e.g.* by the sudden blast of kettledrums and trumpets after a pause in the music), an appreciable time elapses between the stimulus and the startled movement, and since the transmission of the excitation along the sensory and motor nerves occupies no appreciable time, he explains the phenomenon by supposing that cerebral activity is a condition of the rise of feeling. This slowness in production of the feeling of pain as compared with the sensation, is evinced in electric stimulation, in the pinching of the skin with forceps, and also under certain pathological conditions.[1]

In a discussion as to the relation between feeling and cognition, which was carried on by Horwicz and Wundt in the *Vierteljahrsschrift für Wissenschaftliche Philosophie* (3rd and 4th vols.), the first of these writers took as examples sudden blows and shocks, where the feeling of pain arises before the sensation. With very strong excitations, this may perhaps be the case ; but with excitations of moderate strength, it may easily be seen that Beau and Weber are right. I experienced this very plainly on one occasion, when, with my hand behind me, I took a couple of steps backwards and came in contact with a hot stove, which I had not imagined so close ; I then felt quite distinctly the sensation of touch *before* the feeling of pain.

In order to be noticed, a pain must both spread and have a certain duration. Richet says even, that pain without memory and without radiation would be no pain at all (*cf.* p. 96). It is thus not of so simple a nature as the sensation ; probably it presupposes the subduing of a great resistance in the central nerve-organs.

In certain cases the feeling of pain is arrested, while the sensa-

[1] E. H. Weber, in Wagner's *Physiol. Handwörterbuch*, iii., 2, pp. 565-571.—Richet, *Recherches Expérimentales et Cliniques sur la Sensibilité*, Paris, 1887, pp. 290-293.—Funke, *Tastsinn und Gemeingefühle*, (Hermann's *Handbuch*, iii., 2, pp. 298-300.)

tion remains intact. After section of the grey substance of the spinal-cord, the part of the body situated below the section may be in any way ill-treated, cut, crushed, or burnt, without any evidence of pain. Stupefying drugs, cold, intoxication, and hypnotic sleep have the same effect. A patient who, while under chloroform, had his leg amputated, was conscious of the operation indeed, but felt as though it were being performed on a wooden leg. After the battle of Eylau the operations performed were almost painless, because the cold was 10 degrees. Hypnotised persons feel no pain when their teeth are extracted. And just as there is analgesia (absence of pain) without anæsthesia (failure of the sensation of touch), so there may be anæsthesia without analgesia (*anæsthesia dolorosa*). By section of the posterior columns of the spinal-cord the sense of touch in the back is lost, while the sense of pain remains.[1]

The feeling of pain may be various in character. It may pass through a whole scale from mere irritation or numbness, pricking, itching (*fourmillement*), up to genuine pain. The pains themselves, as immediately presented, are different. The feeling of weariness is different from the painful feeling of exhaustion and faintness. There are burning, cutting, pressing, pinching, and boring pains. According to some, these differences are not to be conceived as differences of kind, but depend on the different strength, extent, and duration of the pain. The differences mentioned, in the immediate appearance of the pain, afford, however, at once a proof, that in every state of feeling there are also cognitive elements. Regarded as feeling element, pain is simple and manifests no difference ; if differences are manifested, they must arise out of the sensations which accompany feeling.

On account of its practical importance, the feeling of pain has been much more closely studied than the feeling of pleasure. In this latter there are no motives for keenly tracking its conditions and causes, while the feeling of pain at once sets us to work in this way. Perhaps the feeling of pain is also more plain and distinct than the feeling of pleasure.—It seems to be true of pleasure as of pain, that in itself it exhibits no differences of kind, but that the differences in the pleasurable feelings spring out of the sensations or ideas accompanying them.

[1] C. Lange, *Rygmarvens Patologi* ("The Pathology of the Spinal Cord"), pp. 11, 92, *seq.*, 111.—Richet, p. 118 *seq.*, 258 *seq.*—Preyer, *Die Entdeckung des Hypnotismus*, p. 44.

3. In the so-called physical pleasure and physical pain we undoubtedly, then, have already cognitive elements besides feeling-elements, although the latter greatly preponderate. We will now cast a brief glance at the relation between these two kinds of elements in the province of the different senses. It will be seen that the senses may be arranged in a series, in which at the one end the feeling-elements have a decided preponderance over the cognitive, while at the other end there appears a more equal development of both kinds.

(*a*) *General sensation* is marked by the absence in the individual sensations of definite and local character. They are lost in a general feeling of comfort or discomfort, which as it were constitutes the result in the brain of the excitations received from different parts of the organism. We have here a feeling of our existence in general, of the general course of the vital processes; this feeling, which accompanies the general sensations, we call therefore the *vital feeling*. The property and quantity of the blood, the vigour of the circulation, the tension of the fibres (the tonicity), the abundant or scanty secretions of the glands, the relaxation or tension of the muscles (voluntary and involuntary), the quick or laboured respiration, the normal or abnormal process of digestion —these all help to determine it, without any one of them having occasion to stand out alone. The general sensations constitute a chaos, which receives its stamp through the contrast between comfort and discomfort, and the special variations in which are, from the nature of the case, determined by some one organ playing an especially prominent part, without however being always expressly known to consciousness as the source of the sensation. On the contrary, it is characteristic of the general sensations, that they often "radiate," or are projected, to points quite away from the real seat of the cause. The state of the organ which is most prominent at the moment decides the general fundamental mood.

This fundamental mood can be described only by certain general features, which stand in close connection with the easy and free, or checked and difficult, course of the vital process. Thus the feeling of freedom, security, and power, comes in contrast with the feeling of internal constraint, disquiet, anxiety, and feebleness. In the contrast between the feeling of power and the feeling of feebleness, the sensation of power and muscular sensations play plainly enough an important part. Even when we do not voluntarily expand our muscles, they are always in a certain degree of tension;

even quiescent muscles (in sitting, lying, etc.) are not absolutely slack, but partially contracted; the masticator muscles always draw up involuntarily the lower to the upper jaw; the upper eyelid is always raised, etc. During sleep this "reflex-tonicity" or "the latent innervation," as it has been called, is diminished. The position of the body is then adjusted more according to the laws of gravity; and yet there is a difference between the posture of the living and of the dead. *How* well we are able at any time to hold the body erect, depends naturally on the energy at our disposal at the moment; and, quite apart from all ideas, there is an immediate feeling of pleasure or pain, according as we are or are not equal at the moment to the said task.—The feeling of ease and freedom is principally connected with the functions of respiration and alimentation. Difficulty in breathing causes a feeling of painful disquiet and anguish. If the infant's first cry is called forth by urgent want of air, consequent on the interrupted placenta-circulation, life begins with anguish. A patient has often awakened with terror and in convulsions, because the breathing had almost stopped as soon as he fell asleep; and the heart at the same time ceased to beat. Nightmare or the oppression which it causes, appears (according to Laycock) to be caused by the relaxation of the respiratory centres. Many disorders in the bowels induce the same feeling. It seems to the patient "as though in him Nature had suspended her activity." With nervous pains in the pit of the heart (cardialgy) may be combined—perhaps on account of disturbances of the circulation—a terrible feeling of anguish and weakness, which ranks these pains with the most terrible of all suffering.

In this contrast between the feeling of power and freedom on the one side, and the feeling of weakness and anguish on the other, appears in its simplest and most elementary form the contrast, so important for all conscious life, between ***hope*** and ***fear***. In mere vital feeling, no definite sensations or ideas as yet make themselves felt; hope and anxiety as vital feelings are therefore still quite indefinite; but their very indefiniteness and apparent lack of motive give them great power over consciousness.

In their first stages, the feelings of hunger and thirst have the

[1] C. Lange, *Nygmarvens Patologi* ("The Pathology of the Spinal Cord"), p. 152, *seq.*, 344, *seq.*—Panum, *Nervevävets Fysiologi* ("The Physiology of the Nerve Tissue") p. 106, *seq.*—Laycock, *On the Reflex Functions of the Brain* (*British and Foreign Medical Review*, 1845, vol. 19, p. 306).

same vague character as the general feeling, manifest themselves as dissatisfaction, as disquiet. To this, however, are soon added definite local sensations, of oppression and gnawing in the stomach in hunger, of dryness and burning in the tongue and throat in thirst. We must here abstract from the appearance presented by these feelings, when definite ideas of their significance are linked with them, and when the habit has been formed of taking food at settled periods.[1]

(*b*) *Sensations of touch and movement* come so close to the general feelings, that they often enter into these without being independently presented, and, as in these, the strength of the excitation plays a greater part than its quality. If the strength, however, does not exceed a certain degree, these sensations are still fine enough to be associated with feelings of pleasure or pain, which, in comparison with the general feeling of organic well-being or discomfort, have a certain independence. In active movement a special satisfaction may be felt, and one kind or form of activity will be preferred to another, as one colour to another. There is a similar satisfaction in contact with soft and smooth surfaces, and a displeasure in contact with rough and hard surfaces, to which a certain æsthetic character may already be ascribed. A feeling of pleasure or pain may be called *æsthetic*, if it is not (at any rate not immediately) produced by something that sets practical instincts and impulses to work.

(*c*) *Taste*, again, comes close to general feeling. It is intimately connected with the function of alimentation, as a sort of test and measure of what is to be taken in and consumed. The feeling of satisfaction or of disgust, which, according to some, comes from that portion of the organ of taste which is situated on the back third of the tongue, has quite the character of a vital feeling determined by general sensation.[2] But for all this, differences of quality have here a definite importance. Even new-born infants seem able to distinguish between the different qualities of taste. With each of these qualities (sweet, sour, bitter, salt,) are connected certain shades of feeling. These are indescribable in spite of all their simplicity; but that they are present is evident from the fact

[1] This "psychical moment" (Ranke, *Physiol. des Menschen*, 3rd ed., p. 220) certainly plays a part also in the sensation of cold, for which reason the adult undoubtedly suffers more from cold than the child, who as yet associates with it no further idea. Perez, *Les Trois Premières Années de l'Enfant*, Paris, 1878, p. 8, *seq.*

[2] In disgust, again, we here abstract from the "psychical moment." For this feeling may arise by means of association of ideas from excitations which would not in themselves excite it.

that we employ expressions from the province of taste to designate higher states of feeling.

(*d*) *Sensations of smell* exhibit in like manner qualitative differences, but these have not sufficiently attracted the attention for language to find for them special words. With animals smell plays an all-important part among the senses: by its aid the prey is scented, danger avoided and the sexes brought together. Nor has smell quite lost its deep significance among human beings. It is to the process of respiration what taste is to that of alimentation, and acts in immediate conjunction with the sensation of taste as the guardian of the alimentary canal. Like taste, it can immediately and instinctively excite pleasure and disgust, as a rule in the case of substances which are useful or injurious to the organism. But it can, in a much higher degree than taste, be freed from instinct and vital feeling, and become the source of æsthetic satisfaction.

(*e*) The higher senses, *sight and hearing*, seem to be almost wholly emancipated from immediate connection with the vital feeling. And yet these also are originally only its vanguard. As smell and taste facilitate a pre-examination, which prevents anything injurious to life from being received into the alimentary canal, and as smell gives notice of the approach of the enemy or of the prey, so too sight and hearing are from the first in the service of instinct. As the sensation of taste is followed by the need of swallowing, so the sight of corn or of an insect arouses the impulse to pick it up in a chicken just hatched, or the clucking of the hen causes it to run hastily after the source of the sound. It is possible to feed and relish with the eyes. It is similarly due to instinct that all conscious beings, from the lowest to the highest, start with fear or with surprise at a sudden excitation of light or noise (as also at sudden contact). The phenomena here mentioned exhibit hope and fear in a somewhat more definite form than they have as constituents of the vital feeling. Here the sensations which excite the feeling are more definite and distinct, and do not so closely fuse with it as in the forms previously mentioned (*a*).

What gives to the higher senses a freer attitude in respect of the vital feeling is, in the first place, their *definitely marked scale of quality*. So long as the strength of the excitation plays the chief part, the sensations fuse absolutely with the vital feeling proper. This is especially apparent at the extremes of pleasure and of pain, even when it is a question of purely intellectual and æsthetic feelings. The special forms of sound and shades of colour excite a

finer play of feeling than the excitations which affect by their strength the processes concerned in the preservation of life. In the next place it is of importance, that excitations of light and sound in general are not among those which exercise a strong effect upon our body, and that there are in the sense-organs contrivances to subdue too violent excitations.

In a developed consciousness so many secondary ideas are linked with colours and sounds that it is difficult to discover what effect upon feeling the elementary sensations have in themselves. In practice we avail ourselves of colours and sounds as a means of taking the bearings of things, we think not so much of them as of that which they signify. Their immediate effect is, as a rule, unconscious, and we pay attention to it only when the mood excited enters into a certain opposition to other moods.[1] In order to feel these effects in their full speciality, Goethe used to look through coloured glasses, and in this way to make himself at home with the colour, to see the whole world green, yellow, etc. His remarks on the feeling-tones of colour are even yet classical.[2]

In the influence exerted on feeling by *light* and *darkness* we are reminded of the great contrasts in the vital feeling. It is certainly necessary to look farther back than the visual sensations to understand the great influence of light on all creatures that have sensuous perception. The influence of light is, as already touched upon (II. 3), a condition of the conversion of inorganic into organic matter. Light is thus one of the most elementary conditions of life. Plants turn to the light, and if light enters on more sides than one, they turn to the side where it is strongest. Light promotes metabolism in animals, more especially in the respiration; even creatures without eyes breathe more quickly in a bright than in a dark atmosphere. That the influence of light upon the eye should promote metabolism is explained by some as due to a reflex action of the visual nerve upon the central organ of the vaso-motor nerves.[3] The satisfaction taken in light and the dislike

[1] It has been told of a *spirituel* Frenchman that: "Il prétendait que son ton de conversation avec Madame était changé depuis qu'elle avait changé en cramoisie le meuble de son cabinet qui etait bleu." Goethe *Farbenlehre*, § 762.

[2] *Cf.* also in respect of the influence of colours upon feeling: H. C. Örsted, *To Capitler af det Skjönnes Naturlære* ("Two Chapters from the Study of the Beautiful"), Copenhagen, 1845.—Fechner, *Vorschule der Æsthetik* ("Studies Preparatory to Æsthetics"), ii., p. 212, *seq.*—Lehmann, *Farvernes Elementäre Astetik* ("The Elementary Æsthetics of Colours"), Copenhagen, 1884.—In Nahlowsky and Wundt also good observations are to be found.

[3] *Cf.* F. Papillon, *La Lumière et la Vie* (in the work *La Nature et la Vie*, Paris, 1874).—Landois, *Physiologie des Menschen*, 2 Aufl., p. 24£.—Panum, *Nervevävets Fysiologi* ("Physiology of the Nerve-Tissues"), p. 160.

of darkness therefore constitute even a part of the general vital feeling, and the way in which at all stages of civilization men have associated light and life, darkness and death, testifies to a profound and constant experience. Other experiences besides the immediate general sensations have undoubtedly helped in this: light brings with it security, while darkness favours foes and dangers. The real basis, however, does not lie in these associations.

The pleasure in light has, however, yet another source, which is not, like that just mentioned, immediately derived from the instinct of self-preservation. The organ of sight, like every other, requires activity, and its natural, normal functioning is accompanied by pleasure, as appears to be the case with all normal functioning. When even the eyes of the new-born infant turn to the light, this is not wholly on account of the quickened process of metabolism, but also on account of the impulse to natural function. Dislike of darkness is therefore also the expression of an inhibited impulse to activity.

Light does not, however, satisfy the eye. The visual organ desires to be filled with colours. "Let it be remembered," says Goethe, "how our spirits revive when on a dull day the sun shines out over a single part of the landscape, and makes its colours visible. The attribution of medicinal virtue to coloured precious stones may have arisen out of the deep sense of this unspeakable delight." The effects of colour on feeling are in part dependent on the degree of clearness—that is to say, the degree in which colours approach to white; in part on their "saturation"—that is to say, the degree in which colours approach the spectrum shades; in part therefore on the achromatic, in part on the chromatic element in sensation (see p. 104). The duration and the compass of the excitation are also of importance; thus pain results from the too protracted or too extensive application of a stimulus, which if less extended (either in time or space) would afford pleasure. The greater the depth of colour, the smaller must be the extension, if a feeling of pleasure is to arise.[1]

In respect of the influence of the different colours upon feeling, Goethe had already demonstrated that colours may be divided into two classes, which he called the positive and negative, but which with Fechner we may perhaps rather call the *active* and *receptive* colours. The active colours—namely, purple, red,

[1] A. Lehmann, *Farvernes elementäre Æstetik* ("The Elementary Æsthetic of Colours"), pp. 78-82. *Cf.* also Fechner, *Vorschule* ("Preparatory Studies"), ii., p. 213, *seq.*

orange, yellow—have a stimulating effect, excite activity and movement. The receptive colours, among which may be reckoned blues, are depressing and subduing, and do not conduce to external activity. Yellow and dark blue serve as the typical representatives of the two sets, and the difference between their influence upon feeling strongly recalls the difference between the influence of light and of darkness upon feeling. Goethe describes the frame of mind induced by looking at a landscape on a dark winter's day through yellow glass as follows: "The eye rejoices, the heart expands, the mind is cheered; an immediate warmth seems to breathe in on us." And as yellow recalls light, so blue recalls darkness. Goethe says: "As we see the high heavens, the distant mountains blue, a blue surface appears to recede before us. . . . Blue gives a feeling of cold, as recalling shadows. . . . Blue glass shows objects in a mournful light." The transition between the two series is formed on one side (between yellow and blue) by green, on the other (between blue and purple) by violet. Green produces the impression of great repose, without the cold of blue and without the strong excitement of red. Violet may have more of the soberness of blue, or more of the liveliness of red. Red is distinguished from yellow by greater restlessness and force in its influence upon feeling. Goethe says of a brightly illuminated landscape, looked at through purple glass: "This must be the tone of colour which will encompass heaven and earth on the day of judgment."

With diminished illumination the energy of the active series is subdued; with augmented illumination, all colours approximate to white, and the effect on feeling sustains a corresponding change.

Answering to the contrast between light and darkness, there is in the department of hearing the contrast between sound and silence. Any sound naturally affords pleasure, merely because it sets in action the organs of hearing. The deafening music of children and savages gratifies nothing but this impulse in the organ towards stronger function. The contrast between the high and the low tones has been represented as corresponding to the active and receptive series in the scale of colours. The one set has a cheering and exciting effect; the other is depressing, or productive of seriousness and longing. The *timbre* of different instruments has, then, been arranged according to the same relation of contrast. Here, again, cheerfulness or energy, seriousness or

quiescence, characterize the principal grades of the elementary feelings.[1]

What applies to the quality of the sensations applies also to their *composition* and their *form*. Even the way in which the separate sounds and colours are combined may give rise to satisfaction or dissatisfaction.[2] Under this head comes the feeling of pleasure in symmetry, in definite relations of form, also in rhythm and harmony. Even these feelings are more or less differentiated from the general vital feeling. We will not go more closely into these rather complex relations, since it is enough for our purpose to describe the most elementary effects on feeling.

4. The feelings linked with immediate sensations form thus a series of stages from the vital feeling up to the finely differentiated shades of feeling accompanying the qualitative sensations of the higher senses. This series of stages indicates the natural course of development of the elementary feelings. Before the definite appearance of special organs and functions, in the individual as in the race, feeling can be only a chaotic mass, a summary expression for the course of life. Its chief importance is in being a motive for movement. It is, however, necessary for the actual preservation of life, that the vital feeling should be differentiated, should receive special forms. In order to maintain his own existence, the individual must be able to feel the importance of the existence of other things. But this presupposes the differentiation of the special sense-organs.

As regards the general relation between feeling and sensation, the result may now be laid down as follows. In respect of strength they stand in inverse relation, so that the stronger the feeling-element becomes, the more the properly sense-perceptive or cognitive element disappears. The sense-impressions which excite the strongest pleasure and pain teach us least as to external relations, however great their practical importance as warnings or enticements. In its most elementary forms, feeling is mainly determined by the strength of the excitation, and by the degree in which it affects the course of organic life. This is especially so with the

[1] *Cf.* Nahlowsky, *Das Gefühlsleben*, p. 142, *seq.*; Wundt, i., p. 471, *seq.* (3rd ed. i. p. 521 *seq.*) As Panum has remarked, physical and physiological observation lead here to different results. If the length of the wave and number of oscillations are considered, red will correspond to a deep, violet to a high, tone; but according to the physiological excitation, red corresponds to a high, violet to a deep, tone (*Sanserne og de vilkaarlige Bevægelser* ("The Senses and the Voluntary Movements"), p. 198, *seq.*).

[2] *Cf.* as to the conditions of the æsthetic effect on colour combinations, A. Lehmann, *loc. cit.*, pp. 92-142.

excitations which set up instinctive movements; their qualitative character is thrown into the shade by the stress of feeling and the desire which they excite. But when the qualitative property of the sensation is able to make itself felt, with a strength suited to the sense-organ, the feeling answering to the sensation is differentiated and specified. What it loses in force, it gains in richness and varied gradation, as also in independence of the immediate struggle for existence.

The sum of energy, which in the vital feeling is concentrated on the one question "to be or not to be," on the organic weal and woe, is in the qualitative feelings divided and made to flow in different currents. Whether feeling actually gains or loses through qualitative differentiation depends on whether or no there is a corresponding growth in the total energy of the life of feeling.

B.—Feeling and Ideation.

1. The feelings linked with immediate sensations acquire a special character through the qualitative property of the sensations. Bare oscillation between pleasure and pain is developed into a series of states of feeling, each of which receives its individual impress from being linked with a definite content of sensation. So that here already the evolution of feeling through cognition may be spoken of; for the sensations, in so far as we can distinguish them from feelings of pleasure and pain, belong to the province of cognition. The most emphatic relation between cognition and feeling is, however, reached only when we examine the influence of ideas upon the feelings. As already seen, pure sensation is an abstraction; with the impression of the moment there are always combined more or fewer, stronger or weaker residua or reminiscences of earlier sensations. The point at which the ideas and their combinations obtain an influence over feeling cannot therefore be far from the beginning of conscious life, though this influence may not be plainly apparent until a later stage.

Since we start with the assertion that the feeling of pleasure and pain is present in the most primitive mental states, and is presupposed before definite and clear sensation, we cannot avail ourselves of the ordinary definition of feeling as the effect of sensations and ideas on consciousness. As primitive conscious element feeling is already given, before sensation and idea can exercise any

influence whatsoever; their influence develops and modifies only what is already given. Nevertheless we rejected the view of conscious life as wholly evolved out of states of pure feeling (p. 96), partly because it was improbable that there could be feeling absolutely without sensations (general and motor sensations at any rate), partly because an intellectual element is already given in the differences in strength of feelings and in the oscillation between pleasure and pain. So that it is only an abstraction to speak of pure feeling without any cognitive element. It is, however, allowable to employ such an abstraction as theoretical basis, since, by representing the relations in a yet simpler form than actual experience can afford, it facilitates the understanding of the laws which come into operation.

2. A feeling of pleasure or pain naturally enters into an association with the idea of that which played, or appeared to play, a part in giving rise to the pleasurable or painful feeling, with consequently its real or apparent cause. Previous to such association, feeling has no direction or no object, is consequently not feeling *about* or *for something*. The changes, which feeling sustains in consequence of such association, we shall now consider in detail.

. (*a*) *Pain* becomes, by association with the idea of its cause, *aversion* (anger). The definite relation of the feeling to the object is manifested by movements calculated to remove the object or to move away from it. The earliest manifestations of this feeling have been described by Darwin as follows. "It was," says Darwin ("Biographical Sketch of an Infant": *Mind*, 1877, p. 287, *seq.*), "difficult to decide at how early an age anger was felt; on his" (*i.e.* the child described) "eighth day he frowned and wrinkled the skin round his eyes before a crying fit, but this may have been due to pain or distress, and not to anger. When about ten weeks old, he was given some rather cold milk, and he kept a slight frown on his forehead all the time he was sucking, so that he looked like a grown-up person made cross from being compelled to do something which he did not like. When nearly four months old, and perhaps much earlier, there could be no doubt, from the manner in which the blood gushed into his whole face and scalp, that he easily got into a violent passion. A small cause sufficed; thus, when a little over seven months old, he screamed with rage because a lemon slipped away and he could not seize it with his hands. When eleven months old, if a wrong plaything was given him, he would push it away and beat it; I presume that the beating was an

instinctive sign of anger, like the snapping of the jaws by a young crocodile just out of the egg, and not that he imagined he could hurt the plaything. When two years and three months old, he became a great adept at throwing books, or sticks, etc., at any one who offended him."

Another child, who was perhaps less combative, turned his head away and cried at the sight of a cup out of which nasty medicine had once been given to him. In this case the feeling has a more passive character, and approximates to *sorrow*. In sorrow the feeling of pain is also determined by the idea of the cause, but the cause is a loss or some other thing against which no reaction is possible. Sorrow finds expression in a prevailingly passive and sunken bearing. Sorrow has as a rule a contemplative character, a strange desire being shown to retain and dwell on the object which has excited it.

With further development, and presupposing the power of entering into the feeling of other individuals, aversion or anger leads to pleasure in the personal cause of the pain having himself to suffer pain, or to pain in his feeling pleasure (what Bain has relevantly called malevolent sympathy). Hence arise *hatred* (desire of revenge) and *envy*, while mere aversion and anger in themselves only urge the removal of the object from us or of us from the object.

(*b*) By a similar metamorphosis the feeling of pleasure becomes *delight* and *love*. The idea of that which has an essential connection with the feeling of pleasure blends with it and gives it a certain direction. There arises an involuntary desire to retain and protect that which excites pleasure. Delight is this desire regarded from the passive, contemplative side, is pleasure in dwelling on the object; love denotes the active side, the impulse to an action which shall make the object secure, or at any rate shall secure it *to us*. At higher stages of development arises *sympathetic love*, pleasure at the pleasure of others, together with pain at the pain of others (compassion).

(*c*) From this exposition it appears that aversion and delight, anger and love, cannot be separated from *impulse* or *desire*. All pleasure or pain sets the organism more or less in movement. The form and direction of this movement are determined by the original structure of the organism. While it is often an ineffectual, if not injurious, discharge of the energy roused to activity, it is in other cases (in the so-called instinctive actions) a purposive approach to, or withdrawal from, the object. An *impulse* arises, when this

involuntary introduction of a movement makes itself felt in consciousness with a certain idea of the end to which it leads. When the movement is executed easily and immediately, no impulse arises; the whole thing then takes place as simple reflex movement beneath the threshold of consciousness. The movement must meet with a certain resistance, which need not, however, be so strong as actually to produce pain. In every impulse there is a certain *disquiet;* but this is simply due to the fact that the impulse points beyond the present and quiescent state, aiming either at retaining the cause of pleasure or setting aside that of pain. The stronger the resistance the more the disquiet passes into *pain*—in its simplest form the pain of inhibited movement. To this is soon added pain because the object of pleasure cannot be retained, or because means cannot be procured for the removal of the cause of pain. In this way the impulse comes to consist more and more in feelings of pleasure and pain, and so gradually to be more definitely removed both from simple reflex movements and from the instinctive actions produced by immediate sensations. The impulse now receives a richer ideational content, being combined with the thought of that which hinders or promotes its object. The most natural distinction to draw between impulse and desire is to regard desire as impulse controlled by distinct ideas.—If its gratification is long delayed, or absolutely refused, the impulse, if deeply rooted in the nature of the individual, passes into strong pain.

(*d*) Impulse is originally sanguine expectation. An emerging idea is not at first distinguished from an actual percept; it is true that the strength is as a rule different, but there is no innate knowledge of the meaning of this difference; only experience, and that means here the same thing as disappointment, emphasizes the difference between the possible and the actual (*cf.* p. 129 *seq.*, where this relation is treated from the standpoint of the psychology of cognition). If now the idea of disappointment produces effect with greater or smaller force by the side of the idea of gratification, so that the thoughts dwell now on the one, now on the other, hope or fear arises. Let a denote a feeling of pain, a the idea of something which may remedy it; or let a be a feeling of pleasure, and a the idea of that which may retain and increase it. Farther, let b be an idea by which a is favoured, c another by which a is destroyed. Both b and c stand then in connection with a, and are called out by it according to the laws of the combination of ideas. Two associations will then be possible. So long as neither b nor c

are given as actual experience, consciousness will pass now from *a* to *b*, now from *a* to *c*. The question is, what influence is exercised upon feeling by this alternation of ideas.

It was seen (*A*. 2) that feeling in general arises more slowly than sensations. Observation will easily convince us that *feelings* also arise and bestir themselves more slowly than ideas. It takes longer to convert joy into sorrow than to pass from the idea of something joyful to the idea of something sorrowful. Even in persons of a sanguine temperament, thoughts and fancies alter with greater rapidity than the mood. If now consciousness passes from one of the given points of view (*ab*) to another (*ac*), the idea *c* will have the tendency to excite a new mood (γ) ; but since the mood (β) excited by the first idea (*b*) still endures, the two moods will coincide and form a combination. It is like waves striking upon the shore ; the advancing wave absorbs the receding one. In this way a mixed mood arises : hope, when $b\beta$ has the upper hand ; fear, when $c\gamma$ gains the upper hand. Both feelings presuppose a certain play of possibilities.

The moods of hope and fear appear in innumerable gradations and shades, according to the relation of the possibilities to one another. The greater the possibility of attaining the end, the closer will hope come to *certain expectation*, where the mind rests in the idea of the happy future without further disquiet than is inseparable from the consciousness that the present must give way to a future,—the smaller the possibility, the more nearly will fear approximate to *despair* or *resignation*. If the chances are thought equal, and the imagination is therefore attracted with equal force by either stream, the mind feels itself divided. Two different moods strive to expand in consciousness, but neither can gain the mastery. Hence arises the mood of *doubt*, the chief characteristic of which is a painful restlessness, which may excite so strong a desire to come to a decision that the nature of the decision seems indifferent if only the pain of uncertainty be ended.[1] Men plagued with sudden suggestions or fixed ideas sometimes suffer under them so much, that they yield to incentives to murder or suicide, solely to obtain peace.[2]

(*e*) When two conflicting feelings press at once to the fore and

[1] Othello (Act iii., Sc. 3) says to Iago, after the latter has excited his suspicion of Desdemona's fidelity :—

"Thou hast set me on the rack ;
I swear, 'tis better to be much abused,
Than but to know't a little."

[2] *Cf.* Ideler, *Biographieen Geisteskranker* ("Biographies of the Insane"), Berlin, 1841, p. 134 ; Maudsley, *Mental Pathology*, p. 358 *seq*.

try to make themselves felt simultaneously with equal strength, there arises the intolerable sense of division just mentioned. This is, however, a rare case and of short duration. When Shakespeare makes King Claudius describe his mood at his wedding with his brother's widow as an equipoise of joy and sorrow,[1] it is certainly the intention of the great poet-psychologist to exhibit him as a hypocrite, who betrays himself by the unnaturalness of the condition which he attributes to himself. Where the one feeling does not suppress the other or reduce it to a subordinate element, they will succeed one another rhythmically. Plato describes as follows the emotion of the disciples of Socrates during their last interview with their master. He makes Phædo say: "I found myself in a truly extraordinary state, in an unaccustomed mixture of delight (in the matter of his conversation) and of sorrow when I reflected that he must soon die. And all present were in almost the same frame of mind, now laughing and now crying." Such an alternation is the natural state, when different motives take effect. But this cannot long continue, for the mind seeks equilibrium, and by means of memory converts the successive into the simultaneous; the two feelings are consequently blended into a new feeling, sorrow and joy, *e.g.* into melancholy. In softer natures this transformation is more easily effected than in the more passionate. Homer describes Andromache as "laughing amid her tears" (δακρυόεν γελάσασα), as Hector hands her their little son, that he himself may hasten to the battle.

Sibbern has with justice therefore drawn a distinction between a mixture, or an alternation, of different or even conflicting states of feeling, and mixed feelings in the proper sense. In a mixed feeling, the difference of the constituents is no longer observed, since they go to make up one single total feeling—"as when fear is combated by boldness with respect to what is feared, or when in battle and great efforts the force is felt to be inflamed or helped on by the very checks and difficulties. Under this head may be brought a certain satisfaction in life, even blissfulness, by virtue of sorrow or some other effect of adversity being overcome and trampled on."[2]

Such mixed feelings comprise elements which, if appearing separately, would bear a character different from the total feeling

[1] *Hamlet*, Act i., Sc. 2:—

"with a defeated joy,—
With one auspicious, and one dropping eye,
With mirth and funeral, and with dirge in marriage,
In equal scale, weighing delight and dole."

[2] *Psychologie*, Copenhagen, 1856, p. 380.

which they help to form. Melancholy, *e.g.*, may often have a pleasing character, but the feeling attendant on loss and misfortune is in itself a feeling of pain, unless neutralized, or rather overcome, by other elements of feeling. Conversely, there may be an element in sorrow or pain that would in itself be pleasurable, *e.g.* the feeling resulting from the memory-image of what is lost. Here, then, are instances of psychical chemistry in the province of feeling (*cf.* p. 163).

3. We have analyzed some of the simplest forms of feeling in order to discover the relation between the feeling-elements and the ideas combined with them. We will now see what this analysis teaches us as to the law of the evolution of feelings.

In the earlier psychology appears the tendency to regard cognition as the principal thing and as what properly constitutes consciousness. For Plato the immortal part of the soul was one with thought or reason; he conceived the feelings of pleasure and pain to arise, like sensations, only from the confinement of the soul in a material body. In modern idealistic philosophy a similar point of view may be traced. Kant and William Hamilton could, *e.g.*, conceive spiritual beings possessing reason without feeling or will, but not conversely. For them the essence of consciousness coincided with cognition. "Consciousness is a knowledge," says Hamilton.

There was consequently a disposition to apply to feelings, without further preliminaries, the laws found for the evolution of ideas. This was especially the case with the laws of the association of ideas. The natural growth of the life of thought rests on these laws; but do they also hold good as between the feelings? Some psychologists (among the earlier, *e.g.*, Spinoza, *Eth.*, iii. 14) hold that they do, and believe that feelings, which have once arisen together, will afterwards reproduce one another. But it is a great question, whether a feeling possesses in itself the power of producing another, however close the relation and the similarity.

The question is: Can the feeling-element in a mental state attract the feeling-element in another mental state, or is the transition always effected through association of cognitive elements?

(1) A state of consciousness (A) consists of a feeling-element (a) combined with a cognitive element (a). Now supposing there are other, related cognitive elements (a_2, a_3, a_4, etc.) which A

has the tendency to excite, some of these will succeed in forming an association with a, and through a with a, so that while a was previously determined only by a, it will now be determined by $a + a_2 + a_3 + a_4$. The frame of mind will be modified, the state A will become A_4. This affords no absolutely new kind of feeling, but the given feeling spreads over a greater part of the conscious content. The feeling of pleasure in an object will be extended to that which has more or less similarity with the object. Compassion sometimes arises in this way, the idea of the suffering condition of another exciting pain through the memory of ourselves in a similar condition.

(2) The original feeling sustains a greater alteration, when the fresh cognitive element is combined with the earlier, not through immediate association by similarity, but through association by contiguity. If $A = a + a$, and a is closely linked with b, then A becomes A_b, that is to say, the feeling remains the same in kind but is rendered more special. If *e.g.* a certain quality (a) is of great value in my eyes, and I discover or think I discover that I (b) have it myself, my admiration (A) becomes pride (A_b.)

(3) If finally the new idea (b) is itself accompanied by a feeling (β)—that which it would have excited had it been presented by itself—a new kind of feeling (B) arises. Instead of $A = a + a$ we have $B = a + (a + b) + \beta$: that is to say a and β are combined through $a + b$. This is the schema for the evolution of hope, fear, melancholy, and similar compound or mixed feelings.

There cannot of course be any sharp line drawn between these three cases, since even a_2 and a_3, etc., as well as b, must give rise to new shades of feeling, which fuse with the feeling already given.

The combination of ideas seems therefore to be the channel through which the feelings mingle with one another. It is through the relation of thoughts to new thoughts that feelings pass into new feelings. Since, however, the movement of feeling is slower than that of the thoughts, it is not surprising that intellectual progress is as a rule in advance of the development of feeling. Thought is the most versatile part of our nature; feeling forms the basis, to which results are only gradually transmitted from the more versatile surface. It is consequently vain to expect that enlightenment and instruction will yield sudden and quick results. Every idea has, indeed, its special feeling, but this always breaks its force on the feeling previously prevailing, and its effect is determined through the latter. Since feeling is so

deeply and securely rooted in consciousness, all far-reaching mental development requires time, and the course and rate of development are conditioned not only by the laws of the flow of ideas but also by the special laws of the life of feeling (*cf.* section *E.*) On the other hand, that which has taken root in feeling is the better retained. In the decay of conscious life (without actual mental disease) the intellectual powers are lost sooner than the habits of feeling; in the race, too, these latter persist longer, because they are more frequently transmitted than intellectual bents.

4 If this view[1] is correct, it must find corroboration in the way in which the feelings are reproduced in memory; for the laws of the association of ideas are the laws of memory. Now it is at once evident, that it is easier to recall ideas than the feelings which accompanied them. We can recall images and situations from the past, but only most imperfectly the moods which animated us.[2]— The more gradations, the more definitely stamped features and relations, a mental state exhibits, the better can it be recalled in memory. But gradations and relations presuppose comparison, and belong to the sphere of cognition. The smaller the part which the cognitive elements play in a state, the more imperfectly can the state be remembered. Thus we more easily recall the alternation and succession of feelings, than the several feelings by themselves. It is in this respect with feelings, as sometimes with immediate sensations (p. 150); we can remember the fact that we have had them, without being able actually to recall them. It is due to special circumstances when the state of feeling is reproduced. Feelings are remembered by means of the ideas with which they were originally linked, and in conjunction with which they composed a certain conscious state (*cf.* the law of totality, p. 159). Only when we are absolutely absorbed, buried, in memories, can feeling be awakened. This is a simple consequence of the slower movement of feeling; the thought returns in an instant,

[1] It has been already suggested by Hume (*Treatise ii.*, 1, 5, 8), more definitely by Bain (*Emotions and Will*, i., 5), and by Kirchman (*Erläuterungen zu Kants Anthropologie* ["Illustrations to Kant's Anthropology"], p. 477).

[2] Longfellow has expressed this in the following beautiful lines:—

"Alas, our memories may retrace
Each circumstance of time and place,
Season and scene come back again,
And outward things unchanged remain;
The rest we cannot reinstate;
Ourselves we cannot re-create,
Nor set our souls to the same key
Of the remembered melody."
(*The Golden Legend.*)

but it takes time for the feeling to unfold.[1] A hindrance will always be given in the feeling that prevails at the moment (*cf.* V. *B.*, 7*c*); in any case this more or less modifies the earlier feeling, and a new feeling will arise, which will be the result of both (according to the schema $a + (a + b) + \beta$). This is the source of many illusions which we entertain as to the past.

The feelings which are linked with the senses of sight and hearing, and with free ideation and activity of thought, are more easily reproduced than those which we owe to the lower senses and especially than those which arise from the exercise of vegetative functions. They are consequently more freely at our disposal, and less easily cut off by external hindrances, a fact which is of the more importance since to this class belong the æsthetic, intellectual, moral, and religious feelings.

C.—Egoistic and Sympathetic Feeling.

1. So far feeling in general has been spoken of, and it has been seen how the primitive feeling of pleasure and pain comes to be developed by being directed, through ideas which fuse with it, to definite objects. The further development of feeling receives its decisive stamp according as regard to the individual self or to something beyond the individual affords the centre of gravity of the feeling.

At first this contrast, which when fully developed becomes the contrast between egoism and altruism (sympathy), cannot appear. In the dawn of conscious life, ideas are but little clear and definite, and the idea of self cannot therefore be contrasted with the idea of something outside the self, or of a different self. So that it is psychologically without meaning, to speak of a native egoism, if by egoism is understood the conscious setting of the weal and

[1] In individual cases, which are almost pathological, the fresh feeling that accompanies the remembrance may be the very same as in the original experience. Littré mentions a striking example of such "automnésie affective" from his own experience. At the age of ten he had lost a little sister under specially sad circumstances, and had felt great sorrow about it. "Mais le chagrin d'un garçon ne dure pas beaucoup." He always, however, preserved a lively remembrance of the event, though the freshness of the pain had gone. Then in old age he felt again suddenly, without any special occasion, the same pain. "Tout à coup, sans que je ne le voulusse ni le cherchasse, par un phénomène d'automnésie affective, ce même évènement s'est reproduit avec une peine présente non moindre, certes, que celle que j'éprouvais au moment même, et qui alla jusqu'à mouiller mes yeux de larmes." This was frequently repeated in the course of several days, after which it ceased and gave place to the customary remembrance (*Revue Philos.* 1877, p. 660, *seq.*).

woe of others below our own. It would be just as correct to speak of native effrontery, because a child knows at first neither bashfulness nor shame.

From the beginning, then, according to the conditions of life, the pleasure or the pain felt must almost wholly depend on what favours the preservation and the development of our own being. Even the involuntary movements which do not involve any clear and distinct consciousness, are more or less directed to such an end. There is manifested in these an instinct of self-preservation, which is, however, (in man especially) far from perfect. In the involuntary movements of sucking, and in the disposition to put everything grasped into the mouth, may be recognized a tendency to refer everything to self as the centre; this centre is not, however, the object of any idea. When ideas arise of that which excites pleasure or pain, the instinct of self-preservation stirs as love or abhorrence, and assumes the character of an impulse (*cf.* IV. 4 and VI. *B.* 2*c*.).

When now the feeling is determined by the idea of what promotes or hinders self-assertion (self-preservation and self-development), it will appear as a *feeling either of power or of powerlessness*, according as we think we have or have not at our disposal sufficient means of self-assertion. Under self-assertion must be included here, not merely the maintenance of physical existence, but also the power of mental clearness and freedom, and of "making oneself felt" in relation to others (by controlling them, being recognized by them, etc.). That the feeling of power is the active or positive form of the feelings linked with self-assertion, is due to the fact that the idea of the cause of a feeling of pleasure (or of the hindrance to a feeling of pain) can excite pleasure only when we conceive this cause (or this hindrance) to be within our reach. "All conception of the future," says Hobbes,[1] "is conception of power able to produce something. Whoever therefore expecteth pleasure to come, must conceive withal some power in himself by which the same may be attained."

The feeling of power recalls the feeling of effort, which accompanies the immediate sensation of organic vital energy (VI. *A.* 3*a*); what this (and its opposite) is among the elementary feelings, accompanying sensations, the feeling of power (and its opposite) is among the ideal feelings, accompanying ideas. Often the feeling of

[1] *Human Nature*, viii. 3.

power is a simple prolongation or extension of the feeling of effort; it may, however, arise without finding any actual basis in the latter.

The feeling of powerlessness appears in humility, in repentance, or in self-contempt, which have their rise in the failure to obtain the control over the conditions of life which is recognized as desirable.

In calling the feelings above-named *egoistic*, we pronounce no moral judgment. To make such a judgment is not the business of psychology. All that is implied is, that they are linked with the individual self, and with its desire to continue in existence, to expand and to enjoy life. In the instinct of self preservation lies a tendency to make the individual self the centre of existence, and this tendency continues to take effect so long as no motive arises for the recognition of other centres of pleasure and pain in the world besides self.

2. How is it in general to be explained, that the individual may feel pleasure or pain in something that is not a means to his own existence?—This question has seemed so difficult to answer, that some have even denied the fact implied in the question. In this case, sympathy is explained as disguised self-love. "Self-love," says Larochefoucauld, "never rests quietly outside the self, and lingers with strange objects only as the bees with the flowers, in order to draw from them what it requires."—Others have recognized a pleasure and pain in objects for their own sake, but have tried to explain the existence of such unselfish feelings according to the general psychological laws. They even endeavour to show, that a psychological bridge may be thrown between absolute respect of self and absolute self-forgetfulness, between self-preservation and self-sacrifice. The most interesting and original expositions in this direction, are afforded by Spinoza and Hartley. Later, James Mill and John Stuart Mill have more fully developed the same theory.

The laws of obliviscence previously mentioned (V. *B.* 8*d*) find application here. An idea, which has occasioned the birth of another idea, may itself disappear, and this other idea obtain effect immediately and solely. An example often given is the independent value attached to money, although this is only a means of procuring certain commodities. For the miser, the intermediate link, without which the value cannot be established, and by means of which it originally arose, is wholly and completely forgotten. He loves the money for the money's sake, even indeed denies himself entirely

the things it can procure. The feeling has been transferred from the end to the means, or rather it has made the means an end. So, too, persons and things, which at first were objects of joy and of love only because they caused pleasure, may become immediate objects of this feeling. We love them for their own sakes, having forgotten the original "reason why."[1] While here association by contiguity preponderates, in other cases association by similarity plays the chief part. This is so, when other persons have something more or less in common with ourselves, in nature, appearance, circumstances, and interests. We are then accustomed not to separate them from our own self; in everything which happens to them, we involuntarily set ourselves in their place, suffer and feel with them. Involuntarily the interest slides, by force of the law of similarity, from ourselves to others. On the other hand, not sympathy only, but also envy and ambition, may arise in this way. These feelings too arise from realization of the feelings of others.

Sympathy presupposes that the common interests have the upperhand as against the conflicting interests; it presupposes further that these common interests can be more or less consciously represented in thought. Narrow experience, narrow range of intelligence and imagination consequently narrow also the sympathies. History teaches, too, that sympathy is at first developed in narrow spheres and afterwards extended to wider. Each narrow sphere (family, rank, nation, sect) is in the position of egoist in relation to the wider spheres. Finally, sympathy may be extended to all living beings, to the whole of nature; it then acquires ultimately a religious character, becomes what Spinoza has called "the intellectual love of God."

This is a theory of evolution, since it lays down no absolute dissimilarity between egoism and sympathy, but endeavours to explain them as feelings evolved under different conditions from a common source. It might be called the theory of individual evolution, since it maintains the possibility that such evolution,

[1] Paul Friedmann in his paper "The Genesis of Disinterested Benevolence" (*Mind*, 1887), lays stress on the fact, that by living together men confer benefits on each other without expressly desiring it. The feeling of having in this way caused pleasure to another, arouses an interest in him; care is taken not to undo the benefit, because there is a sense of power in helping others. The interest thus excited may come to embrace the whole person, and its original occasion be forgotten. Aristotle had already said something similar. "Benefactors seem to love those whom they have benefited, more than these love the benefactors. . . We find the same in craftsmen; for every craftsman loves the work of his own hands more than it would love him, if it came to life." Aristotle explains this by the fact that the action is a part or an expression of our being (*Nicom. Eth.*, ix. 7.

even an evolution from absolute self-assertion to absolute self-sacrifice, may take place in the lifetime of a single individual, without presupposing any further conditions than those above-mentioned. It certainly, however, over-estimates what can be attained in the lifetime of a single individual. In the feelings, as has been seen, it is a question of dealing with heavy masses; when once they have found their centre of gravity, they do not lightly shift their position. It takes more experiences than a single individual can have in his lifetime, to complete a metamorphosis of this kind, forcibly and naturally as it may be described.

The theory presupposes, moreover, the possibility of receiving help, or at any rate beneficial influence from others; so that the individual is not isolated, not from the first sharply separated from other individuals. A *society* is presupposed, within which the individual develops. The problem therefore is only thrust farther back, and the question now is, whether a society, of such a kind that this evolution would be possible in it, could conceivably have arisen through the association of individuals, each of whom began with an unlimited instinct of self-preservation.

In so far, finally, as the theory lays stress on the motive given in the similarity of other individuals to the individual himself, it presupposes *an original impulse of imitation* or *an instinct to feel and to suffer with his like*. This is so, *e.g.*, with Spinoza, who suggests a theory developed later by Adam Smith. A man who sees another burning, involuntarily draws his hand close to his body. The cheerful or sad aspect of another infects us at once with the same emotion. Some even hold that this capacity of being infected with the mood of others, is grounded in an innate disposition. But in any case this capacity or this impulse requires a special explanation.

This all points to the need of looking back beyond the individual impulse of self-preservation, if we are to understand how the individuals come to attach an independent value to something which extends beyond themselves.

3. With the question of the origin of the individual the limits of psychology are reached. Here, then, no attempt will be made to solve this problem. It is, however, of interest to point out that much, which cannot find a full explanation in the individual's personal experiences, may become more intelligible when the individual is looked at in his full nature, as proceeding from the race. And as it may be with psychological individuality (the centre

of pleasure and pain, of memory and self-consciousness), so, too physiology shows that the separation between individuals occurs, gradually, and that the stage in which the maternal and the young organism are independent of one another, must be preceded by a stage in which they form a single vital whole, or a single organism.

Propagation stands to the race in the same relation as self-preservation, nourishment and renewal to the individual organism. The scale of living beings exhibits all possible forms of transition between individual self-preservation and the creation of new individuals out of the substance of the maternal organism. With plants and the lower forms of animal life, single cells in any part of the organism can at once lead an independent organic life directly they are severed from the maternal organism. The higher we ascend in the scale of existence, the more complex become the conditions for such development of the life of the organism, or continuation in new organisms. But the same fundamental condition applies even to creatures which propagate by sperm and ova, and where consequently the new organisms arise out of cells obtained from two different organisms, germ- and sperm-cells having been formed in the maternal and paternal organisms and certainly at their cost. Thus, whatever the mode of propagation, the organic individual spends the first portion of his life as a part of another organism. According to the view now generally accepted, the ovum is formed in the maternal organism even before its own birth ; in the opinion of some even in its ovum.[1] While, therefore, the origin of the individual is ultimately lost in the distance, for physiology as for psychology, the important conclusion is, nevertheless, reached, that it is to be looked for in preceding organisms, and that the separation into independent organisms is the result only of a process of evolution. The origin of the individual is consequently brought under a general physiological point of view. Growth, as Baer[2] says, is nourishment with formation of new elements, consequently a continued generation, and generation in its turn is nothing more than the commencement of a new growth.

The fact that self-preservation and propagation, as even Plato taught in the *Symposium*, pass into one another, supplies a physiological basis for the transition between pleasure in what affects the individual himself, and pleasure in what lies beyond his

[1] Ditlefsen, *Menneskets Histologi* ("Human Histology"), p. 244. Claude Bernard, *Leçons sur les Phénomènes de la Vie*, p. 311.

[2] *Entwickelungsgeschichte der Thiere* ("History of Animal Evolution"), ii., p. 4.

own vital process. Sympathy, then, appears as literally growing out of self-preservation. Even after the physical union of the maternal with the young organism has been interrupted by birth, a close union is kept up by instinct. The most marvellous of all instincts are those which impel one generation to prepare the way for the next. Many insects secure nourishment and protection for the larvæ which come out of their eggs, but which they will never see. In none of its forms does maternal love know a "reason why;" but it is especially obscure and instinctive where the mother does not have the child before her as an independent organism. It is only in the latter case, that the general psychological laws can come into operation, and maternal instinct become actual maternal feeling. All instinctive care for beings of whom the individual can himself have no conception, must be guided in detail by special sensations. Instinct consists of the union of a strong feeling with certain sensations and involuntary motor-impulses. When, instead of the mere sensation, a percept and an idea of the child are possible, feeling takes a higher form. The child's smiles and caresses, its helplessness, the feeling of community which constant services produce in the donor, develop the originally blind and instinctive feeling into clearness and intensity. The feeling is then definitely differentiated from the general vital feeling, and may come into emphatic opposition to it.—The strength of the maternal feeling as compared with the instinct of self-preservation may be seen from the courage with which animals defend their young, and from the sorrow they feel on losing them. Swallows will fly into burning houses to save their young. When a young whale is harpooned, the mother will not desert it while it still lives. If polar bears are compelled, when chased, to leave their young, they presently return to look for them, and shed (according to Brehm) great tears and swim round the coast for several days in their distress. Many animals try to draw the attention of the pursuer from their young to themselves. These traits are the more remarkable from the fact that the struggle for existence tends to cultivate quite contrary qualities, for weak and wounded companions are a burden and a danger, which is why many animals (*e.g.* doves, stags, elephants) ill-treat and drive away their sick and wounded comrades.[1]

In animals and in the lower races of men, maternal love is lost

[1] *Cf.* Darwin's posthumous treatise on instinct, published in Romanes's *Mental Evolution in Animals*, p. 381.

when the helpless age of the child is passed. In this connection it is psychologically of great importance that the higher organisms develop more slowly, and the period during which mother and child are united through instinct is consequently prolonged. This gives a firmer basis for the psychological evolution of the feeling. Where the relation between mother and child is permanent, the feeling will attain to a yet higher form, embracing not only the physical, but also the mental, individuality of the child. When a vivid conception of the child's independent conscious life has been formed, the psychological duality, in which sympathy consists, is quite complete. Pleasure and pain are felt, because another being feels pleasure and pain, just as the vibrations of one string set up corresponding vibrations in another.

In the above only maternal, not paternal, love has been spoken of, because the latter shows itself strongly only at higher stages. Maternal love is not only the strongest sympathetic feeling ; it is also—if we regard the scale of living beings as the expression of a long process of evolution—the sympathetic feeling which is earliest manifested, and that which, by establishment of the most primitive social relations, lays at the same time the basis of all the means and forms of the further and higher development of sympathy. The relation between mother and child gives the most primitive family and the most primitive human society. It makes[1] a pure "state of nature," an absolute individualism impossible. In the animal kingdom, the male seldom shares in the care of the young. The father is often a danger and a foe to his own young. Darwin relates in his *Voyage Round the World*, a striking instance of the egoism of the male and self-sacrifice of the female. The wild horses on Falkland's Island roam constantly from place to place, and compel the mares to accompany them, whether the young foals are old enough to follow or not. A man saw a horse violently kick and bite a mare for a whole hour, and so compel her to leave the foal to its fate. Masculine egoism shows itself also in the human race, where the care of the children at the lower stages is left to the mother. Only where marriage takes a permanent form—and this happens, as already taught by Lucretius (v, 1008), especially when permanent dwellings are provided—may the paternal relation become a source of sympathetic feeling. The paternal feeling then ranks with the maternal.

[1] *Cf. Die Grundlage der Humanen Ethik* ("The Basis of Humane Ethics"), Bonn 1880, pp. 16, 40, *seq.*

One sign that, in the evolution of human sympathy, half-unconscious instinct precedes[1] the properly psychological evolution determined by the laws of combination of ideas, is that sympathy is aroused earlier in those who give than in those who receive benefit. The love of parents to children is, as a rule, stronger than that of children to parents. During the proscriptions of Sulla sons sometimes betrayed their fathers, but never *vice versâ*.

Under the shelter of the defence provided by the paternal and maternal sympathy, may grow up the fraternal and friendly sympathy. And this may extend, by means of the psychological process described above (2), even beyond the family. It reaches perfection in the feeling that all men are brothers, of like nature and subject to like conditions.

4. There is yet another powerful feeling which grows out of a natural instinct, and forms an important basis for the development of sympathy. The *feeling of love* in its primitive form is, like maternal love, a "moment" of the general vital feeling. Its first stirrings also are connected with revolutions within the organism, which give to the vital feeling a previously unknown character. There arise new and inexplicable longings and sensations. Something stirs in the individual which impels him beyond himself. But at the primitive stages the individual still regards the object, with which instinct unites him, merely as a means. Love is at first only an extension of egoism. Aristophanes, in Plato's *Symposium*, consequently explains it, by the gods having cut men in half, so that the two halves wander about with longing, and search for one another. The comparative physiology of propagation in a measure bears out this humorous explanation. It shows us various forms of transition from nonsexual to sexual propagation. In the lowest forms of sexual propagation the correlated organs are found in one and the same individual; one such hermaphrodite represents the whole species, while in higher beings two different individuals are required to represent the species. In this dual representation—as in the contrast between mother and child—it is as though one self were divided in two parts.

Here, again, this duality becomes of importance only when the

[1] There is a detailed account of this course of development in Herbert Spencer's *Psychology* (Part II.), *Sociology* (Part I.), and in his *Data of Ethics*. In Danish literature there is a description of the primitive family and social relations in the work *Samfundslegemets Grundlove* ("The Fundamental Laws of Human Society"), by Claudius Wilkens, Copenhagen, 1881, iv., pp. 3-4.

idea of the object determines the feeling. At the lowest stage the object is not presented as a second self. But even in the animal kingdom we find an approach to this. The courtship of animals is, as Darwin has proved in his celebrated work on sexual selection, by no means so simple a matter as is ordinarily supposed. An individual preference is often met with; beauty and other attractive qualities are taken into account, and a touching fidelity is often shown. Here are already given the motives, which in the human race effect the development of love from an undisciplined sensual desire, in which the individual seeks his own pleasure only, to a tender self-abandonment and to delight in another individual. Looked at purely egoistically, the sexual instinct is a deception; it looks as though it were for the gratification of the individual, and yet only assures the preservation of the race. Schopenhauer, who thought the nature of love exhausted in mere sexual instinct, preached in consequence revolt against it, from indignation at the deception practised by "der Wille zum Leben." This instinct, which in its lowest forms does not require to know the object gratifying it, becomes, however, refined and ennobled, the more it is linked with, and determined by, the image of another independent individual—an image which can excite delight and admiration, and not merely immediate desire. The feeling then acquires the character of sympathy, being determined and conditioned by the feeling of another individual, who is no longer sought out as a means of self-gratification. Instead of entering with a demand and a dictatorial request, the feeling can now be satisfied only by free yielding. "Pleasure he (the powerful) may steal, but love must be a gift" (Schiller).[1] And that the means has become the end may be seen from the fact that resignation is possible, that the desire may be abandoned without the feeling ceasing. While the elementary sexual instinct serves only for the physical maintenance of the race, in ideal (such as maternal) love the race is realized as a spiritual union of individuals.

5. In the instincts named above we have the helping hands which, from the first, lead men to something beyond themselves, and bring them into relations where the educative laws of association may operate. This has already been brought out by Shaftesbury, in opposition to the individualistic account of sympathy. In later times this point of view has been especially

[1] In *Mauprat*, George Sand has described how brute instinct may sustain a metamorphosis into ideal human feeling.

applied by Spencer and Darwin. This doctrine might be called the *general theory of evolution*, since it explains the origin of sympathy through the progressive evolution of the whole race. Once the feeling is linked with an idea, and this with another idea, then (according to *B.* 3) the way is opened for the extension and modification of the feeling. Natural selection constantly operates more or less in the same direction, for strong and deep sympathy strengthens individuals in their struggle for existence, and makes life itself of more value to them. And since the metamorphosis of feeling takes place slowly during the life of the race, the organization inherited by the new individuals may take advantage of its results. The laws of heredity make it possible for the experience of earlier generations to become a capital, with which later generations may begin. Besides heredity, tradition and education operate, for the forms in which earlier generations have given expression to their sympathetic feelings take effect in later generations by sympathetically exciting and educating feeling. The sympathetic instinct unfolds in a Christian otherwise than in an Hellenic atmosphere, amid modern humanitarianism otherwise than in the mixture of asceticism and barbarism of the Middle Ages. The amount that depends on tradition, the amount on heredity, and the amount that, on the basis of the constantly operating instincts, must be acquired and evolved in the course of the individual life, are different in every individual, in either sex, in every race and every age.

Taking the instinct of self-preservation as the original basis, which gets modified by the influence of experiences operating according to the laws of association, then, as already indicated, a ruling feeling of hatred, of envy, and of malice, can be as well constructed as a ruling feeling of sympathy. Spinoza has already called attention to this.[1] If, then, it is asked why psychology does not trace the growth of a disinterested ill-will, but rather dwells upon the growth of disinterested love, the answer must be, first, that the formal laws are the same for both processes of development; all that is required is a change of sign. But the chief reason is, that disinterested malice (malevolent sympathy) does not find the same food in the conditions of life as the contrary feeling. It may arise under certain individual and unhappy circumstances (*cf.* Shakespeare's Richard the Third, and Miss Wade in *Little Dorrit*); but

1 *Eth.*, iii., 32, Schol. "We see, then, that, from that same property of human nature which leads men to be compassionate, it also results that they are envious and ambitious."

it cannot strike root in nature, because it is inimical to life instead of tending to its preservation and promotion. Even though it may find favouring conditions in the conflicting interests of individuals, families, races, and creeds, yet in the long run historical development tends to smooth down and do away with such want of harmony, to conduct the conflicting interests into a common current. This is often finally accomplished by the sympathetic feelings grounded in organic instincts (as in the tale of the rape of the Sabines; of the union between patrician and plebeian; of Romeo and Juliet).

The parallel named, between the psychological development of disinterested love and that of disinterested malice, accounts for the ease with which they sometimes pass into one another. In both, ideal forces are set in motion; lukewarmness and indifference have disappeared. It is merely a question of shunting the train, already on its journey, so as to send it in another direction.

If the question is raised, which of the two forms of sympathy is the more primitive, the sharing of joy or the sharing of sorrow, a distinction must certainly be drawn between sympathy as elementary instinct and as a definite feeling determined by experiences and ideas. The elementary sympathetic instinct (as manifested in the attitude to posterity and to the opposite sex) aims as much at the augmentation of the object's pleasure as at the removal and diminution of its pain; it is directed to the maintenance and promotion of the general existence of the object. On the other hand, it is certainly the case, that compassion at the sight of the suffering of others, more easily arises than satisfaction at the sight of their pleasure. Pain and suffering (both of ourselves and others) make, at any rate at the moment, a stronger impression than pleasure and joy, a circumstance which is perhaps connected with the fact that pain always affords a motive to activity; there is something to be done, something which may perhaps be at once relieved, while the feeling of pleasure is an actual indication that for the present all is as it should be. In the struggle for existence it is the wounded who need help; the others can take care of themselves.

6. Even where the instinct does not find direct gratification, it may still exercise a powerful influence. The movement which it causes in the vital feeling must find an outlet, and if there is none for it in reality, it will be sought in an ideal. To the ascetic and mystic "the heavenly virgin" is the ideal which takes the place of

an earthly woman. Already, Plato, in the *Symposium*, has with genius described Eros as the instinct for the ideal, which may be gratified either by love or by the striving after honour, power, or knowledge. Eros is the great teacher, who persuades men to fix their hearts on something beyond their own selves. As a parallel to this ideal effect of instinct, instances are not wanting of an unpleasant admixture of sensuality and mysticism. In the actual instinct nothing more is implied than that the need of self-devotion is excited; it then becomes a question of how this need is gratified. For this reason the period of transition from childhood to youth is so important and eventful in the life of every human being. The power of obscure but strong feelings leads the individual out beyond the limits of his own personality, sets in movement thought and imagination, and arouses an idealizing impulse. This is a time when everyone has a touch of genius, whatever they may be at other times. Goethe, in his poem *Der Schäfer* ("The Shepherd"), has described with inimitable humour this ideal breaking into flame, too often of brief duration, which "drives men far afield," but gives way to the normal prosaic frame of mind when once the physical need of the instinct has been satisfied.[1]

The most important crisis in the development of a feeling is when its object is removed out of the sphere of sensation and perception into that of ideation and memory. The source of all poetry, all morality, and all religion, springs where the sympathetic feeling no longer has its object immediately present. The immediate union with the object then gives place to a certain distance, and it becomes a question whether the feeling can bridge over this distance, so that "in der Ferne fühlt sich die Macht" (in the distance the power is felt) (Goethe, *Das Blümlein Wunderschön*).

Bain lays great stress on the importance of contact and caresses in all forms of tender feeling, whether love for children and those dependent on us, or friendship or love for the opposite sex. "As anger is consummated, reaches a satisfying term, by knocking some one down, love is completed and satisfied with an embrace. .... In a word, our love pleasures begin and end in sensual contact." The strength of this impulse finds its explanation in the fact that touch is the fundamental sense, that out of which,

[1] Cabanis observes (*Rapports du Physique et du Moral de l'Homme*, v., 10):—"J'ai vu nombre de fois la plus grande fécondité d'idées, la plus brillante imagination, une aptitude singulière à tous les arts, se développer tout à coup chez des filles de cet âge, mais s'éteindre bientôt par degrés, et faire place au bout de quelque temps à la médiocrité d'esprit la plus absolue. La même cause n'a souvent pas moins de puissance chez les jeunes garçons; souvent aussi les heureux effets n'en sont pas plus durables."

according to the evolution hypothesis, the other senses are evolved. Only this fundamental sensation can afford the impulse of love its highest gratification.[1] So much the greater is the pain caused by separation, which prevents the gratification of the deep organic impulse. It is then a question, whether an ideal union is able to take the place of the physical, whether a mental tie can become as strong as a bodily. The transition from physical to ideal union is, as a rule, only effected through resignation. This resignation may, however, completely vanish in the deep and full union with the object, which enters in the place of the immediate and instantaneous union. Where the object of feeling is great and complex, sensuous perception is even impossible. Even with the feeling for a single personality this is so. A personality is never fully given in any single moment, or in any single situation; it is to be had as a whole only in the sum total of its life, of its history. If we love some one, we do indeed picture him in some one definite situation; but this serves only as an example or type (*cf.* the theory of individual ideas, V. *B.* 9). The feeling thus acquires an ideal character so soon as it seeks to embrace the personality in its totality and unity, which is as soon as it gets beyond the stage at which the object is only a means of personal gratification. Since, however, an individual life is never self-contained and complete, but subject always to growth and alteration, the ideal feeling acquires at the same time the character of a faith, a faith that the inner essence of the personality to which we are united by sympathy, will remain self-consistent throughout all changes.

Feeling becomes yet more ideal, when it is directed towards a large, comprehensive whole (the family, the state, humanity), or is concerned with that which from its nature cannot be conceived as limited (God, nature). If a definite idea is here to be associated with the feeling, it can be only by way of symbolism. The history of religion shows how deep in the nature of feeling lies the tendency to symbolize. Hence the impulse to secure the ideal and infinite in definite forms, that feeling may have a point to gather round. On the other hand, we see also how fixed symbols may check and narrow feeling, which is the reason why it constantly breaks them and seeks satisfaction in new forms (the conflict between mysticism and dogmatism).

The development of thought and imagination is always a necessary presupposition of the higher development of sympathy.

[1] *Emotions and Will*, 3rd ed., p. 126.

In order to feel for others, an individual must have had his own experiences, must be acquainted with pleasure and pain, and know what causes these feelings. The range of sympathy is determined therefore by the experiences of the several individuals, nations, and ages. When circumstances lead, as in savage races, to stoicism and disregard of suffering, no fellow-feeling with the pains of others will be developed. Philanthropy presupposes therefore a certain degree of civilization. As stoicism, so too asceticism, may be a check to sympathy, for which reason the principle of universal love to mankind introduced by Christianity could be properly unfolded only after the ascetic tendency of the Church had been repressed. Next to actual experience of pleasure and pain, it is important to be able to preserve them in memory and to apply them to the understanding of the state of others. It is a question of being open to vivid impressions and of possessing sufficient versatility to put ourselves in imagination in the place of others. It has been justly observed, that want of sympathy is often want of imagination and mental quickness, and does not arise from actual want of feeling. It is especially difficult to enter into the feelings of others, when their conditions of life (internal or external) are very different from our own. Difference of language (as between Greeks and barbarians), of colour (as with the negroes),[1] of rank, and of faith have afforded long and stubborn resistance to the growth of sympathy in the human race. Formal logical consistency may be here of great importance. As it can be said with some reason that egoism is unwise, because a man may often work for himself by working for others, so—and certainly with more reason—it may be said that egoism is illogical, when it narrows the sympathies; it makes exceptions which do not accord with the nature of the case. In historical development a relentless logic is at work, leading sympathy to conquer, not only personal egoism, but also the egoism of family and of nation and creed. Impartial knowledge works into the hands of widest sympathy; and both come to a stop only at natural boundaries. Finally, the development of the intellectual life has importance also for the form and the means in and by which sympathy is gratified. If the sympathetic impulse of the moment is indulged, the object of sympathy may be as likely injured as benefited. This momentary emotion must, then, admit of being

[1] It was a moment memorable in the history of the world, when Abraham Lincoln, on his entry into Richmond, took off his hat before a negro who gave him his blessing. A lady who was looking on from a window above turned away with inexpressible horror!

kept in check, to make way for consideration of the enduring happiness of the object, and this is impossible without the capacity for far-sighted and all-round reflection. Sympathy, like egoism, may show a dread of circumscription, a desire to be allowed its course, and so far it may even be said to contain an egoistic "moment."

The relation between the *intellectual* and the *emotional* element in sympathy varies to infinity in the individual cases. Now a reflection in imagination of the nature and fate of the object, now our immediate unity of life and feeling with it, lends the feeling its special character. Poetic sympathy is characterized by the preponderance of the first influence, so that sometimes a pure imaginative satisfaction may be found even in dwelling on and describing adversity and the dark side of life. Writings which give a vivid and correct description of personal and social suffering, may have a certain repelling effect, because of the absence of genuine feeling. The intellectual element of sympathy is at the same time a distancing force; it permits the object of sympathy to recede somewhat, that it may be the more fully apprehended. It is therefore of importance only where the substratum of feeling is strong and deep. The emotional element lies deeper than the intellectual; the real importance of the latter is in its refining, enlarging, and exalting effect.

7. We return to the question of the possibility of disinterested sympathy. From what precedes, it is evident that we may very well apply the term "interest" to sympathy without necessarily stigmatizing it as egoism. The race can as little be separated from the individual, as the individual from the race. In the instincts which lie at the bottom of maternal feeling and of the feeling of love, what is marvellous is just this impossibility of drawing a line between what the race desires and what the individual. And however ideal a character sympathy may acquire, however exalted and comprehensive that in which a man finds pleasure may be, it is just as much a part of his self, of his consciousness, as he is a part of it. The pleasure and pain which he feels in it are his own pleasure and pain; how else could he feel them? But in "disinterested love" he does not feel them as his own in the sense that absorption in the object is only a means of greater personal enjoyment. If not "one who wishes to annihilate himself," a "disinterested person" can only mean one who immediately shares in, and rests in, the pleasure and the pain of others, with-

out demanding for himself more than the power of being thus inspired.

It is impossible to love anything or anybody without experiencing thereby joy and satisfaction. A special pleasure is associated with every strong stir of feeling, whatever the nature of the feeling. Even in sorrow there is, together with the bitterness, a depth and vividness of mood, a strong stirring of the mental powers, which has its attraction and its charm. It is as the opening of all the floodgates. This is the pleasure or gratification in weeping and mourning, of which even Homer speaks. Strong emotion introduces, moreover, a series of organic reflexes, and with their discharge is combined a certain satisfaction. In mental and bodily exaltation is thus to be sought the ground of the attractiveness which lies in sorrow.[1] What may in this way take place in sorrow, is found more or less in all other feelings. Here lies undoubtedly the germ of an egoistic turn even to the sympathetic feelings. There may be an hysterical desire to set feeling in motion. The feeling is enjoyed, being made the object of reflection. But here there is more than the immediate feeling; the idea of self as possessing the feeling comes into effect. This reflectiveness of feeling is the peculiarity of *sentimentality*, which is consequently mainly a modern phenomenon (though it may be traced already in Euripides and in the Alexandrian epoch). The egoistic element in sentimentality is the coquetting which the individual—instead of being quite taken up with the feeling—carries on with himself as the subject of the feeling. It is connected with this instinctive or conscious satisfaction in the stir of feeling, that sympathetic feeling is so often thoughtless, and consequently satisfied without being of real service to the object of sympathy. The mark of unselfish sympathy in this as in other respects is the possibility of resignation. Pure and strong sympathy must be able even to deny itself.

Sympathy may be subjected to yet another test. Even if we are quite absorbed in our feeling for an object, we may still retain the wish that it should be we ourselves who work and live for it. If now circumstances arise in which our service is a check on the development of the object's nature and worth, or in which others can work for it better and more efficaciously, it becomes a question whether

[1] This explanation, given by W. Hamilton and Bouillier, seems to me the most probable (*Cf.* Bouillier, *Du Plaisir et de la Douleur*, chap. vii.). It is more natural than that suggested by Spencer (*Princ. of Psychol.*, ii., p. 590, *seq.*), according to which the desire to abandon oneself to sorrow would spring from a feeling of suffering undeservedly, sorrow thus, through an effect of contrast, calling out a lively consciousness of real merit.

our sympathy is strong enough to make us draw back, or to let us feel contented that it is not we who are charged with the care of the beloved object.

Such resignation is possible, and affords the finest proof of pureness of sympathy. So far, Molinos and Fénelon in a theological, and Spinoza in a philosophical connection, were perfectly right to present a love free from all thought of self, independent of all reward or punishment, as the highest. The Catholic Church condemned this doctrine, principally indeed that the educative media contained in the thought of rewards and punishment should not be lost. Psychology, however, cannot admit that disinterested love is a chimera ; it is chimerical only when carried so far as to require that life and the stir of feeling shall be lost in an absolutely simple, quiescent state. Such a state, as already frequently observed, would mean the cessation of conscious life.

8. With the higher forms of sympathy is connected *the ethical feeling*. In disinterested sympathy the feeling of pleasure or pain is immediately determined by the recognition of an existence other than that of the individual himself. Instead of seeming the centre of existence, the individual now feels himself one among many. He now judges even his volitions and actions not only by the pleasure or pain they afford him, but also by the advance or retrogression they bring to the object of sympathy. When sympathy leads to such a *valuation*, it becomes an ethical feeling. This appears in its fully developed form when sympathy embraces all creatures that feel and suffer, and when consequently the value is decided by consideration of the greatest possible benefit to the greatest possible number. The ethical feeling has then the character of a feeling of justice, understanding by justice a combination of sympathy and wisdom ("*caritas sapientis*," to use Leibniz's expression). The notion of justice involves two things ; an impulse to give, and an impulse to give according to the true needs of each claimant. There is thus, besides the intellectual "moment" that is found in all higher forms of sympathy (*cf.* 6), a new intellectual "moment" in ethical feeling, by which the right division and direction of sympathy are conditioned. The ethical feeling implies the idea of a connected whole of conscious beings, each of whom has his own special centre of life, and each of whom consequently has a claim to a special form and direction of sympathy. The view being thus enlarged, the individual feels himself only a single member of a great kingdom evolved in the course

of ages. And that to which the impulse of self-preservation and the impulse of momentary sympathy alike impel him, is ultimately controlled by the impulse to work for the advancement of this kingdom.

When this impulse comes into more or less strong opposition to the egoistic or the narrower sympathetic feeling, it is felt, if it still succeeds in taking effect, as a law which requires the individual and limited to be subordinated to the universal and comprehensive. The ethical feeling resulting from this is the *feeling of duty*, which comprises always an element of resignation, though it does not necessarily, as Kant supposed, contain a feeling of pain,—at the suppression of the lower sensual desires of our nature before the majesty of the ethical law. There may be a relation, even an opposition, between a higher and a lower in us, without any actual feeling of pain arising from it. The feeling of the truth and majesty of the ideal can so excite our activity, that the hindrances produce only the more definite feeling of our powers. Of course, it is not always so. The hindrances may be so strong that the most painful opposition and contradiction arises in the mind. Feeling stands then against feeling, and the one feeling pronounces judgment on the other. In the opposition between the ideal recognized and the imperfect realization of the will, is manifested the ethical feeling of *repentance*, in which the individual confronts as a judge his own existence and his own actions. Very often repentance is the first form of the feeling of duty, appears as the birth-pangs of the ethical character. As in the evolution of cognition a natural sanguineness is manifested, leading to rash expectations and conclusions, and consequently to disappointments, so in the province of feeling a blind desire may sweep men along, and a corrective have to be given afterwards by pain. Even the Greeks were keenly alive to the way in which repentance succeeds the blinding of passion.[1] The further development of the ethical feeling makes it possible to anticipate repentance (ethical disappointment), reflection coming into force already with possible action, not merely with that already executed. In *conscience* are asserted both the corrective power of the ideal as regards the past, and the capacity of subjecting future action to an ideal test. This is the ethical memory. In it the experiences of the past fuse with all the teaching of far-sighted reflection, into one collective power, which can take expression with the immediateness and strength of the

[1] *Cf.* The Allegory in the 9th book of the *Iliad*, v. 502—507.

instinct or of the impulse. Conscience is the most individual and most concrete form of the ethical feeling.

All repentance does not come under the head of ethical feeling. It has been observed, in passing, that repentance may be felt even from the standpoint of mere self-preservation. This is the case when we have acted against our otherwise dominant selfish interest. Repentance acquires an ethical character only when we feel ourselves in conflict with the requisitions of sympathy; and the deeper and more closely we apprehend the ethical law, the more we feel ourselves bound to it in our innermost nature, the more powerfully and penetratingly does repentance work in us.

The ethical feeling passes through a whole scale of forms of development. Looked at historically, it does not find full explanation either in the instinct of self-preservation, or in sympathy, or in the influence of the intellect upon feeling. It has developed under the protection of educative powers, authorities. These powers are educative partly with intention, and partly without it. They have often pursued their own ends and yet contributed to the development of the ethical feeling, moulding human nature by rewards and punishment, checking some feelings and cherishing others. At the lowest stage authority makes its appearance as an overwhelming physical power; it here instils fear and trembling—that is, purely egoistic feelings. At higher stages, on the other hand, where authority appears as a power protecting and promoting life, fear is mingled with sympathy and admiration, and passes into *reverence*. From this it is but one step to the true ethical feeling, which presupposes a conviction independent of external authority.[1]

The *religious* feeling is, historically and psychologically, closely connected with the ethical.—Even it bears at the lowest stage the character of fear. That fear first created gods, is borne out by the fact, about which all anthropologists appear to be agreed, that evil beings were worshipped before good ones. Belief in gods and belief in immortality are at the lowest stage one, for the gods believed in are the spirits of the dead, and those spirits only the object of worship, which are thought capable of doing harm. Religious veneration is here a simple recognition of power. A higher stage is reached where the extraordinary, inconceivable and wonderful awakes religious feeling; this acquires then the character of admiration and of *reverence*, and begins to be of a disin-

[1] A more detailed examination of the ethical feeling and its development is given in my work, *Die Grundlage der Humanen Ethik* ("The Basis of Humane Ethics"), Bonn, 1880.

terested nature.—The feeling acquires real ethical significance only, when the great powers, on whom man feels himself dependent, are presented to him as the upholders of ethical aims and excellence. This stage is reached in the religions of higher races. The religious feeling has a constant source, which no intellectual progress can affect, in the great question as to the connection of ethical endeavour with natural evolution in general, and its importance for this. It can drive out all egoistic and personal stirring of fear and hope, under the influence partly of insight into the settled, regular order of nature, partly of the requisitions of ideal ethics. But there always remains the question of the relation between the ethical ideals and the actual reality. The fact that everything which we admire as true, beautiful, and good, has been evolved under natural conditions gives a religious character even to the idea of nature. It contains the motive of the idea of an ethical order of the universe, in consequence of which the innermost essence of reality, the innermost force of natural evolution, cannot be foreign to that which works out in human ideals. The religious feeling may be called a cosmic vital feeling; as in the organic vital feeling (VI. *A.* 3*a*) we have the fundamental mood which is excited in us by the course of the organic functions, so the religious feeling expresses the determination of our life of feeling by the course of natural evolution. Since, however, in actual experience the ideal and virtuous appears always as a struggling power, the religious feeling acquires a character of faith and longing, and that idea (of an ethical order)—looked at theoretically—appears as the final hypothesis or final postulate, of the validity of which no other indication can be found than just the ideal worth itself, whose basis in reality is postulated. The form in which the idea is expressed, —the speculations, symbols, and dogmas, to which it leads—with these psychology is not concerned. Psychology has only to show how the religious feeling, like the ethical and other feelings, is determined in its development partly by intellectual influence, partly by the opposition between egoism and sympathy.

The relation between the ethical and religious feelings is indicated by this, that in the former we feel a spurring on of our power of action, in the latter we feel our dependence. If religion and ethics come into disagreement, the passive and the active poles of our nature are opposed. This disagreement may arise in the consciousness of the single individual, as also in the whole race, the feeling of some individuals leading more in the ethical,

that of others more in the religious direction. A definite and absolute separation of passivity and activity, of dependence and active force, is, however, as little possible in the province of feeling as in that of cognition. In receptivity we are always active, in activity always receptive. Even the forces which we exert in the strongest effort of our will, we feel as something given to us. We feel that a sustenance is bestowed upon us, without which we can do nothing, and that all our activity serves in reality only to promote and unfold that which is built up in us by quiet and unconscious growth. The ethical feeling is religious through the "moment" of resignation and reverence which is inseparable from it, and the religious feeling is ethical when it becomes more than egoistic superstition and sentimental enthusiasm. Kant and Fichte did great service in pointing out this close connection. In so doing they refined and ennobled the religious as well as the ethical feeling, and opened up the way to their more perfect harmony.

9. The disinterested feelings presuppose that ideation and imagination are sufficiently developed for the object of feeling to be retained as something that has its independent value. Only in this way can unselfish love, ethical and religious feeling arise. But even apart from their object and content, idea and imagination are of importance for feeling. The special activity of ideation and of imagination may become a source of special feelings.

Cognition is from the first in the service of instinct and impulse. The thoughts are spies of the instinct of self-preservation. Knowledge is valued as a means to power. At this stage there arises no properly *intellectual feeling*. Even where what is sought is not external power or advantage, but mental freedom and independence, the feeling excited by the activity of cognition is not purely intellectual. The intellectual feeling arises only when the relation among the ideas becomes the determining factor, quite apart from the internal or external consequences which cognition has for us. The presupposition is that the struggle for existence is not too hard and peremptory in its demands. Further, so great a multitude of ideas must have been formed that they can arrange themselves primarily according to their own laws, without immediate intervention of feelings and impulses. There then arises joy in agreement, sequence, and connection, and a feeling of pain at discord, contradiction, and lack of connection, and this pleasure or pain is felt not merely because our standard of truth is maintained or disregarded, but because in

harmony or discord itself there is something immediately satisfying or painful. Under this head comes also the delight in new facts and discoveries. Even if these upset opinions that previously held good and so excite disquiet and doubt, they yet open up a wider vista and point to a connection larger than any hitherto suspected.

As there are musical and poetical natures, so are there also intellectual natures. To these latter self-contradiction, confusion, and want of connection are just as painful as false notes and wretched verses to the former.

The æsthetic feeling is in some of its forms related to the intellectual. Pleasure in symmetry and rhythm, generally in the form of phenomena, finds its explanation in the ease and clearness with which the percepts arrange themselves. The cognitive faculties operate here without inhibitive contradiction, command their material as in play. The higher sensations (colours and sounds) excite, as has been seen, moods which are differentiated from the general vital feeling. This is still more the case with combinations and groups of colours and sounds.

The feeling for beauty comes into play even in the animal kingdom, for colours, sounds, scent, and rhythmical movement are employed as means of allurement in courtship. Even in man the feeling of love excites the imagination to a greater freedom and boldness, and opens the eyes to colours and forms. At this stage beauty is only a means, as truth is so long as the cognition works only in the service of the instinct of self-preservation. But through the psychological process already described, that which was originally only an opening for the instinct may become an independent end. This æsthetic development goes in some measure hand in hand with the general development of sympathy. The two support one another; the power of unselfish devotion is common to both.

In the pleasure of self-adornment (with feathers, pearls, bits of bone, or by tattooing), there is exhibited in even the lowest human races an æsthetic feeling. The next step is delight in weapons and other implements, apart from their use. These are fancifully worked and ornamented with pictures. Hence the very instruments for carrying on the struggle for existence become sources of pleasure. And as with the instruments, so with their employment. When imperative necessity has been satisfied and the exertion recovered from, an impulse arises to movement for its own sake. The wild animal plays, if it is not troubled by hunger,

fatigue or danger. The savage plays at warfare, and finds an outlet for his recovered energies in violent movements. In play, which arose as a means of employing the "superabundance of force," Schiller (*Uber die Æsthetische Erziehung des Menschen*, letter 27) saw the germ of all art, a thought which Herbert Spencer has attempted to work out.

The æsthetic feeling has thus grown out of the instincts which lead to the preservation of the individual and of the race. It presupposes a superfluity of energy, which is not needed in the struggle for existence, and may consequently be disposed of in other ways. But this gives merely the material. The special way in which it is employed is dependent upon the intellectual development. If excitations are to produce an æsthetic effect, there must be a certain articulateness of sense organ, so that fine gradations may be apprehended instead of all sensations being absorbed in the general vital feeling. It must be possible to have free play of colours, forms, sounds, and movements. The direct excitation is not, however, enough. To produce an æsthetic effect, it must not only make itself felt in its strength, kind and form, but its effect must also be able to branch out in consciousness, inciting a wealth of ideas and moods, clear or obscure. In an æsthetic effect, therefore, a distinction may be made between the immediate element acting directly, and the associations excited.[1] In music the direct factor prevails, in poetry the associative; the plastic and pictorial arts stand in this respect between the two. The feelings excited by sound and rhythm, by the rise and fall, the strife and harmony, of sounds, have a vague and general character, and do not necessarily arouse definite ideas. The strong influence of music on feeling depends upon this very freedom and depth of mood, which results from the fact that the whole audible expression of feeling is recalled without the definite occasion or object which in every individual case excites it. This is why musical compositions admit of such different interpretations; to one and the same direct element very many and varied associative elements may correspond. The pictorial and plastic arts make an approach to music, the more they take effect by play of colours and harmony of form. But here the definite subject, the individual shapes, to be represented, bring definite requisitions. Their forms must be recognisable and their situations

[1] Fechner, *Vorschule der Æsthetik* ("Preliminary Studies in Æsthetics"), Leipzic, 1876, chs. 9—13.

intelligible. So that here combinations of ideas and historical memories are necessary to true immediate apprehension. Poetry, finally, operates chiefly through the ideas and feelings excited; the direct factor is a means only. It gives what music may not give—the definite feeling with its full content of thought and of imagination; and it gives what the pictorial and plastic arts cannot give—the historical development of characters and actions. In music the sensations, in the plastic arts the percepts, in poetry the free ideas are the forms of cognition which essentially determine the character of the feeling. In all its various forms art affords an opportunity of exercising and utilizing powers which were originally asserted in the struggle for existence. There remains consequently the closest interaction between art and real life; the ideal and the practical activity of the mental powers pass one into the other, mutually prepare for one another. Art grows out of the natural exercise of the powers, and in its turn modifies these. With this relation the ethical import of art is closely connected; for the powers exercised in artistic play are, if not in the same individual yet in the race, ever utilized afresh in the ever-continued struggle for existence.

It accords very well with the theory of the origin of art out of the struggle for existence, that the sense for artistic beauty precedes the sense for natural beauty. Art is closer to man than nature; the one is his own work which he cannot disclaim, while the other may for a long time appear to him a foreign, inimical, or indifferent power. Children and savages have as a rule no sense for the beauty of nature. All that is connected with man and his achievements affords interest, but nature interests only so far as it is serviceable to human ends. From the primitive, practical standpoint a beautiful country is the same as a fruitful one, fruitful, that is, in corn and grass. Peasants marvel at the pleasure taken by tourists in visiting waste heaths, sandy downs, and mountains. A distinguished American traveller said to an Englishman: "Your country is very beautiful; in many parts one can travel for miles without seeing a single tree not enclosed." The feeling for what is wild, sublime, and romantic in nature has arisen through effect of contrast: it was inevitable that the progress of civilization and the increasing contrast between town and country should arouse a longing for free and undisturbed nature, especially where it is bold and reckless. This sense and this longing are especially found, therefore, in periods of hyper-refinement (the close of

antiquity, the 18th century). It presupposes, however, not only weariness of town life and civilized society, but also a rich life of thought and feeling, which finds in the character of the landscape, in its shades of light and colour and form, a mood in harmony with its own. Rousseau was the first to really arouse the feeling for nature in the great mass of people, especially for wild undisturbed nature, and this is closely connected with his energetic defence of the independence and importance of the life of feeling generally. He discovered the mountain landscape, which had previously excited in the minds of most men only horror and dread. He taught us to turn our backs on human life and to listen to the language of nature. Delight in nature appears as at once the highest stage of development of the æsthetic feeling and one of the best examples of disinterested sympathy.[1]

Two special æsthetic feelings, the *sense of the sublime* and *the sense of the ludicrous*, will be presently treated of more closely, since they will serve as good examples to illustrate the general psychological laws of the life of feeling. This work aims at no description and classification of all feelings, but at an inquiry into the general psychology of feeling. If an account of the individual feelings is desired, it is to be found in Bain's *Emotions and Will*, in Nahlowksy's *Gefühlsleben* ("Life of Feeling"), in A. Horwicz's *Psychologische Analysen* ("Psychological Analyses"), and in Sibbern's *Psykologisk Patologi* ("Psychological Pathology").

D.—The Physiology and the Biology of Feeling.

1. If it is true that we can distinguish between cognition and feeling only by means of abstraction, and that every concrete state of consciousness is composed both of cognitive elements and of feeling elements, there is no reason to expect cognition and feeling to be linked with the activity of different cerebral organs. The case was necessarily different as long as the procedure was from the notion of different parts or faculties of the mind. Thus Plato

[1] *Cf.* as to the historical development of the sense for nature: Friedländer, *Die Entwickelung des Gefühls für das Romantische in der Natur im Gegensatz zum Antiken Naturgefühl* ("The Development of the Feeling for the Romantic in Nature as Contrasted with the Feeling for Nature of the Ancients"). In 2nd vol. of his *Sittengeschichte Roms* ("History of Roman Customs"). A Biese, *Die Entwickelung des Naturgefühls bei den Griechen und Römern* ("The Development of the Feeling for Nature among the Greeks and Romans"), Kiel, 1882—1884.

placed thought in the head, the feeling of courage and honour in the breast, and the sensuous impulses in the lower part of the body. Aristotle attributed all feeling of pleasure and pain (as also all sensation) to the heart, while the activity of pure reason was, in his view, united to no corporeal function. In later times Descartes and his disciples (Willis and Malebranche) placed feeling, together with all other phenomena of consciousness, in the brain, and in this, as in so many other points, anticipated modern physiology. The ancient theory of the opposition between brain and heart, as running parallel with the opposition between understanding and feeling, was not, however, so easy to suppress. It was grounded in what seems to be the teaching of immediate experience. Every violent movement of feeling is accompanied by sensations in the chest and lower part of the body, the heart beats louder, breathing stops or is accelerated, the digestion is affected; in short, emotion strongly interferes with the vegetative functions. Even at the present day Bichat says: "Everything seems to prove that the organic life is the goal at which the passions end, and the centre from which they start." In his opinion the brain is the seat of cognition, and "is never affected by the passions, whose sole seat is in the viscera" (namely, at one time the liver, at another the lungs, the heart, the spleen, or the stomach).[1] Charles Bell and Gall appear to have been the first in the present century to give the brain as the seat of feeling as well as of the understanding and the other phenomena of consciousness. Gall's notion that the different parts of the brain could be exhibited as organs of different special feelings (self-love, reverence, hope, benevolence, etc.) lacked all physiological probability. As has been seen in an earlier chapter (II. 4), it has not yet been possible to prove any localization of higher functions in the cerebrum, and the advocates of the theory of localization (as H. Munk) expressly declare that sensuous perception only, not intelligence (the synthesizing ideational activity), is localized. Since the development of feeling is so closely linked with cognition, there is just as little reason to expect a special localization of it as of cognition. In the different forms of feeling, as in the different forms of cognition, the same cerebral cells may be conceived as acting in conjunction, only in different degrees and under different forms of combination. And as feeling seems to arise and to develop more slowly than cognition, it must be supposed that it is physiologically

[1] *Recherches Physiologiques sur la Vie et la Mort*, Paris, part viii. p. 71.

represented by greater extension of the nerve-process in the brain-substance.

An elementary feeling may, however, arise, even when the higher cerebral organs are wanting. A rat, which has lost its cerebrum, its optic thalami, and corpus striatum, takes alarm when the cry of a cat is imitated, precisely as it does in an uninjured condition. The elementary, instinctive feeling of fear (*cf. A.* 3, *e*), may also, like elementary sensation, arise without function of the cerebrum. This is perhaps also true of certain pathological manifestations of feeling, which do not stand in connection with mental activity,[1] as also of the elementary feeling of pain.

But this much is at any rate correct in the older idea of the connection of feeling with the vegetative organs, that these latter really play an important part in every feeling, even if they are not its physiological seat. Feeling makes greater demands on the nerve centres than cognition, and the consequent tension finds a vent by distributing itself over a larger or smaller number of the remaining parts of the organism. While the preponderance of the cognitive elements announces itself by all possible energy being concentrated in the brain, so that the rest of the organism is kept as quiet and passive as possible, the state determined by feeling has, on the contrary, the tendency to distribute itself. From the brain the effect is transmitted to the heart, which may on violent emotion even quite cease to beat, so that death ensues. Violent and sudden fright, anger, sorrow, or joy, may be in this way deadly. If the effect of joy is identical with that of sorrow or of anger, it is because in all these cases what really takes effect is the surprise, the overwhelming astonishment, which is closely related in its symptoms to dread. If the excitement is less violent, the heart begins after a short pause to beat more quickly than before, and so despatches a more powerful stream of blood to the brain, which in this way feels the reaction of its own movement. In warm-blooded animals this reaction of the heart on the brain is stronger than in cold-blooded, and in higher animals stronger than in lower. In man the reaction is noticeable for a second or two. Not only the heart, but other internal organs also, are affected in consequence of the violent movement of the brain. The violent beating of the heart in trouble and fright is explained by some as due to the sudden contraction of the arteries, which thus cause greater obstruction to

[1] *Cf.* Vulpian, *Physiologie du Système Nerveux*, Paris, 1866, p. 549; where such elementary feelings are ascribed to the *pons Varolii* (*protubérance annulaire*).

the flow of blood, so that the heart must work harder. The sudden turning pale in fright shows, at any rate, that such contraction does take place. In other cases the vascular muscles are expanded, so that a richer stream of blood is despatched (blushing). The emotion may also affect the lachrymal glands (sorrow), the bowels (fear), the liver (anger), the respiratory organs (terror), etc. Emotion may effect further the augmentation or diminution of the excitability of the motor-centres (tetanus, paralysis, St. Vitus's dance), but, conversely, may sometimes lead to recovery.[1] Even on the voluntary muscles emotion acts immediately. The feeling of pleasure is accompanied by tension and firmness of the muscular system, an upright bearing, a frank and free glance; the feeling of pain by a loose and sunken bearing, bent head and downcast eyes. The one opens the mind to the external world, the other shuts it up within itself. The instinctive character of emotion and its close relation to the expressions of the will are here clearly exhibited (*cf.* IV. 7, *d*).

The discharge may thus proceed in different directions. It occurs the more readily in a given direction, the *nearer* the motor-centres of the organ or part of the body concerned lie to the centres which play a part in the rise of the feeling, and the *more frequently* that organ is called into activity.—In the first of these respects, the discovery of the vasomotor centres in the cerebrum p[illegible]oper throws a light on the close connection between emotion and contraction or relaxation of the vascular muscles. It is further connected with this, that the muscles of the eye and face can express emotion even when the rest of the body expresses calm. Very violent emotion may affect the whole body.—In the organs mentioned, the second point is also of importance. The centres of vegetative life situated in the medulla oblongata are in uninterrupted activity so long as life endures. They possess in consequence the highest degree of excitability, and are affected by the slightest changes either in the brain or in the other organs. In a similar way is to be explained the fact that emotion chiefly affects organs which are in a diseased or highly strained condition.[2]

[1] Claude Bernard, "Étude sur la Physiologie du Cœur" (*Revue des Deux Mondes*, 1865; reprinted in *La Science Expérimentale*); Wundt, *Physiol. Psychol.*, ii., p. 330 (3rd ed., ii., p. 506); Ranke, *Physiologie des Menschen*, 3rd ed., p. 339; C. Lange, *Rygmarvens Patologie* ("Pathology of the Spinal Cord"), pp. 255, 391, *seq.*; Darwin, *Expression of Emotions*, *passim*.

[2] Domrich, *Die psychischen Zustände*, Jena, 1849, pp. 212-217; Spencer, *Physiology of Laughter* (*Essays*, vol. i.); Landois, *Physiol. des Menschen*, 2nd ed., p. 773; Freusberg, *Über die Erregung und Hemmung der Thätigkeit der nervösen Zentralorgane* (*Pflüger's Archiv*, 1875), p. 185.

The movement of feeling strengthens itself, since it takes a circular course from the brain to the peripheral organs and back again to the brain. It has sometimes been desired, especially from a spiritualistic standpoint, that the feeling proper should be sharply distinguished from the reaction from the internal organs. This latter "moment" comes, indeed, as a special case, under the head of the general vital feeling, and, as already observed (*A.* 3, *a*), the condition of the vegetative organs may excite a feeling similar in character to that excited by external experiences and mental influences. But, although the two stages in the development of a feeling are separated by a small interval of time, there is no reason, in a psychological connection, for drawing a sharp line between them. They fuse at once, and only the two in conjunction form the feeling in its full character. In a medicinal, didactic, and moral connection, it may on the other hand be useful to keep the two stages apart. In different individuals they appear in different strength. In some the effect upon the internal organs is relatively weak, even with violent emotion; in others inordinately strong.

If the feeling can be very strong and deep, even violent, while the effect upon the internal organs is very weak—and this is especially the case with the higher (intellectual, æsthetic, ethical, and religious) feelings—it is not possible to regard feeling as consisting merely of the sensations which arise in consequence of the effect upon the internal organs. This conception, which would lead back in a measure to Bichat's theory, and which forms the extreme opposite to the spiritualistic conception of feeling, was recently expounded in an interesting paper by William James (*Mind*, April, 1884), and carried to the extreme proposition that we do not cry because we are sad, but are sad because we cry.[1] If, however, feeling is thus conceived as a sort of sensation, the special character of the feeling elements (*cf.* IV. 2, and VI. *A.* 2) as opposed to the other elements of consciousness fails to assert itself.

2. Difficulties even greater than the physiological localization of feeling are presented by the question as to which property of the organic process it is to which the feeling corresponds. Since the nature of the nerve-process is not known, only a general hypothesis

[1] In a very interesting and clever work *Om Sindsbevägelser* ("On Emotions of the Mind"), Copenhagen, 1885, the Danish nerve pathologist, C. Lange, has laid down a theory similar to that of James. The writer attempts to trace back the whole physiology of feeling to the excitations of the vasomotor centre, conceiving all other organic reflexes as dependent on the vasomotor.

can be reached. There is, however, an interest in raising the question, since it throws a light on the importance of feeling in the economy of life.

Aristotle conceived the feeling of pleasure as linked with every natural and normal activity of life, and this conception is still the most general and most probable.[1] In feeling we have the innermost state of the conscious individual as determined by the influences received from without and by the activity exercised by the individual himself. It is but a step to perceive in the contrast between pleasure and pain—the original contrast in the world of feeling—an expression of the contrast between progression and retrogression of the vital process. As a general rule it may be laid down that pleasure indicates increased activity of life, higher and freer employment of energy. The feeling of pleasure is thus attendant on the normal functioning of the several organs, of the brain and the nervous system, as well as of the muscles and the vegetative organs. If, on the contrary, greater demands are made than an organ can satisfy, or if, on the other hand, an organ has not sufficient scope for its energy, then pain is felt. Since all function is connected with the setting free of tension, of the accumulated organic capital, one and the same degree of activity will be associated at different times with pleasure and with pain, according to the energy which stands at our disposal.

A slightly different view has been recently propounded by Fechner. Since pleasure and pain are not only quantitatively, but also qualitatively, different from one another, they must, according to Fechner, correspond to processes which are different, not only in degree, but also in form. He therefore supposes pleasure to depend on the agreement, pain on the want of agreement (incommensurability) of the vibrations of the nerves, with which, in his opinion, conscious life is linked.[2] As has been said, it is impossible to decide this either way. Fechner's theory leads practically to the same results as that founded by Aristotle, for it must be presupposed that the agreement named indicates organic progression, want of agreement retrogression. If discord wholly prevails, life will be dissolved, just as it will be when overpowered by stimuli, when its powers are overstrained or shut off from all activity. Pleasure thus appears in any case as the expression of heightened

[1] In Léon Dumont, *Théorie Scientifique de la Sensibilité*, Paris, 1875, pp. 26-63, a general view of the different theories is to be found.

[2] *Vorschule der Ästhetik* ("Preliminary Studies in Æsthetics"), i., pp. 12, 79; ii., p. 366.

life, pain as the expression of retrogression and as the forerunner of death.

It is, of course, not meant that there is in pleasure and pain an actual reflection or comparison of how far we are advancing or retrogressing. Such reflection is impossible, at any rate, in the simplest forms of feeling. Originally pleasure and pain announce themselves; and only afterwards, under the presupposition of sufficient intellectual development, is it possible to speculate as to their import.

3. The theory referred to is borne out by the fact that excitations which cause dissatisfaction and pain are, as a rule, also injurious. Of pain from blows and wounds, where the organism is directly mutilated, this is self-evident. Similarly as regards fatigue and overpowering sensuous stimuli. Bitter substances have a tendency to decompose the organic tissue; the satisfaction in a sweet taste finds an explanation in the fact that sugar is contained in most of the vegetable constituents of human nutriment.[1]

It might, on the other hand, appear to be a serious argument against the Aristotelian theory, that pleasure does sometimes accompany what is injurious, pain what is useful. But this argument only leads to a more precise statement of the theory. In the feeling of pleasure or pain, only the partial and momentary effect of the excitation or of the activity finds expression. A palatable poison effects momentary advance in one part of our organic nature. Later, when it is diffused in the organism, it unhappily exhibits other properties which threaten life. But this does not make the feeling of pleasure in the taste a deception; a thermometer does not show the degree of warmth of some hours hence, but only of the present moment.[2]

This considerably narrows the general rule that pleasure is a token of progression, pain of retrogression. From Aristippus we are referred to Epicurus; life is no longer to be judged according to the pleasure or pain of the moment, but according to the duration and final victory of pleasure. It must, however, be required of the theory that it shall be able to explain why the pleasure or pain of the moment is no sure criterion. It is not a sufficient answer to say, with Lotze, that purposiveness (teleology) in nature does not necessarily, but only in individual favourable cases, extend to absolutely unaccustomed events, or to pathologically altered circumstances. The question is: What is, then, the reason

[1] Grant Allen, *Physiological Æsthetics*, London, 1877, p. 69, *seq.*
[2] *Cf.* Lotze, *Medizinische Psychologie*, p. 237, *seq.*

that purposiveness does not extend farther? It cannot be from pure caprice. And this naturally leads to the question, why the purposiveness is there at all.

This is one of the points on which the evolution hypothesis throws a clear light, where formerly obscurity reigned.[1] Feeling is not understood, so long as it is kept completely isolated from the will; in the foregoing it was shown also that feeling, instinct, and impulse could not be separated. The feeling of pleasure leads to an endeavour to retain and appropriate that which excites the pleasure; pain leads to an endeavour to remove and to defend ourselves against what has caused it. This rule applies to instinct as well as to conscious will; the difference is only in the nature and the cause of the pleasure and of the pain. If, now, a being were so organized as to feel pleasure in everything injurious to him and pain in everything useful, he would not be able to live. Natural selection already therefore brings about a certain harmony of feeling with the conditions of life. Obviously, however, this harmony is not perfect. To absolutely strange or very rare circumstances the organism cannot adapt itself. Pleasure in what is injurious is thus the sign of an imperfect development, which may perhaps be gradually remedied. Such imperfections arise in the nature of things when the relations of life are suddenly changed, especially when there is a transition to very complex and many-sided relations. Thus it may be said of men, that even yet their life of feeling is not adapted to the problems and demands of social life. Civilization is only some thousands of years old, even where it has existed longest, and it was preceded perhaps by myriads of years in which animal and barbaric impulses prevailed. It is, then, little wonder that pleasure and pain will not serve straight away as safe guides, and even that a general rule the exact contrary to that quoted has been formulated, and pleasure regarded as a danger and a misfortune, and pain as useful. Even the single individual often experiences that pain has a "secretly educating power"; in education pain is regarded as a good, in so far as it affords a timely warning and restraint. In the evolution of the race, similarly, pain serves as a warning voice, though only the ascetic line of thought attributes to it a virtue in itself. As feeling is brought, through the struggle for existence, into a certain harmony with the conditions of life, so the struggle for existence also teaches us not to trust the feeling of the moment, but to seek a higher standard.

[1] *Cf.* Spencer, *Principles of Psychology*, part ii., chap. 9.

The general rule that pleasure indicates the progression, pain the retrogression, of life, is as applicable to the higher ideal feelings as to the lower. In sympathy and in the ethico-religious feelings, the individual feels himself a part of a greater whole, a member of an organism whose pulsations he experiences within himself. He no longer separates his interest from that of the larger organism. What promotes the life of the latter promotes also the life of the individual.[1]

E.—The Validity of the Law of Relativity for the Feelings.

1. If the distinction which we make between cognition and feeling is just, there must be certain laws which apply only to the one species of mental elements and not to the other. It has, indeed, been shown that this is so, for in the province of the feelings nothing is found corresponding to the laws of association of ideas. A feeling may enter into association with one or with several ideas; but there is scarcely a direct association between feelings. On the other hand, both cognition and feeling are elements in every state of consciousness; it is therefore to be expected that there are laws which are common to both species of elements, because they are derived from the general nature of consciousness. This too we find confirmed, the law of relativity proving itself, by its validity also in the province of feeling, to be a fundamental psychological law. It makes its appearance here even more plainly than in the province of cognition.

The law of relativity, which was declared a universal psychological principle by Hobbes (see II. 5), was even earlier propounded with respect to the feelings of pleasure and pain by Cardanus.[2] Somewhat later Spinoza developed the same application in a clear way. As he expresses it, pleasure is felt in progress of perfection or of energy, pain in its retrogression; but perfection in itself does not excite pleasure; for, if man were born perfect, he would feel no pleasure in it. Similarly with imperfection; only one who is acquainted with perfection is troubled by it. This, as will be seen, is Fechner's law applied to feeling.[3] As his precursors in this connection, Fechner

[1] *Cf. Die Grundlage der humanen Ethik* ("The Basis of Humane Ethics,") p. 19, *seq.*

[2] Dumont, *Théorie Scientifique de la Sensibilité*, p. 27, *seq.*

[3] Some of the examples given in V. *A.* 3, might be equally well employed to illustrate the law of relativity in the province of feeling. This is not surprising, as there is a very close connection between sensation and feeling.

himself names Bernouilli and Laplace. These mathematicians taught that the value of a thing could not be determined purely objectively, but varied according to the relation of the thing to the interest of each several individual. The *fortune physique* must be distinguished from the *fortune morale*. In physical fortune, the conditions of life of the individual on whom it is bestowed are left out of sight. A sum of £50 denotes a physical fortune equally great for all. But for the possessor of £50,000, the mental good fortune (that really felt) in this increase is very small as compared with what it is for one who possesses nothing, or who perhaps has debts which are driving him to despair. Psychologically, we have to do only with this "moral fortune"; for fortune to be purely "physical" can mean only that it will excite no real feeling of pleasure.

2. Just as we distinguish between a colour and its different shades, which are partially determined by the relation to other colours, so pleasure and pain present themselves to us as fixed forms, although they are what they are only through contrast to one another. In his *disposition* each individual has a practical regulator, a level above which his feelings rise only in single instants, and below which it is the exception for them to sink. This disposition or fundamental frame of mind, in which we found earlier the basis of the real unity of consciousness (V. *B.* 5), is due partly to inherited tendencies, partly to experiences and circumstances. It is not necessary that it should be absolutely unchangeable throughout the whole life; great transformations in it are possible, but if the continuity is not preserved, if the transition to another disposition is quite sudden and groundless, the individual feels a stranger to himself, having lost his accustomed regulator.

The feeling, then, is only given in its full strength, when it is contrasted with another feeling. That we do not always notice the part which contrast plays in the feelings—a part far greater than in sensations and ideas, because the life of feeling is stamped throughout by the contrast between pleasure and pain—is without doubt to be explained by the fact that we turn as a rule with all our attention to the new feeling, which acquires its strength by contrast with the fading feeling. The vanquished is forgotten in the victor. Precisely because a preceding pain lends greater vitality to present joy, is it easily passed by without a thought;[1] this is also

[1] St. John, xvi., 21: "A woman when she is in travail hath sorrow, because her hour is come: but as soon as she is delivered of the child, she remembereth no more the anguish, for joy that a man is born into the world."

the case when not actual pain, but only a smaller degree of satisfaction, forms the background of the new emotion.

Just as complementary colours not only enhance one another, but also pass easily one into the other, so one feeling often prepares the way for the contrary feeling. The transition from a strong feeling into its opposite is effected more easily than the transition from indifference into a strong feeling. In the first case the source, so to speak, is already opened, and it is merely a question of turning the current into another direction; in the latter case the vital force has first to be set going. Often a feeling can be cultivated only indirectly; thus piety and obedience to authority usually precede the true ethical feeling in its integrity and independence. Even the strong contrasts of feeling (pleasure—pain, love—hate, hope—fear, veneration—contempt) prepare the way for one another. Weariness of the one side of the contrast creates the desire to experience the other, especially at a stage of development where the suggestions of the moment are immediately obeyed, or in a state of strong nervous exaltation (*cf.* the German saying, "*Himmelhoch jauchzend—zum Tode betrübt*," or "Who laughs before breakfast will cry before night.") Similarly in the course of a mental illness, there is often a point at which extreme feelings of unhappiness, delusion and suspicion are suddenly converted into excessive joy at imaginary power and glory.[1] That "extremes meet" is nowhere better exemplified than in the life of feeling, where the sharpest and most important contrasts are indigenous. There are natures which cannot attain to peace of mind until their passion has been expended. To many the voice of conscience becomes audible only in contrast to a strong stirring of wild impulses; the temptation, strange as it sounds, must therefore be very great in order to be overcome. Often conscience awakes only after a crime has been committed, and then leads instantaneously to self-accusation.[2]

The physiological basis of this property of feeling is to be found in the vital conditions of the nervous system. The energy of the nerve-organs is limited; if exhausted by a continuing influence, the organs demand either rest or a different kind of stimulation. Consequently pains are intermittent; even though their cause persists, there comes a point where the capacity for suffering is for the time

[1] Examples given by Ideler, *Biographieen Geisteskranker* ("Biographies of Mental Patients"), Berlin, 1841.

[2] Bischoff, *Merkwürdige Kriminalrechtsfälle* ("Remarkable Cases of Criminal Law") vol. 2, Hanover, 1835, p. 43, *seq.*

exhausted, and then a period of rest begins, during which force is gathered for renewed suffering.[1] Even mental suffering and joy are manifested thus rhythmically; to violent outbursts succeed quieter moods, which again give way to momentary passion. Herbert Spencer has drawn attention to the fact, that expressions of emotion by dancing, poetry and music, bear a rhythmical character.[2]

The feelings of pleasure and pain connected with the most intermittent organic functions are the most violent. The feelings linked with the preservation of the individual and of the race may be in the highest degree violent, because the deep-seated organic conditions on which they depend are subject to a natural rhythm. The functions of the special senses (in particular of sight and of hearing) are carried on more continuously, and are consequently subject to no such great contrasts (*cf. A.* 3*e*).—It must, however, be remembered that a feeling can be very strong without being violent (IV. 7*a*).

As finite beings we have only a limited capacity for pleasure as well as for pain. The profound idea of the ancients as to the envy of the gods has thus a real basis. Happiness leads through its own excess to unhappiness, when it consumes the elasticity of our nature. But against this idea must, by force of the same law of contrast, be set that of the compassion of the gods, since pain also exhausts itself.

This changing play, which enhances the pleasurable feelings, but also threatens their existence, and seems, indeed, capable of dividing mental life into contending forces, has often being regarded as an imperfection, and the human mind has framed in contrast to it the image of an ideal state, in which the perfect feeling of blissfulness is broken by no contrasts or changes. Even Spinoza, who, so long as he speaks as a psychologist, shows so full and correct a comprehension of the law of relativity, describes at the conclusion of his *Ethics* a state of perfection, where all contrast, all change, and all transition are to be done away. But no one has ever been able to give a definite positive content to this ideal state. Such a thought and its influence are psychologically intelligible only through the contrast to the suffering of this present life. So that the fact that it should ever have arisen, is itself a corroboration of the law of relativity.

[1] Ch. Richet, *Recherches Expérimentales et Cliniques sur la Sensibilité*, Paris, 1877, pp. 303-307.

[2] *First Principles*, part ii., chap. 10. *The Rhythm of Motion*, § 36.

3. It has already been observed (VI. *A*. 2 and *B*, 2 *d*) that feeling is slower in its origin than cognition. Only with very strong and sudden stimuli is this temporal difference annulled. But the state which these induce, is characterized by an analyzable merging of cognitive and feeling elements. Simple shocks similar to the elementary sensations, out of which according to an hypothesis already mentioned (V. *A*. 2) all special sensations arise, may be attributed with as much justice to feeling as to cognition. Something similar holds good, at a higher stage, of all *wonder* and *surprise*, of every impression of the new and extraordinary. From its strong contrast to the preceding state or to the remaining conscious content, our own new state of mind plays at least as great a part as the content of the new percept or idea. This, in a psychological connection, is the distinguishing feature of all mental excitement. By means of the fresh current of feeling, the new cognition is presented with extraordinary clearness, and in an especially attractive light. Therefore the ancients taught that wonder is the beginning of all wisdom. But it is the beginning only. For from this introductory phenomenon many roads may be entered upon. Either the feeling element so gains the upper hand that restlessness and enthusiasm make clear appropriation and deep penetration impossible, or it acts as an inspiriting force and leads to comprehensive and persevering work in the service of the new idea.

In some cases wonder turns to fear, disappointment and contempt, or to joy, love and veneration, according to the nature of that which has excited wonder. It therefore appears as an introduction to very different psychological processes, and it was so far with a correct notion at bottom, that Descartes and Malebranche, in their exposition of the feelings, permitted wonder to head the series as presupposition for every one of them. It is, however, more natural to form, with Bain, a special class of feelings, comprising wonder and other "emotions of relativity," in which the "moment" of relativity and of contrast, which takes effect in all our conscious states, absolutely determines, not only the strength and quality of the feeling, but also its nature and content. Of this class are the feelings of novelty or repetition, change or uniformity, liberty as opposed to restraint, health as opposed to illness (the feeling of convalescence), power as opposed to impotence.

4. It is a necessary consequence of the law of relativity, that frequent repetition weakens the freshness and strength of the

feeling. The background against which it stood out originally so vividly and forcibly, becomes of necessity ever less distinct; the light and shade come to be distributed, so that the contrast gradually fails. This process is only one form of the general process of accommodation, which is proper to all life. Under all circumstances, a living creature endeavours to come into harmony with its surroundings. The effect of this upon feeling is, that enthusiasm is often succeeded by indifference or carelessness, and is ultimately remembered as inexplicable. Accommodation, which provides for the execution of functions with a smaller expenditure of energy, has a subduing effect. While this is an economy and consequently a gain, when it turns on practical action, it is a loss when feeling is in question. The element of wonder present in every living feeling, seems to be absolutely lost on repetition.—That there must be repetition is involved in the fact that the experiences of a finite being are always limited; the changes must necessarily form a circle. As previously shown, without repetition of experiences, conscious life would never develop beyond the stage of sensation (*cf.* V. *B.* I. 5. 11; *D.* 3). But not all sides of conscious life seem to be promoted by it.

S. Kierkegaard has taken this physical law as the point from which to draw the line between æsthetic and ethical conduct of life. All excitement and all enthusiasm are æsthetic in character; our attitude is that of enjoyment, when laid hold of by a strong influence. The self lets itself be carried away by the involuntary flood of feeling. But in the course of daily work, under the deadening and subduing influence of repetition, it must be shown whether the feeling possesses any strength beyond that momentary flare up. Consequently for Kierkegaard the possibility of repetition is the fundamental ethical problem.[1]

While Kierkegaard treats the problem in a way which betrays a genius for psychological insight, it is striking to see with what zeal he turns his back on psychology. The problem cannot in his opinion be solved by means of psychology. "Repetition" he says (p. 92), "is something transcendental," by which he must mean that

1 "He who wishes only to hope, is a coward; only to remember, is voluptuous; but he who desires repetition, is a man. . . . When existence has been explored to its depths, it will be seen whether there is courage to understand, and inclination to rejoice in, the fact that life is a repetition."—*Gjentagelsen. Et Forsög i den Experimenterende Psykologi*, ("Repetition. A Study in Experimental Psychology"), by Constantin Constantius. Copenhagen, 1843, p. 5.—The problem of repetition is re-introduced from another side by S. Kierkegaard, in his polemic, namely, against established Christianity as "a present, which has forgotten its origin." See *Indövelse i Kristendom* ("Practice of Christendom"), and the newspaper article *Öjeblikket* ("The Moment").

only an inexplicable act of volition can overcome the difficulty. He has overlooked the fact that there is a psychological law of nature, on which the ethical requisition can be based—even as ethics in general, if it is neither to beat the air nor to make constant appeal to the supernatural, must build upon what is psychologically possible.

It is only, indeed, in so far as feeling is a purely passive state that it can be deadened by repetition and custom. Active movements and dexterities, on the other hand, are perfected by repetition; custom in these becomes practice. And to the active side of our nature belong, not only the power of moving the muscles, but also perception and thought, attention and will. Feeling is deadened by repetition precisely because the movement practised can gradually be executed unconsciously.[1] So far, therefore, a decisive contrast between the conditions for feeling and for ideation would be maintained. Previous inquiries (*B* and *C*) have, however, taught us how the development of cognition is to the advantage of feeling. The purely elementary feelings, *i.e.* those produced by simple, definite sense-stimuli, cannot gain by repetition (any more than the simplest, immediate sensations). The ideal feelings, on the other hand, *i.e.* those linked with and determined by a larger or smaller set of ideas, may not only retain their full strength (though not perhaps their violence), but even gain in force by repetition. The same sum of energy that is freed in the moment of excitement, may be freed later, only, so to speak, divided into several currents, no longer in a state of concentration. Feeling gains by repetition therefore in breadth and depth what it loses in freshness. During accommodation, the object of feeling discloses its nature, is seen from different points of view, while from the other side the various elements in the nature of the individual are brought into interaction with the object. Thus within the main relation there may be a variety of changing relations. Hence the feeling spreads over an ever larger part of life, and may be fed by many more sources than at first. This is the case, *e.g.*, in the relation of people who live together. The inner growth of feeling is often apparent only when the relation is put to the test; it may then sustain a reconversion from the distributed to the concentrated form, in which it will appear that the capital laid out has borne interest.

The question comes to be, how rich and comprehensive is the con-

[1] The difference in the effect of repetition on the intellect and will, on the one hand, and on feeling, on the other, was insisted on by Hume (*Treatise*, ii., 3, 1), and Bichat (*La Vie et la Mort*, pp. 47-56).—Among later writers, Fries (*Neue Kritik der Vernunft* ("New Critique of Reason"), p. 36) treats this question very skilfully.

tent with which feeling is linked. The narrower the self, *i.e.* everything which commands our interest, the more speedily are the possibilities of new and fresh feeling exhausted. In this the sympathetic feelings show their superiority over the egoistic. Comprehensive sympathy, interest directed to great and important objects, retain freshness in spite of the deadening influence of repetition and of rhythm. A feeling of this kind is a resuscitation of the natural sanguineness (V. *B.* 4), which begins by attributing worth and reality to each idea as it emerges, but which easily passes, under the influence partly of repetitions, partly of disappointments, into indifference or discouragement.

A pretty example may be taken from Goethe's *Briefe aus der Schweiz* ("Letters from Switzerland"), to make clear the effect of repetition on feeling.—He is speaking of the sublime impressions on a journey in the Swiss mountains.—"A youth who journeyed with us from Basle observed he had not the same feeling as on the first occasion, and thought the first impressions the best. I was disposed, however, to say: when we have such a sight for the first time, the unaccustomed soul expands, and there is a painful happiness, an excess of delight, which stirs the soul and draws out blissful tears. Through this process the soul becomes greater without knowing it, and is no longer capable of that first sensation. Man thinks he has lost, but he has gained; what he loses in pleasure, he gains in inner growth."

Infallibly, much is lost that cannot be reproduced. The budding feeling is like the first breath of an infant, in which the lungs expand so as never again to be empty; no later breath can, then, be like the first. To this extent repetition is impossible. Pessimism is, however, quite unwarranted in treating this as pure loss; looked at from another side, it is a great gain. It depends upon the view of life taken by each individual from which side he will choose to view the matter.

5. This opposition between the effect of repetition and of accommodation on the passive and on the active sides of feeling, leads us to recall the opposition which the older psychology (especially since Kant's admirable exposition in the *Anthropologie*, § 71) postulated between emotion (*Affekt*) and passion (*Leidenschaft*). By emotion is understood a sudden boiling up of feeling, which for a time overwhelms the mind and prevents the free and natural combination of the cognitive elements. Passion (sentiment, disposition), on the other hand, is the movement of feeling become

second nature, deeply rooted by custom. In passion the impulsive element of feeling is especially prominent, and it stands consequently intermediate between feeling and will. What the emotion, with powerful expansive movement, is in one single instant, the passion is in the depths of the mind as a collected sum of force, which lies ready for employment. But quiet reflection is not therefore excluded from passion; on the contrary, the latter finds its expression in a thought which controls all the ideas. "Emotion," says Kant, "takes effect as a flood which bursts its dam; passion as a stream which wears for itself an ever deepening channel . . . emotion is like a fit of intoxication, which is slept off; passion as a madness, brooding over one idea, which sinks in ever deeper." Often what in emotion was the means, becomes in passion the end. This is connected with the fact that the passion is often only a mechanical repetition or continuation of that which, in the moment of emotion, took possession of the mind with sudden and concentrated power.

Feeling begins as emotion, and passes—if it finds sufficient food—into passion. Anger and sorrow are emotions, revengefulness and melancholy are passions. The deepest and most central current in human nature is the ruling passion, first determined and set going by the inherited disposition, and nourished, developed, and refined by all stir of feeling and by experiences.—Repetition has a different effect upon emotion and upon passion; it weakens the one and feeds the other. This is connected with the fact that passion is of a more active nature, and more closely linked with definite and distinct ideas than is emotion.

As emotion may prepare the way for passion, so may the latter take vent as emotion, although it may also gratify itself in a quiet and duly considered way.—By the way in which it finds satisfaction, passion may excite emotions of a different class. Thus the love of country will in a time of danger arouse the warlike spirit and love of battle. Or in the execution of a murder from cold-blooded self-interest, ferocious instincts may be excited and lead the murderer to ill-treat his victim in a way that is useless for his purpose.[1]

[1] *Cf.* Anselm von Feuerbach, *Aktenmässige Darstellung Merkwürdiger Verbrechen* ("Official Account of Remarkable Crimes"), Giessen, 1828, i., p. 93: "It is, therefore, not to be regarded as a mere lying evasion and poor subterfuge, when murderers tell in their confession that they were mastered by a fury or frenzy, which deprived them of the power of thinking, and carried them away with ungovernable power, so that they did not know at the time what they intended, and were afterwards unconscious of what they had done. . . . . Not everything that occurs in the commission of a crime, can be explained by the chief motive which led to it."

The term passion is used in this connection in a narrower sense than that of ordinary language, where this definite distinction between emotion and passion is not made. At the same time we keep at a distance all moral valuation of the concepts emotion and passion. There are good as well as bad passions or emotions ; but both kinds have the same general psychological features, just as nutritive and poisonous plants may belong to the same family. Everything which is really to have power over us, must manifest itself as emotion or passion. Mere "reason" has no power in actual mental life, where the struggle is always between feelings. The frequent talk of the conflict of reason with the passions is consequently psychologically incorrect. No such conflict can take place directly. A thought can suppress a feeling only by exciting another feeling which is in a position to set aside the first. Among psychologists in modern times, Spinoza and Hume have more particularly insisted on this, while by Kant (in his systematic works), and still more by his followers, it has been overlooked. Greek psychology was even disposed to regard the matter from the exactly opposite side. When passion and reason were said to contend, it was really meant, according to Plato (*Protagoras*), that thought contended with thought ; passion being only a false kind of knowledge which was to be suppressed by the true.

6. The law of relativity explains the constant, definite form of each individual feeling, and shows how one feeling prepares the way and may be of importance for another. But as in the sphere of intellect a shallow conception of the law of relativity leads to the conclusion, that everything is equally true or equally false, so in the sphere of feeling the conclusion has been drawn, that all pleasure is an illusion, because it results only from contrast to pain. It is on this assertion that Schopenhauer has grounded his pessimistic philosophy. At the root of all consciousness there lies, according to his theory, a blind but unruly will or impulse, that clings to life and incites conscious beings to the preservation and farther propagation of their existence. All that lives and feels, desires above all things to live. This "*Wille zum Leben*" is not caused by life being good, by its affording pleasure and joy ; the relation, on the contrary, is such that life is supposed to bring happiness, because of the obscure power inciting us to cling to it.[1] The

[1] Schopenhauer's predecessor, the Italian poet Leopardi, expresses the same thought : "All men will to live ; consequently they must find life beautiful and agreeable ; they will to find it beautiful, and are enraged with the disturber of their peace who would admit it to be otherwise." (*Opuscules et Pensées*, Trans. from the Italian by A. Dapples,

so-called pleasure arises from the gratification of a need; it is the need accompanied by pain which is positive; pleasure, on the other hand, is negative, signifies only the cessation of the need. This is why the best things in life,—health, youth, and freedom,—are not valued while possessed; only when they have vanished is their value apparent.

Schopenhauer's theory stands in absolute contradiction with the biological importance of feeling. If there really existed an inextinguishable desire of this kind, which cools only for a moment, to blaze up again the more violently, it would soon consume itself. Pain shows itself to be everywhere constantly connected with what is injurious to life or threatens its existence. Pain and dissatisfaction cannot, then, be what is fundamental and positive, something which during the struggle for existence is checked and interrupted by our experiences. If we propose to call the tendency to movement, which is present even before the dawning of consciousness, impulse or will, then impulse in this sense cannot in itself bring in dissatisfaction or pain. This can arise only when the impulse encounters a resistance greater than it can overcome. With the normal exercise of the organic functions there goes a fundamental mood of happiness, a feeling of ease and freedom, to which, however, the attention is seldom directed, and which we usually notice only when it is succeeded by, or succeeds, a state of discomfort. Health, youth and liberty are good things, just because they facilitate the full development and employment of our powers. Diseased vital feeling soon cramps all our powers; mental illness usually begins with disturbances and disease in the vital feeling. The importance and positive value of the vital feeling do not depend on its coming itself to the fore, but on what is brought in and conditioned by it.

Schopenhauer's theory applies best to the feelings which are connected with the maintenance of the individual and of the race. It might seem as though the theory would apply best of all to the very earliest period of life; at any rate an unprejudiced observer has come to the conclusion that pain is the prevailing feeling during the first six months of human life, and that during this period the feelings of pleasure in great measure arise through the removal of states of pain, not through the generation of positive

Paris, 1880, p. 114).—The theory that all pleasure rests on the cessation of a need, was partially defended in ancient times by Epicurus, in later times by the Italian writers more especially (Cardanus, Verri), from whom Kant adopted it (*Anthropol.* § 57), without however, drawing the consequences which Schopenhauer afterwards drew.

states of pleasure.[1] But Schopenhauer, on the contrary, distinctly teaches that the feeling of the painfulness of existence is truly aroused only after consciousness is developed. If this were so, it should be expected that the earliest periods would be occupied by a feeling of pleasure, and not preponderatingly by one of pain.

Schopenhauer absolutely disputes the psychological process by which the development of cognition also furthers feeling. He is, indeed so inconsistent as to admit ideal and disinterested feelings (delight in art and science, sympathy, especially compassion); but he cannot explain the difference between these and the feelings associated with purely physical impulses. In his opinion a man, in spite of all his thoughts and ideas, is just as brutish as an animal, has the same aspirations which the animal has; only the latter attains its end far more easily and with less grief and pain.[2] In this respect Schopenhauer takes his stand as a determined opponent of the evolution hypothesis, not wholly without justice as against the optimistic exaggerations of the mighty progress we have made. It cannot be denied that the brute instincts of self-preservation (Schiller's *Hunger and Love*) still in great measure govern life; but this the evolution hypothesis may very well admit, without giving up its main doctrine. It is one question, whether an evolution actually takes place; another, how much has been already accomplished. It is incredible that the evolution, admitted on all sides, of ideas and thoughts should have had no influence on feeling. It is at any rate a considerable advance that the said instincts are now required to justify their existence, because of their connection with more or less ideal and universal ends (of family, of State, etc.).

To suppose that pleasure must always have pain as a background would be to misunderstand the law of relativity. It is most impressive when it follows upon pain; but it may also perfectly well have as background a weaker feeling of pleasure, and this is especially true wherever the instinct of self-preservation does not operate immediately. The struggle for a higher and nobler human existence aims consequently at suppressing the immediate instinct

[1] Preyer, *Die Seele des Kindes* pp. 91, 93. (Eng. Trans. i. pp. 141—143.)

[2] "Ultimately and in reality it is a question only of the same things that the animal desires, and with incomparably smaller expenditure of passion and distress." *Parerga und Paralipomena*, Berlin, 1851, ii., p. 260.—"Animals have the same set of passions as man: joy, sorrow, fear, anger, love, hatred, longing, etc.; the great difference between man and animals is due only to the degree of perfection of intellect." *Ueber den Willen in der Natur* ("On the Will in Nature"), 2nd ed., p. 28.—This is further developed in *Die Welt als Wille und Vorstellung* ("The World as Will and Idea"), vol. ii., ch. 19.

of self-preservation, and at affording as wide an access as possible to those ends which are more than satisfaction of the bare desire of life.

7. It is in itself a meaningless employment of terms to call a pleasure or pain negative. All feeling as such is a real, consequently a positive, state. Even "illusory" or "chimerical" joy is real joy. The feeling that is mainly determined by contrast with another feeling is not on that account less real and positive. Hallucinations of pain are real substantial pains. The hypochondriac feels real discomfort, and is not to be talked out of it. What is meant by such expressions as positive and negative, true and untrue, can in this connection be only the reality or unreality of the object of feeling. The feelings cannot be criticized except by criticizing their causes and their objects.

Just as positive and negative feelings of pleasure have been talked of, so too it has been thought that there is a neutral point, denoting indifference, a point therefore at which neither pleasure nor pain is felt. It is a great question whether there really are such *neutral* states. A purely theoretical treatment might, indeed, lead to the view that, in the line which leads from the highest pleasure to the strongest pain, there must be a central point, equally far from both extremes. But this theoretical centre cannot be the expression of a real conscious state. For if we reach it from the side of pain, it will be felt as pleasure; if from the side of pleasure, as pain—and until an accommodation has been effected, as both. This is a simple consequence of the law of relativity.

Immediate experience is in this respect difficult to interpret, just because the law of relativity causes us to regard certain states as indifferent when we glance back at them in moments of strong excitement. Nevertheless, those psychologists appear to be right who maintain that keen and close observation will always reveal in the apparently neutral states fine oscillations of pleasure or pain. Even with the most abstract lines of thought there are associated weak moods of satisfaction or the reverse. Bain quotes wonder as an example of neutral states or stirrings of feeling (neutral excitements). As has been seen, this is a phenomenon bordering on both cognition and feeling, in which the two kinds of elements often seem in equilibrium. It is, however, on account of the stir and movement of mental powers, to be undoubtedly regarded as pleasure, like all other free and fresh activity. And if, on the other hand, wonder is presented as introducing fear, sorrow, scorn, or anger, it is a feeling

of pain. Wonder need not belong to the powerful feelings, which leave the object in comparison with the emotion quite in the shade; but it is not on that account neutral.

It is perfectly easy to conceive an uninterrupted series of transitions from pleasure to pain, without a neutral point in the series being necessary. It is found by experiment that if, *e.g.* the hand is laid on a body the warmth of which gradually increases, at a certain point weak feelings of pain arise together with the pleasant sensation of warmth; these former gradually increase and ultimately drown the pleasant feeling.[1]

The perpetual background of the life of feeling, the general vital feeling, has under normal conditions the character of pleasure, though we are not as a rule fully conscious of it, since, as already observed, we devote our health, liberty, and youthful strength to activities which excite stronger and more distinct feelings. It is only during times of convalescence, or when for any other reason the attention is especially directed to our state of health, that the feeling of pleasure connected with health comes properly into consciousness.

There lies at the bottom of this notion of neutral states not only an overlooking of weaker degrees of pleasure and pain, but also a confusion of the state of mind in general with the effect of single ideas and experiences. Many impressions and ideas come and go, without exciting a noticeable feeling or obtaining distinct influence on the general state of feeling. But this general state itself is at each moment determined by the predominance either of the feeling of pleasure or of the feeling of pain.

8. As instances of feelings, whose character is determined by the law of relativity, those of the sublime and the ridiculous shall now be more closely treated. The examination of these feelings may serve at once to show the way in which a feeling is developed into higher forms, through the conversion of pain into pleasure, of egoism into sympathy, and the importance for this feeling of the development of cognition.

The *feeling of the sublime* in its simplest forms is related partly to wonder, partly to fear. A thing is sublime, which affords such a wealth of impressions that the ordinary mean of intuition is far overpassed, without the object intuited ceasing to act upon us with gathered force. We attempt to compass it with our intuitive faculties, but cannot succeed or only with difficulty. Such

[1] Horwicz, *Psychologische Analysen*, ii. 2, Magdeburg, 1878, p. 26.

an effect is produced by high and precipitous mountains, by the desert, the expanse of ocean, the starry firmament. Even the idea of infinite time gives the impression of the sublime, as when it is said that every thousand years there comes a bird to whet his beak on a huge mountain, and when the mountain shall by this means be crumbled away, a second of eternity will have passed. Insuperable force makes an impression earlier than immeasurable time and space. The feeling of the sublime is certainly first of all experienced in consequence of the idea of extraordinary and superior human force. The savage has this feeling for a strong warrior, whose force and dexterity throw his own into the shade, just as we feel our existence a mere nothing in comparison with infinite space and infinite time. The sublimity of temporal and spatial extension (what Kant called mathematical sublimity) takes effect, indeed, not only by setting our intuitive faculties into more than usual activity, but also and principally by giving the impression of an immeasurable power, which operates in the huge masses of spatial and temporal particles. As observed in an earlier connection, interest for what is human manifests itself before the feeling for nature (*C.* 9). The sense of superior power, as feeling of the sublime, begins in the human world[1] and spreads from it over nature, the forces of nature being apprehended as more or less analogous to human force. In the raging of the wind and the sea, in the hurrying cloud and the great mountain piles, are manifested the spirits of the dead and the tribal gods.

The feeling produced by superior power is not always disinterested wonder or admiration. In the struggle of all with all, the strong warrior may turn his weapons against those of his own race as well as against the enemy. He defends, indeed, his countrymen, but requires in return their subjection. Of a similar kind is, at the lowest stage, the attitude to the gods. Since evil beings are prayed to and worshipped earlier than good, the feeling given to the divine must bear principally the stamp of fear. Only when the deity appears as essentially a protective and gracious power, does fear pass into reverence (see *C.* 8). Sublimity is found not only in the Jehovah of the Old Testament, who creates the world by His word and gives stern law to His people from the Mount amid thunder and lightning, but also in the teaching of Buddhism and of Christianity of the infinity of the divine pity and love, at the presence of which human sins and sorrows melt away as the mist before the sun.

[1] *Cf.* Grant Allen, *The Origin of the Sublime* (*Mind*, 1878).

The pain which is associated with the feeling of the sublime in its primitive forms, disappears on higher development, partly because the intellectual elements of the feeling become richer and nobler, partly because the object of feeling is embraced with sympathy. As already exhibited, there is in reverence an element of sympathy which distinguishes it from fear. It is therefore scarcely true, as some psychologists hold, that an element of pain is necessarily involved in the feeling of the sublime, whether it is supposed, with Edmund Burke,[1] that fear or terror always makes itself more or less distinctly felt in face of the sublime, or more idealistically, with Kant,[2] that there is a "moment" of pain in the suppression of the lower, sensuous nature, that our supersensuous nature may attain to a clearer effect. The "moment" of pain is lost, when the feeling of the sublime takes a purer and higher form. At the same time the egoistic "moment" contained in fear also vanishes.

The contrast, which is a presupposition of the feeling of the sublime, need, then, be of no painful character. We may even recognize our wretchedness with joy, if our soul is at the same time enlarged and satisfied by some great thing. We sacrifice life, in order to gain life.

Here, as at so many other points of conscious life (*cf.* V. *A.* 5 ; *B.* 8 *d*; *C.* 7–8 ;—VI. *B.* 2 *e*), the successive precedes the simultaneous. The feeling of our wretchedness and the feeling of the grandeur and loftiness of the object, may often for a long while rhythmically alternate, before they merge into the actual sense of the sublime. It is especially at this rather restless stage in the development of feeling, that a "moment" of pain may make itself felt. The painful feeling of the insuperable is peculiar to this stage.

9. While the feeling of the sublime involves a certain mental development, the *feeling of the ridiculous* is possible at the lower stages of consciousness, so soon as definite ideas can make themselves felt. Indeed, even before this stage we find the physiological expression of the feeling ; laughter makes its appearance, even before anything ridiculous can be realized in consciousness.

(*a*) Laughter may arise from purely physical causes, and so need not be an expression of emotion at all. Violent cold may excite not only shivering, but even laughter. The ancients mention a pathological laughter, caused by eating a herb grown in Sardinia

[1] *Philosophical Inquiry into the Origin of our Ideas of the Sublime and Beautiful*, part ii., sect. 1-2.

[2] *Kritik der Urtheilskraft* ("Critique of the Power of Judgment"), § 26.

(hence "sardonic laughter"). Attacks of hysterical convulsions are often accompanied by laughter.[1] Gladiators wounded in the diaphragm died laughing. Ludovicus Vives (*De Anima.* lib. iii.) relates of himself, that on first tasting food after a long fast, he could not refrain from laughter. Under this head belongs the laughter excited by tickling; even a child of eight weeks laughs, when the soles of its feet are tickled.

These phenomena must at once be set down as reflex movements. The only doubt that can be entertained is in respect of that last named, since, according to Preyer, the child laughs only when in a contented mood. Such mood is in itself enough to induce smiles and laughter. Even in the first few days there may be noticed in a contented and sleeping child a slight raising of the corner of the mouth (as contrasted with its depression, which expresses dissatisfaction and is often introductory to crying). Real smiling is not, however, noticeable till the fourth week, in conjunction with beaming eyes and a general indescribable air of satisfaction, together with certain bleating sounds, repeated by jerks, which also express obvious satisfaction. Laughter is merely the continuation of smiling and of these sounds, and like these is originally only the expression of a satisfaction immediately based upon general feeling.[2]

Besides young children, also idiots, who, as Eschricht has said, are young children in the bodies of older children or of adults, express satisfaction by smiles and laughter. Many idiots display a perpetual smile and break frequently into shouts of laughter, especially when food is given them, when they are caressed or hear music. In the majority, this laughter cannot be caused by definite ideas.[3]

Ewald Hecker[4] has attempted to give a physiological explanation of the laughter caused by tickling. Experiments seem to prove that tickling has as a consequence a reflex stimulation of the sympathetic nerves, which shows itself in a rhythmic contraction

[1] Laycock, "On the Reflex Functions of the Brain" (*British and Foreign Medical Review*, 1845, vol. 19, p. 306), mentions a case of reflexive laughter consequent on an epilepsy, brought on by a swelling in the brain. A lady in a hypnotized condition broke into uncontrollable laughter, even during the singing of serious songs, when the bridge of her nose was gently pressed. On cessation of the pressure the laughter at once came to an end, and the countenance resumed its previous expressionless appearance. Preyer, *Die Entdeckung des Hypnotism* ("The Discovery of Hypnotism"), p. 33.

[2] Darwin, *Expression of Emotions*, p. 212, *seq.* Preyer, *Die Seele des Kindes*, pp. 141, 184-186 (Eng Trans. i. pp. 144, 206-208).

[3] *Cf.* Eschricht, *Om Muligheden af at Helbrede Idioter* ("On the Possibility of Restoring Idiots"), Copenhagen, 1854, p. 76.

[4] *Die Physiologie und Psychologie des Lachens und des Komischen* ("The Physiology and Psychology of Laughter and of the Comic"), Berlin, 1873.

of the blood-vessels corresponding to the rhythmic intermittent contact. From this it follows that the rhythmic supply of blood to the brain is likewise rhythmically inhibited, and laughter then appears as a purposive reflex movement, the chest being compressed by the expiration, so that the flow of blood from the brain ceases. The movements of expiration are intermittent and rhythmic, like tickling touches.

The explanation does not, however, embrace all phenomena of laughter, and especially not those in which laughter makes its appearance as an expression of immediate joy and immediate satisfaction. While the jerky breathing, in laughter caused by tickling, is nicely explained by Hecker's theory, it is on the other hand not clear why an immediate feeling of satisfaction, which contains no contrast or rhythm, should be expressed in this convulsive way.—It is besides to be noted, that even in laughter caused by tickling, a central or psychical influence may make itself felt. We do not as a rule laugh if we are prepared for the tickling, and for this reason we are not able to tickle ourselves. Thus there must be something unexpected and sudden in the excitation, and after the first contact has taken place a vague expectation of its continuance (with the same strength) must be excited, an expectation which will be disappointed, since the contact ceases in the next moment, to begin again immediately. It will be seen that in this there is an analogy between laughter as excited by tickling and laughter arising from the idea of something ridiculous.

Laughter has often been regarded as peculiar to man, and so capable of serving as a means of definition of man (*animal risibile*). And if laughter needed the idea of something ridiculous, this would doubtless be correct. But even monkeys smile and laugh, not only when they are tickled or have something especially good to eat, but even on seeing some one they are fond of, or on making friends with their keeper.[1] Moreover, it has been already observed by Ludovicus Vives (*De Anima*, lib. iii.), that that which man expresses by laughter may be expressed by animals in other ways (*e.g.* by wagging the tail).

(*b*) The feeling of pleasure, which is the simplest mental cause of laughter, is from the nature of the case very often, and at a primitive stage almost exclusively, produced by impressions which satisfy the instinct of self-preservation and appeal to the love of self. Life is above all things a struggle for existence.

[1] Darwin, *Expression of Emotions*, pp. 132-135.

Strong and suddenly excited self-esteem easily breaks out in laughter. With idiots of a somewhat higher class than those just mentioned, personal vanity is the most frequent cause of laughter. Here two conditions unite; the sudden, unexpected, and the strong self-esteem. This species of laughter is met with in characteristic forms, principally where a hard and doubtful struggle has been carried on and is suddenly crowned with victory, and that which threatened life is now laid powerless and harmless. Hence the exultant shouts to which the Homeric heroes gave voice over the conquered foe. What here finds a vent is not merely a feeling of salvation and deliverance. The image of the opponent in his full strength and formidableness is suddenly succeeded by the image of the same opponent as crushed and checked in his great designs. The impulse to dwell on the nothingness and powerlessness of the vanquished foe as compared with his previous aspect, often takes the form of barbarous insults to the prisoner or the corpse. In more or less brutal forms this species of the feeling of the ridiculous always finds an occasion, so long as even in the human world life is a struggle for existence. Thomas Hobbes therefore grasped an essential aspect, when he explained laughter as a sudden sense of superiority (sudden glory, *Human Nature*, ix. 13). Hobbes, with his doctrine of the state of nature as the struggle of all with all, was naturally led to lay the stress on the feeling of *self-esteem* or of *power*. The one-sidedness of his view lay in his not inquiring whether the sense of power which breaks out in laughter does not sustain essential changes and acquire a different character, according to the nature of that which occasions it. Everywhere, however, where there is conflict in the service of anything cared for, an element of contempt will be found, in the way in which those contending regard the plans and exertions of their opponents. Even in religious poetry and religious polemic we meet with this form of the feeling of the ridiculous. Thus, the second psalm says, "The kings of the earth stand up, and the rulers take counsel together, against the Lord and against his anointed." "Let us break their bonds asunder; and cast away their cords from us." "He that dwelleth in heaven shall laugh them to scorn; the Lord shall have them in derision." And Pascal, in defending himself against the complaints of the Jesuits that in his *Provincial Letters* he had employed ridicule as a weapon, observes that as there are two things to be found in religious truth—a divine beauty and a divine majesty, so there are two things contained in religious error;

ungodliness which makes it terrible, and insolence which makes it ridiculous; and for this reason the saints entertained both hatred and contempt of error, and showed their zeal, not only by forcibly repelling the wickedness of the ungodly, but also by exposing their error to ridicule, following in this the example of God himself (*Lettres écrites à un Provincial*, xi.).

The mere possibility of employing laughter as a weapon, shows that it presupposes power. One man can laugh at another only when the latter is the weaker. Of course it is not always real superiority that finds a vent in this way. Actual distress and perplexity may manifest themselves in smiles and constrained laughter. Indeed, even the consciousness of complete powerlessness, when associated with the resolve not to yield, may find expression in the same way. In Paludan-Müller's [1] *Fall of Lucifer*, Lucifer laughs for the first time, as "with trembling unparalleled, but with unbending defiance" he takes possession of his kingdom.

The fact that nobody likes to be made the object of ridicule, is naturally explained by Hobbes's theory. Few take it as humorously as Socrates, who got up during the representation of the *Clouds*, that the caricature might be compared with the original. The mere fact of anything having a ridiculous side to it, shows that it does not represent absolute power. Precisely for this reason is it on the other hand so tempting, wherever claim is made to authority and absolute recognition, to discover something ridiculous. Everything sublime, all reputation and all dignity have a dangerous foe in ridicule. Laughter is here not so much an expression of superior power, as an expression of deliverance. Even things which would not seem ridiculous under ordinary circumstances, become so in a situation of enforced seriousness. Boys can find amusement in the smallest things during school hours. The bare fact of anything occurring without the consent of the controlling authority suffices to arouse the consciousness of freedom. Authorities that have almost lost their power become the natural objects of the feeling of the ridiculous. The appearance of comic poetry (Aristophanes, Molière, Holberg) always therefore denotes a crisis, at which the consciousness of freedom breaks out.

(*c*) Scorn is not, however, a necessary element of the feeling of the ridiculous. This feeling undergoes an essential change if it has sympathy as its basis. When a close link unites the person who laughs with the object of his laughter, there arises a new and

[1] A Danish poet.

special feeling. This is even the case when we laugh at something which we have ourselves said or done at some earlier time; we expose ourselves to ridicule, although we of course take a different view of our absurd behaviour from that of persons who see it only as outsiders or as antagonists. To laugh at some one with whom we are in sympathy is the same thing as laughing at ourselves. Here there is a duality of feeling; the worth of the object is recognized beneath its littleness. In one and the same instant a double standard is applied. So with laughter at the helplessness and groundless fear of a child or at its *naïveté*. Here there is a hidden bond of union between the person laughing and the object of his laughter. The feeling is deprived of its sting. The feeling of the ridiculous with a substratum of sympathy is what is called *humour*. This may be more than a passing mood. It may be so developed as to become the basis of a view of life which is, indeed, keenly aware of the finiteness, pain, folly and discord of the world, and sharply contrasts this with what is great and important, but which has at the same time in its close fellow-feeling for all living beings and in its firm faith in the forces ruling in nature and in history, overcome all bitterness. The humorous view of life is reconciled to the experience that even what is great and exalted has its limitations, its finite side, and in its ridicule of the small and finite does not forget that this may be the form of a valuable content.

Comic poetry depends not only on the consciousness of freedom, but also on a more or less prominent humorous view of life. Only in this is it different from the squib or satire, in which the egoistic or at any rate the antipathetic "moment" is dominant, a single definite person or thing being dealt with. Only with humour as a basis does art become really free. The power to which the humourist and the comic poet make appeal, is no longer their own self as opposed to another self; rather, by exposing meanness and folly, they defend truth and reason. Here, then, the feeling of power is not egoistic; what is seen in its insignificance is only that which in the object of ridicule contradicts the true and right. This is why, after laughing at a person, we often feel the impulse to declare that he is a good fellow after all.[1]

[1] Rousseau (in the *Lettre à d'Alembert*) reproaches Molière with having in the *Misanthrope* described a worthy person as ridiculous. Lessing with this in view drew attention to the difference between laughing at and ridiculing. (*Hamburgische Dramaturgie*, No. 28-29). Aristotle had already distinguished between satire and comedy. (*Poët.* c. 4).

(*d*) But whether the substratum is sympathetic or antipathetic, everything ridiculous has this in common, that something weak suddenly appears in all its insignificance through the contrast to a superior power. The ridiculous presupposes that for a moment we have let ourselves be duped, puzzled, deceived by an illusion or excited by an expectation, and that the whole affair is all at once changed into a mere nothing.[1] The psychical element in tickling is, as already observed, the expectation, excited but immediately disappointed. A child laughs at every sudden movement, especially if repeated in jerks, as when some one crouches in front of him and then rises up, and repeats this bending and rising. Sudden deliverance from painful and dangerous situations has the same effect. All wit depends on exciting expectation, by propounding a puzzle or asking the solution of a riddle—a puzzle or a solution, the utter absurdity of which will presently be shown. All comic effect is a species of effect of contrast.—In a farce performed some years ago in the *Bouffes Parisiens* there was a character who sat in a corner of the foreground perfectly still, quite unaffected by the action of the piece. From time to time it was asked why he sat there. At last some one proposed to address him, but was prevented by another who said, "Don't speak to him; he is deaf!" This gave an explanation of his passive attitude. But at the same moment the character added with a melancholy countenance, "and dumb." This excited roars of laughter.[2] To the Emperor Charles V. is ascribed the utterance as to his relation to Francis I. of France (with whom he carried on constant wars, especially about the possession of Milan): "My brother Francis and I are quite agreed; we both wish to have Milan." The point of agreement was just the cause of strife; but there is roused an expectation to see the relation between the two Sovereigns in another light; and this expectation is in the next instant disappointed.

The effect of contrast, on which the ridiculous depends, results from the sudden conjunction of two thoughts or two impressions, each of which excites a feeling, and the second of which razes what the first erects. No closer logical basis can be given of the effect thus produced any more than it can be logically explained why two complementary colours call up one another. The ex-

[1] Especial emphasis is laid on this by Kant, *Kritik der Urtheilskraft*, § 53; by Zeising, *Æsthetische Forschungen* ("Æsthetic Inquiries"), (Frankfort, 1855, pp. 282-290), and by Spencer (*Physiology of Laughter*, *Essays*, vol. i.).

[2] If I remember rightly, the piece was a parody of a diplomatic congress to settle the affairs of the Greeks, and Greece was admitted to the congress without being allowed to take a part in the discussion.

planation of the ridiculous frequently given [among Danish writers, especially by S. Kierkegaard in *Uvidenskabelig Efterskrift* ("Unscientific Postscript") p. 394, *seq.*] as depending upon a contradiction, is at once too abstract and too narrow. Even though the conjunction which gives rise to the feeling of the ridiculous may frequently be formulated as a logical contradiction (as in the notion of a man being deaf and dumb and himself announcing that fact), this does not give the real process, which must consist essentially in a contrast of feeling. A certain intellectual development is of course necessary to the apprehension of the ridiculous, just as the power of the eye to apprehend each several colour independently is a presupposition of the effect of contrast in colours. The feeling of the ridiculous is in this respect related to surprise and wonder, which also depend on opposition and contrast (*cf.* 3). That the element of feeling is the essential thing in these phenomena is evident from the fact that they scarcely stand repetition and custom. While cognition (*e.g.* insight into logical contradictions) is practised and strengthened by repetition, feeling becomes deadened (*cf.* 4). The ridiculous does not bear too frequent repetition.

Even when we laugh at a logical contradiction, the (antipathetic or sympathetic) feeling of power plays a part. We have, namely, our own reason as the solid ground from which to pronounce judgment, and we are more or less clearly conscious of it, when we laugh at something absurd. Even if it is not our own victory that we celebrate with laughter, it is at any rate the victory of reason.

(*e*) The feeling of the ridiculous, then, depends, like the feeling of the sublime, on a contrast. But the two feelings stand, besides, in a relation of contrast to one another. They both rest on one and the same fundamental relation, on the relation between greatness and insignificance, looked at from opposite sides. Probably this was what Socrates had in mind, when (towards the end of the feast described by Plato in the *Symposium*) he insisted that it is the business of one and the same person to write tragedy and comedy. This proposition is borne out even by the ancient Greek tragic poets, who wrote satyr plays as well as tragedies; but not till Shakespeare's great example does its full truth appear. It has been strikingly observed that Shakespeare's humour is a part of his faith in the world. For man's real position is this, that he must bring his force to bear on his surroundings, must overcome and crush resistance, while at the same time he must feel his insig-

nificance in face of the great powers of nature and of history. Only he who neither exults nor fears has won complete victory over himself and over the world. To laugh much, as Hobbes has said, is the mark of a small mind which feels his power only in comparison with what is beneath him, while it is the mark of a great mind to help others and to compare himself with the greatest (*Leviathan*, chap. 6). In humour we feel great and small at the same time, and sympathy makes laughter humorous, just as it changes fear into reverence.

F.—The Influence of Feeling on Cognition.

It has been shown in previous sections (*B.* and *C.*) how the connection of ideas is of use to the feelings, and facilitates their development. But deeper than the influence of ideation upon feeling is the influence of feeling upon ideation. The fundamental union of the feeling element with the cognitive element forms always the beginning of the general higher psychological development; but while it is being effected—consequently during the psychological process described in sections *B.* and *C.*—the feeling element is by no means absolutely passive.

1. In treating of the development of feeling by means of cognition, we assumed that nothing enters to hinder the combination of ideas. But the feeling itself may have a hindering effect. If the feeling a is very closely intergrown with the idea a, it will hinder the natural union between a and a_2, a_3 . . . and still more that between a and b,—that is to say, the line of thought is not brought to its full conclusion, because the feeling will not expand beyond its original object. Here operates the inertia of feelings, which in this way becomes a source of many inconsistencies in history and in daily life. The fact that the Greeks could not extend their love of humanity to the barbarians, did not spring from any purely intellectual narrowness (although their limited historical experience had something to do with it), but full ethical consistency was hindered by their patriotism. Christianity threw down these barriers, not by intellectual superiority, but by the deep emotion which it aroused. Within Christendom intolerance has erected new barriers, and hindered the consistent development of the religion of love. The result to which logical thought seems able to lead instantaneously, demands therefore in history a long period;

a revolution in the life of feeling is the product of the experiences of long intervals of time. Consequently, historical criticism can only with caution employ logical contradiction as a criterion; historical development would be impossible if no inconsistencies were possible. Historical inquiry has to try and find the actual feelings which in special cases have helped to retard and hinder. The measure of the intrepidity and energy of the thought may be deduced from these barriers of feeling, in defiance of which the new feelings have made their way.

But the step once taken, feeling is the faithful guardian of what has been acquired. Then its inertia is of use to knowledge. By the fusing of *b* with *a* through *a*, *b* takes deep root in the mind. Knowledge gains in certainty and security, and becomes properly a personal possession only when rooted in this way in feeling, in the immediate state of the individual.

The fact that a certain idea, or set of ideas, has as a basis strong interest or violent emotion, alters its relation to other ideas. It becomes a stronger centre of association than it would otherwise be. In all experiences regard is paid only to that which in some way or other affects the idea supported and strengthened by the interest. All the other elements in the world do not exist for consciousness. Feeling effects here a qualitative choice. All ideas which do not harmonize with the ruling feeling are suppressed, just as forms of life disappear which are unable to adapt themselves to their circumstances. Lotze has especially emphasized the fusing of ideas with the given vital feeling. If the vital feeling is changed, the road to the ideas connected with it is blocked; even if new experiences recall certain of these, the common bond of union still fails. "It is in this way," says Lotze, "that I should attempt to interpret the facts that, when we have recovered from severe illness, we do not remember what we experienced while it lasted, or while, before its outbreak, our general feeling was already changed; that when we are free from the paroxysm of fever, we do not remember sets of ideas which accompany it, and that in particular cases the sets of ideas are carried on when the next paroxysm occurs, owing to the return of the morbid general feeling."[1]

2. Some psychologists have attributed to the several ideas an impulse of self-preservation, through which they endeavour to make themselves felt with a certain strength in consciousness,

[1] *Drei Bücher der Metaphysik*, p. 600 (Eng. trans. by Mr. Bosanquet; vol. ii. p. 315). *Cf.* V. *B.* 7 *c.*

and to suppress one another. The psychology of cognition has proved the unsoundness of this view (V. *B.* 6). The strength of each individual idea depends, in the first place, upon its relation to the rest of the ideas in consciousness. The idea which can find support in the greatest number of experiences and memories, will have the greatest chance of becoming the dominant idea. In the second place, the strength of the idea depends on its relation to feeling. When there is strong tension or deep and enduring interest, even ideas which stand in connection with very wide and oft repeated experiences, may be wholly thrust aside. The fetish-worshipper lays more stress on the few cases in which he can believe that he received help from his sacred stone, than on the many in which such a belief is quite impossible. When we love some one dearly, we do not see the unlovable traits. Such a case is very charmingly and touchingly described by Prevost in his *Manon Lescaut*. Love is blind—but only because it is wonderfully keen-sighted in a single respect.

In biographies of criminals are found numberless examples of the dazzling power of feeling and of passion. The strong desire for an object—whether a kingly crown or a silver watch—overpowers thought, or rather concentrates all thought upon the object and upon the means for obtaining it. Shakespeare has described with masterly hand, in *Macbeth*, how the idea of the criminal action may so dominate the mind, as to appear the only reality:

> "My thought, whose murder yet is but fantastical,
> Shakes so my single state of man, that function
> Is smother'd in surmise; and nothing is
> But what is not." (Act i., Scene 3.)

To this circumstance is to be attributed the often incredibly foolish way in which crimes are committed. "In the greater number of crimes," says the celebrated jurist, Anselm von Feuerbach,[1] "it may be quite distinctly shown how the understanding of the criminal is dazzled, clouded, taken prisoner by desire, limited in the free use of its activity by the witchcraft of the impulses which have become uncontrollable in him, and how this very limitation has been a chief auxiliary in the execution of the act." Such crimes come about by the claims, not only of conscience, but also of prudence being deadened.

[1] *Aktenmässige Darstellung Merkwürdiger Verbrechen* ("Official Account of Remarkable Crimes"), ii., p. 342.—On the psychological problem contained in this is grounded Dostojewski's novel, *Raskolnikow*.

It is impossible to know beforehand whether, in any individual case, the incentive of feeling or the connection of the ideas will be the stronger. It is a question of a trial of strength.—Other circumstances may make the matter yet more complicated. The strongly tempting incentive of feeling may itself, through effect of contrast, produce a vivid idea of the moral law and of the interest we were about to violate; on such effect of contrast rest some of the most impressive manifestations of conscience. In other cases the customary association of ideas may still call out images, which are capable of checking the current of the dominant feeling. When Lady Macbeth is about to lay hands on the old king, she is held back by his likeness to her father:—

"Had he not resembled
My father as he slept, I had done't." (Act ii., Sc. 2.)

A shade more passion—and the law of similarity could not have taken effect.

We are here on the bounds between feeling and will. For the blindness and absolute dominance of passionate feeling seldom arise through the purely involuntary play of feelings and ideas; strange as it sounds, a man can will to delude himself, can for the sake of his passion repress sober reflection. If the indulgence of the passion meets with resistance in the mind, he can set understanding and imagination to work to find grounds for deadening the inner voice. The inner contradiction is unendurable, and must be somehow set aside. The individual is then a sophist to himself. In all passion some such sophistry may be shown. It is the same thing in a milder form, when we hold fast to favourite opinions, give them colour, and act upon them, very often for wholly inadequate reasons.

3. Originally a practical interest sets ideas in motion. The problem for primitive cognition is to discover the means of satisfying the instinct. Only gradually is there evolved the impulse to cognition for the sake of the thing cognized (see V. *D.* 4; VI. *C.* 9). And even the efforts of thought called out by contemplative enthusiasm only emancipate themselves slowly and imperfectly from the control of practical feeling, and hence bear as a rule the impress of teleology. The resignation, with which feeling restrains itself, in order to let the thoughts go their own way and follow their own laws, is the outcome of severe struggles in the history both of the individual and of the whole human race. Man desires to

know nature as it is; but he also desires that his own ends may be ends of nature. All causal laws are to him in the last resort, means to the realization of the highest good. The tendency makes its appearance both at the rudest stage of fetishism, and in the highly developed thought of the idealistic philosophy. Content and value of the feelings and ideas are most different at the different stages; the psychological relation between feeling and cognition remains, however, the same from the lowest up to the highest stage.

The *concept of necessity* is originally practical: thought seeks only the conditions without which the aims of man cannot be realized. Hence thought acquires from the first a negative character in contrast to feeling; feeling is sanguine and impatient, and would prefer to go straight to its aim; only unwillingly does it make way for a consideration as to the means, without which the aim cannot be attained.

The definite, inevitable connection between means and end, bidding defiance to the strongest emotion; the fact that if *a* is desired, *b* must be had also—first brings man into collision with necessity. After the repetition of such experiences, thought at length draws the conclusion that such necessary connection is an essential part of all given reality. It may then become an independent problem, the object of immediate interest, to explain these necessary laws, and, forgetting self, to be absorbed in the great system of phenomena. Then the relation between cause and effect takes the place of the relation between means and end. The history of the sciences shows a progressive passage from teleology to mechanism—under the constant protest and opposition of feeling. Even if science explained the whole universe according to its laws, it would not be able to prevent feeling from postulating, as a basis for this whole system of causes and effects, a highest teleology, beyond our powers of conception. The final questions with which views of life are concerned, the questions of the value and significance of reality and of life, are decided in the last resort according to the dictates of feeling. This is clearly shown in the present day by the great importance obtained by the opposition between the optimistic and pessimistic views of life. In the last resort, our own innermost nature and personal experience of life decide the issue.

4. Just as a landscape looks different according to the light falling on it, so the same things and events seem to us quite different in our different moods. Here principally the vital feeling

with its oscillations plays an important part. Lichtenberg says: 'I have distinctly observed that I have often when lying down a different opinion from what I have when standing; especially if I have eaten little and am tired." The feeling does not at once change with the ideas, but extends to the new ideas, even when these are in no way connected with that which produced the feeling. Hence a feeling is often strange and incomprehensible to ourselves, especially when it owes its origin to internal organic states; but in most cases it exerts its influence upon the new ideational content without our noticing it. If, after the idea *a*, associated with a strong feeling *a*, we have from *any* cause (not merely from association with *a*) the idea *x*, then *a* may also extend to *x*. We owe much to this influence; for by its means an augmentation of mental life at one point may promote many mental activities. Thus, *e.g.* music, wine, and quick bodily movement, may set in movement the activity of thought. Under this head must also be ranged many of the examples in Feilberg's work, *Om Störst Udbytte af Själsevner* ("On the Greatest Utilization of the Mental Faculties"). He emphasizes with justice the way in which new impressions and situations may excite a movement of the whole consciousness, quite apart from their content. "New situations bring the mind into the state called by chemists the *status nascendi*, which substances have at the moment of generation. As chemistry teaches of substances, that in this state they have a special tendency to enter into new combinations, so is it with the mind. The state which is, as it were, wavering, is just set free from some former thing, contains increased chances for the birth of new states (has more possibilities)."—p. 30.

This phenomenon might be called the *expansion of feeling*. All strong feeling struggles for the sole control in the mind, and gives a colour to all mental activities.[1] This expansion is different from the widening of feeling through association of ideas, previously described (VI. *B.* 3). Through expansion, the feeling spreads over all ideas and sensations, even when they stand in no connection whatever with those which were at first associated with the feeling.

[1] This law had already been pointed out by Hume (*Treatise* 1, 3, 8), and plays an important part in his theory of knowledge. More recently Beneke has developed the same law in an interesting way (*Psychologische Skizzen* ("Psychological Sketches"), i., p. 362, *seq.*). —*Cf.* also Spencer, *Princ. of Psych.*, §§ 260-261. A good example may be found in Goethe's *Erster Epistel*, ("The question seems to me serious and important; but it finds me at present in a cheerful mood. . . And to the happy the world seems happy also.")—*Cf.* also Mdme. de Staël's observation (*Corinne*, i., 1): "Quand on souffre, on se persuade aisément que l'on est coupable, et les violents chagrins portent le trouble jusque dans la conscience."

In the one the effect proceeds from the idea, in the other from the feeling itself. The same law, by virtue of which feeling obtains external expression, operates here. There is, so to speak, a mental as well as a bodily mimicry; the one is the influence of feeling upon ideas, the other its effect upon muscular movements. —What follows is a description of certain cases, in which the expansion of feeling operates in conjunction with the inhibitive and selective influence of feeling.

(*a*) The *anticipating and actualizing effect of feeling.* During strong mental tension there is a disposition to take expected impressions as given before they really occur. If, *e.g.*, we impatiently expect a carriage, we think every instant that we hear a rumbling.—Experiments made in respect of physiological time, afford good instances of this. If, *e.g.*, a certain excitation is to be responded to, the attention may be so on the stretch that response is made to a different excitation instead of to the one expected, not by mistake, but because in a state of strong tension any excitation whatsoever leads to the action which is on the point of being made. Or the signal is thought to be heard before it is really given.—A great number of the so-called mesmeric or spiritualistic phenomena may be explained through the strained expectation which the experimenter excites in the persons on whom he operates.[1]—Because the difference between memory images or imaginations and real percepts is one of degree only (V. *B.* 7 *a*; *D.* 1-2), it is easily obliterated when feeling is strongly excited. Feeling thus actualizes the ideas, *i.e.* gives them a mark of reality that does not properly belong to them.—Even in the sphere of thought, feeling may have an anticipating effect, deciding the question from its postulates, instead of going through the tedious and reasoned line of argument. Contemplative zeal sets forth the wished-for unity and harmony in a system of philosophy, and often thinks a result has been thus attained.

(*b*) *The idealizing effect of feeling.* It lies in the nature of feeling not to inquire after distinctions, conditions, and limitations. It is absolute in character and finds vent in superlatives (always, never, only, etc.). Closer determination, the recognition of conditions and limitations, is the business of cognition. When, however, feeling incessantly permeates the thoughts, and is never quite satisfied with their content, it impels them ever farther,

[1] A full inquiry into the influence of "expectant attention" in phenomena of this kind is given in Carpenter's *Mental Physiology*, p. 279, *seq.*, 618, *seq.*

even at length beyond the limits of cognition. This pressure feeling exerts through the concentration already mentioned upon one single thought, which is thus set free from its connection with other thoughts and from its limitation by them. Practical and ethical interests especially act in this way. Feeling leads in consequence to the formation of an ideal world, from which the imperfections and sufferings of the actual world are far removed. The idealizing speculation which springs from this source, has its own importance.

(*c*) *The inciting and animating influence of feeling.* Through its very obscurity and inexplicability, feeling exercises great influence upon cognition. The various stones in the structure of cognition may as a rule be easily pointed out. But feeling has its source in the natural instincts, and we know only a small part of its course. The quiet power of the conditions of life, the effect of which appears only after a long time, is of more significance than the individual experiences, clearly apparent and established. But whatever the way in which feeling has arisen, it desires not only to expand and to dominate everything, but also to be itself *explained* and *justified.* This need of an explanation stands in connection with man's instinct of self-preservation. In pleasure and pain he experiences the action of the world on his vital process; these are signs which he must interpret, and of which he must trace the causes, if his life is to be preserved and advanced. Also at higher stages of development the individual finds his innermost nature expressed by feelings, and seeks in consequence to find their justification. Feeling cannot, however, justify itself; it is not in itself any source of knowledge. So soon as appeal is made to feeling, discussion is at an end. The conflict between views of life must be carried on with clear thoughts. Feeling plays an important part as an agent in starting and helping forward; it inquires and induces inquiry, but does not itself afford any answer.—While, as purely individual and incommunicable, feeling isolates individuals, it also from its need of explanation and justification brings them together. Only in union can they find full explanation. Thus feeling acts as a founder of societies, calls into being communities, factions, schools, and scientific associations.

Examples illustrating the need of feeling for explanation and justification may be taken from the effect of music and from the usual course of mental diseases.

Feeling exercises an attractive power, not only over ideas of the

same kind as that which originally caused it, but also over other ideas which excite similar feelings. By this means the feeling may become a connecting link between ideas of different kinds. When the man born blind, to whom was attempted an explanation of the colour scarlet, exclaimed, "It must be something like the blast of a trumpet," there arose through the description of the sensation of a dazzling and strong colour the related idea of an aggressive sound (*cf.* VI. *A.* 3 *e*). Wundt[1] has called this phenomenon the *analogy of sensations.* By virtue of it music calls up images and ideas from other departments of sense. An analogy of sensations is formed, *e.g.*, through the common element in feelings accompanying free and easy respiration, the breaking forth of light after darkness, and the sound of pure and clear tones after discord and confused noise. The feeling excited by music finds involuntarily—though perhaps chiefly in those who are not specially and technically trained—a more or less clear symbolical expression by means of analogous sensations. Events and experiences of our inner or of external nature serve for the concrete depicting of the general mood.[2] Musicians warn against yielding to such a state of dreaming, lest the specific effect of the music be lost; but it is impossible to avoid it entirely. Music owes its great power over men precisely to the circumstance that the memories it excites are attached by innumerable threads to all the experiences of life, and may branch out on all sides of our being.

According to a view chiefly developed by Guislain, all mental disease consists in the first instance in a pathological disturbance of feeling. Intellectual disturbances, together with the abnormal expressions of the will, now violent, now whimsical, now convulsive, would then be only the consequences of a primary disturbance of the sensibility. "Mental disturbance," says Guislain, "appears to me in most cases an oppression of the sensitive faculties (une douleur du sens affectif)."[3] A *stadium melancholicum* is in most cases the first chapter in the history of insanity. The intelligence is at first unimpaired.[4] But the patient

[1] *Physiol. Psychologie*, i., p. 486 (3rd ed. i. p. 530). *Cf.* Nahlowsky, *Das Gefühlsleben* ("The Life of Feeling"), p. 142, *seq.*

[2] *Cf.* what M. Goldschmidt relates of himself (*Livs Erindringer og Resultater*) ("Memories and Results of Life"), i., p. 46. "As far back as I can remember, singing did not affect me with a desire to join in, but was transformed into pictures."

[3] *Cf.* Griesinger, *Die Pathologie und Therapie der Psychischen Krankheiten* ("The Pathology and Therapeutics of Psychical Diseases"), (and edition, pp. 65, 214). Prichard, *Uber Geisteskrankheiten* ("On Mental Diseases").—See also above, V. *B.* 5.

[4] Thus a patient said of his condition before the actual outbreak of the malady: "I was then most heavy at heart, but clear in the head." (Krafft-Ebing, *Die Melancholie. Eine Klinische Studie*, Erlangen, 1874, p. 57.)

involuntarily searches for the cause of his painful feeling. Only with great self-control can he keep hold of the conviction that the cause lies simply and solely in his own pathological state. He soon frames an explanation for himself. He lays the blame on his surroundings or on other innocent persons (especially such as have something mysterious about them, as the secret police, the free-masons, the Jesuits[1]). He believes himself persecuted, misjudged, molested. Especially when these ideas are favoured by illusions and hallucinations do they establish themselves firmly in the consciousness of the patient.

These false ideas are an attempt to explain the new, changed, and abnormal feelings. The individual is driven by his pathological frame of mind out of the normal harmony with his surroundings; feeling is now determined purely from within, and is no longer the subjective indicator of the position the man holds in the universe. Even in a healthy state, feelings without an objective motive may arise, but they then find an easy corrective; the disease consists precisely in the inability to correct and control them. The altered feeling becomes now the basis of a new conception of the universe, to which the patient yields himself more and more, and in this way feeds his despondency.

Often in the midst of the greatest despondency there may be a sudden change of gloom to light (see *E.* 2). Through a certain instinct of self-preservation the mind finds compensation for what it has lost, in an imaginary world. "Such a frame of mind," says Ideler,[2] of a patient whose madness was caused by an unhappy attachment, "can, when some collectiveness is again possible, take only one of two courses: either the mind will sink into the deepest melancholy, if the certainty of its loss overwhelms it; or if it does not lack the power of resistance, it will constrain itself to a delusion which promises the fulfilment of its most ardent wishes. . . . . Thenceforward the whole endeavour of the patient will be to mould this phantasy ever more in accordance with the heart's desire. . . . . and with sophistical reasoning to set aside all contradictions which it meets with in the real world."

[1] Lichtenberg describes his state of hypochondria as follows: "I regard the whole world as a machine, which exists in order to make me feel my suffering and my illness in every possible way." *Vermischte Schriften* ("Miscellaneous Writings"), i., p. 16.

[2] *Biographieen Geisteskranker*, p. 18.

VII

THE PSYCHOLOGY OF THE WILL

A.—The Originality of the Will

1. As in Greek mythology Eros was made one of the oldest and at the same time one of the youngest of the gods, so in psychology the will may, according to the point of view, be represented as the most primitive or as the most complex and derivative of mental products. If a will is acknowledged only where there is conscious choice between alternatives, then it presupposes a certain development of cognition and feeling, and consequently cannot exist at the lowest stage of consciousness. A choice implies a given content that may be chosen; and this content must grow up and acquire a value in consciousness. This is true, too, of movements, which are a condition of all externally directed action, on which account a germ of will has been with justice attributed even to those movements that take place before consciousness is roused. To understand the nature of the will, it is necessary first to go back to this primitive germ, and to trace the course of its development from unconscious into conscious, though involuntary movement, and from this again into movement consciously selected.

2. The simplest organisms possess the power of setting up movements independently of external stimulus; the source of movement lies within the individual organism. Such an "*automatic*" or "*spontaneous*" movement is of course not causeless. It is in fact brought about by internal changes, setting free accumulated energy. Of this description are the movements the amœba makes incessantly, which seem indeed to be a property of all organic cells, even of those that are elements of higher organisms (as, for

example, the white blood-corpuscles). The amœba derives its name (ἀμοιβή) from its perpetual and internally excited changes of movement, while a constant change of form of this description is thence in its turn called amœbæan movement.[1] The internal changes, which set free potential energy, must in their turn depend on the function of nourishment, which is the fundamental organic process. The spontaneous movement of living creatures is possible only because life itself is an uninterrupted process of taking in and using up certain constituents.

But a further consequence of this is, that spontaneity, the power of self-movement, denotes only momentary—not complete and continued—independence of external influences. Life depends on a definite relation of reciprocity between the organism and its environment, and would soon come to an end if this relation were entirely suspended.—Absolute spontaneity would be a consumption of one's own fat, which could support life only for a brief space.

Spontaneity is only quantitatively different from *irritability*, the power of responding to external stimulation in a special manner, that is to say by a movement differing in strength and possibly in kind from the stimulus. Its independence becomes of value to the organism only through this power, which makes adaptation to circumstances possible. The ultimate explanation of irritability also is to be looked for in organic process, and especially in the great instability of organic matter. Thus there are infinitesimal forces, producing the greatest effects on the retina and in the brain, and occasioning muscular contractions or chemical processes within the organism.[2]

3. In those higher organisms, too, which are endowed with a central nervous system, a distinction between spontaneity and irritability is justified. It does not seem possible to explain all the movements of such organisms as reflex. There may be a discharge of the energy accumulated in the central ganglia without any excitation whatsoever of an afferent nerve. This is true in the highest degree of those centres of respiration and circulation situated in the medulla oblongata. A change in the condition of the

[1] Waldeyer, *Über die Einfachsten Lebensäusserungen der Organismen* (Redebeider Naturforscherversammlung in Hamburg, 1876) ("On the Simplest Manifestations of Life in the Organism," Address before the Natural Science Association at Hamburg, 1876). M. Foster, *Textbook of Physiology*, pp. 2, 74.—Panum, *Nervevävets Fysiologi* ("Physiology of the Nerve-tissue"), pp. 69-72.

[2] Pflüger, *Über die Physiologische Verbrennung in den Lebendigen Organismen* ("On Physiological Combustion in Living Organisms") (*Archiv für Physiologie*, vol. 10, 1875), 311.

blood (through the accumulation of carbonic acid) here takes the place of the external stimulus. The blood has at once both a nourishing and a stimulating effect. The condition of the blood, moreover, may directly affect the higher centres, whence arise automatic or spontaneous ideas (dream-images, hallucinations) and movements.

Bain [1] maintains that the earliest movements are always of this description, and that movement of this sort co-operates in all movement whatever. His view is that the energy accumulated during a process of nourishment seeks discharge and finds it along those motor nerve-tracks which were previously prepared, the organism thus setting itself in motion without waiting for an external stimulus. Bain, whose view is an extension of suggestions made by Joh. Müller, quotes in its support the first movements of the fœtus, awaking from sleep happening without change in external conditions, the strong impulse to movement in young animals and children, the superior vivacity and pleasure in movement of men and animals in the morning and when well nourished, and finally the special energy possessed by men of what may be called a "volitional constitution." Movement, then, precedes sensuous perception, and is at first independent of outer stimuli. It is more intimately and inseparably bound up with our nature than is sensuous perception. Man is capable of extraordinary activity quite independently of what he sees, hears, and thinks; his percepts and thoughts are important in determining the direction of movement, but do not cause it to begin.—As Fichte taught, the most original thing in us is the impulse to action; it is given before the consciousness of the actual world, and cannot be derived from it.

Quite recently Preyer has declared in favour of Bain's view, as follows :—"How, then, are the first movements in the embryo to be accounted for? That they do not result from passive contact, I am convinced from special observations made on the chicken in the egg—which moves, as I found, from the beginning of the fifth day. Movements of the trunk take place first, then also of the extremities and head, . . . without the smallest change in the surroundings and long before reflex activity exists at all. . . . The origin of these remarkable primitive movements of the trunk in unborn animals must lie, then, within themselves and cannot be

[1] *The Senses and the Intellect*, book i., chap. i. *The Emotions and the Will*, ii., chap. i.

attributed to the reaction of the superficial parts on the central. . . . The cerebrum has nothing to do with them, for the same movements take place in brainless abortions and headless embryos. The explanation must be that during the formation of the motor-ganglia cells in the spinal cord, there accumulates a certain quantity of potential energy, which may quite easily be turned into kinetic energy by the current of blood or lymph, or even by the swiftly advancing growth of tissue."[1]

The independence of sense-impressions, which these spontaneous movements indicate, clearly cannot be absolute. Important as is the possibility of setting up those activities of most moment in the preservation of life without waiting for external stimulus, it is equally important on the other hand that there should be the power of accommodation to external relations. Important as it is that from the first the organism should actively confront the external world, it is equally important that its activity should admit of determination by the nature of its surroundings. There may be such accommodation and determination even before consciousness, by means of *reflex movement* (*cf.* II. 4 *b.*). In this, movement is not immediately brought about by the internal state, but by a stimulus from the external world or from a part of the organism;—and so, in a purely mechanical way, more or less purposive movements are set free in response to the stimulus. It is a disputed point how far such "purposive" reflex-movements are accompanied by consciousness; but even if they are accompanied by a faint consciousness (as appears to be the case in the fœtus) they are certainly not the fruit of conscious deliberation. Elementary feelings and sensations may possibly be present, but they are not subjected to any further elaboration. The direct transition from excitation to movement is, indeed, characteristic of reflex movement. Reflex action is just as involuntary as spontaneous movement.

The simplest reflex movement would be one set up by a single excitation. As soon as several excitations occur together, their effect will turn upon the fact of the movements, which they severally tend to bring about, harmonizing or not. If the excitations have a tendency to set up movements not admitting of combination, it becomes a question of which movement is the strongest; this, though somewhat weakened by opposition, will determine the result. A frog, deprived of the cerebrum, croaks if its back is gently stroked; but if its hind leg is at the same time powerfully

[1] *Die Seele des Kindes*, p. 127, *seq.* (Eng. trans. i. p. 201).

stimulated, it does not croak.—The most effective inhibitions to reflex movement come from the cerebrum. In the first years of childhood, while this organ is as yet undeveloped, no reflex movements are inhibited.

4. When the cerebrum has a share in determining movements, there arises a spontaneity of a higher kind. Because of its wealth in cells this organ can both subject the impulses which it receives from without to a thorough elaboration, and initiate active movements independently of the excitation of the moment. With these movements consciousness is undoubtedly present.

In so far as a line can be drawn between reflex movement and *instinct*, it must be by describing instinct as more complex, more active, and more conscious than reflex movement. In instinctive movements we seem to have a combined system of means directed to an end that lies outside the individual's present field of consciousness, and that he may not live to realize. Instead of the momentary discharge which we have in spontaneity and elementary reflex movement, there is the direction of various powers to a more or less distant end. Stimulus is required to set instinct to work, but the action is determined far more by the motor-tendencies implanted in the individual than by the nature of the stimulus. This latter serves only as the opening of a valve. This is why an animal is so easily deceived, as, *e.g.*, when an insect, misled by the smell, lays its eggs on the "carrion plant." The incentive is so strong that the excitation is subjected to no control. In the case of an instinct meeting with obstacles, an *impulse* to carry out the instinctive movement may be excited (*cf.* IV. 4; VI. *B.* 2 *c*).

It is not quite clear whether or no instinct is linked with the cerebrum. Already Flourens showed that the removal of the latter causes the destruction of the feeding and the sexual instincts. Goltz reports of several of his dogs that, after removal of considerable portions of the cerebral cortex, they no longer shrank with disgust from eating dog's-flesh. But, on the other hand, there is very clear evidence of instinct in creatures whose cerebrum is yet undeveloped (as in the feeding instinct of new-born infants). Hence it seems probable that instinctive movements may have their source also in the mesencephalon (the corpora striata and the optic thalami).[1]

Volition proper, on the other hand, is linked with the cerebrum.

[1] Vulpian, *Physiol. du Syst. Nerv.*, p. 692, *seq.*

Volition proper is characterized psychologically by the ideas of the end of the action and the means to its realization, and by a vivid feeling of the worth of that end. The phenomena of volition are thus so closely connected with cognition and feeling that to ascribe to them a separate seat would be to revive the errors of phrenology. On this point the latest inquirers are at one (see II., 4 *d*). Not so, however, with respect to the initiation of movement. If those investigators are right who assume motor-centres in the cerebrum, then the transition from conscious to motor organs takes place here; those centres being necessary media in directing the volition to the motor nerve-tracks.[1] But if those are right who, with Goltz, deny that motor-centres in the cerebrum can be assumed, then that transition does not take place till the tracks connecting the cerebrum and the lower parts of the brain are reached.[2] If for any reason the transition from the will (or rather from the corresponding physiological processes) to the motor nerve-tracks is interrupted, then there is incapacity to carry out what is willed, although the will itself is not wanting. In the slighter cases of aphasia (or better agraphia), which are not accompanied by word-blindness, the patient sees the word before him and endeavours to copy it, but writes it wrongly and is unable, in spite of all his endeavours, to remedy the mistake. Motor-presentations, and with them the possibility of an innervation of the motor-centres, are completely lost (*cf.* above, p. 147, note). Dogs which have been deprived of large portions of the front brain are unable, although they try, to carry out the movements desired.[3]

5. The backward history (Vorgeschichte) of volition must needs lead us beyond the limits of psychology, agreeably to the law that the unconscious precedes the conscious. On the other hand, the history will be properly understood only after acquaintance has been made with the phenomena of the will in actual consciousness. The psychological connection of will with the other conscious elements must now be pointed out.

Psychologically, we speak of volition wherever we are conscious of activity, and are not entirely receptive. But the psychology of cognition and of feeling has shown that we never are purely

[1] Wundt, i., p. 156, *seq.* (3rd ed. i. pp. 218, *seq.*).—Panum, *Nervevävets Fysiologi* ("The Physiology of the Nerve-tissue"), pp. 205. 223.
[2] Goltz in Pflüger's *Archiv*, vol. 26, 1881, pp. 36-37. Munk, *Über die Funktionen der Grosshirnrinde* ("On the Functions of the Dura Mater"), p. 52.
[3] Goltz in Pflüger's *Archiv*, vol. 34, 1884, p. 475.

receptive. In all sensuous perception, in all thought and all feeling, there is some activity on the part of the individual. Absolute passivity would be reached only if it were possible to represent consciousness as a series of single sensations with passive after-effects. A single and passive sensation appears, however, to be an abstraction, only approximately realized under certain abnormal conditions. Now since it has been shown to be the most essential feature of consciousness, that all the individual elements and states are united through one synthetic activity, it may be said that to volitional activity is due the existence of consciousness itself. (*Cf.* II. 5; V. *B.* 5, 8 *c*). It is not, then, correct to say that the will presupposes cognition and feeling, for these latter, looked at from one side, are themselves manifestations of will in the wider sense of the term.

The stronger the individual sensations and ideas are in themselves, the more does the volitional activity fall into the background. Exclusive sensations have a tendency to bring about hypnotic states. Bonnet has observed with justice, that if a being were all its life to experience only one single sensation, and a sensation unvarying in intensity, it would have no will at all. We may add that such a being would have no consciousness either (see II. 5). Only just in the instant when the sensation makes its appearance would an elementary activity of will be excited, since the attention would be turned to the excitation. No excitation occurs without arresting the attention and calling forth more or less activity, which contributes to the most clear and explicit apprehension possible of the excitation. Together with the sensation, we notice more or less this *involuntary instinctive attention;* in any case it helps to give the momentary condition its special character.

Change among sensations affords an opening for a somewhat higher form of volitional activity. When a new sensation emerges, it is more or less welcome according to the relation which it bears to preceding sensations. If it is in sharp opposition to them, or for any other reason excites discomfort, the mind will strive to repress it and to turn away from it. The contrary is the case, if (as with complementary colours) it affords a welcome relief or for any other reason brings about a feeling of pleasure. These movements of pleasure and pain are naturally as a rule so slight, that we are not clearly conscious of them; and yet they determine in every single case the manner in which things shall present themselves to us, since they lead to an involuntary selection, an *elemen-*

tary choice (V. *A.* 7) among the emerging sensations. As plants turn to the light, our perceptive faculties turn to that which excites pleasure and interest, and away from that which excites pain.

The transition from involuntary to *voluntary attention* and choice is effected gradually in the course of the development of the memory and of the free idea (*cf.* V. *B.*). The choice among emerging sensations can then be determined by earlier experiences. While involuntary attention has the character of *instinct*, voluntary attention makes its appearance as an *impulse*, being guided by an idea of that which it desires to perceive, and it is capable of development into clearly-conscious, *choosing*, will. We may determine, for example, to follow certain melodies or a certain theme in a piece of music, or to listen to the *timbre* of one single instrument. The investigations into physiological time have shown how great an influence strained attention may have on the rapidity of perception, being even capable of anticipating the percept. The difference between voluntary and involuntary attention lies in this, that in the former the straining, the turning of the powers of the mind in a certain direction is present before the stimulus, while in the latter this straining is produced only by the stimulus itself. Recognition (perception) naturally takes place more quickly and easily when we have ready in consciousness a preliminary idea of the phenomenon, and it is precisely the gathering of energy round some one idea as the centre of association, that constitutes attention. The fusion of the sensation with the corresponding idea, whence perception arises, thus takes place in inverse order in voluntary and in involuntary attention.—We see in great measure what we wish to see, and as a general rule are able to see only what we wish. Hence the possibility of strokes of genius and prophecies, as also of illusory interpretations of facts. The originally sanguine tendency of human nature anticipates experience, and only gradually and often reluctantly accepts correction from it. Fortunately experience has the power to open our eyes and force us to see. But the activity of the will is always an essential condition.

Voluntary attention (like apprehension in general) may also be directed to mere ideas, memory-images or imaginations. The endeavour to call forth and retain these is accompanied by a feeling of effort, similar to that which we have in trying to observe a dark object. This sensation appears, however, to be differently localized. Fechner has called attention to the fact—which the ex-

perience of every individual will confirm—that while in voluntary perception of external objects there is a feeling of tension in the sense organ chiefly affected, this wholly vanishes when memory or imagination becomes active, and appears as tension and contraction in the skin of the head, and as pressure from without inwards on the entire skull.[1] This muscular tension is not, however, always present, and is not, in any case, the whole of the physiological process connected with attention. It is possible that impulses return from the centres with which the voluntary concentration of consciousness is linked, to the centres of sensuous perception (as in other cases to motor-centres), in which way their effect may be strengthened.[2] This would be the physiological form of the psychological fact that an idea becomes clearer if we give ourselves up to picturing it. Some individuals can even call forth voluntary hallucinations. Finally, Carpenter has tried to establish the theory that in attention as in all volitional activity there is a pressure of blood on the organ whose function is strengthened. In the endeavour to retain an idea or a train of thought, this increased pressure of blood would occur in certain parts of the cerebrum (ideational hyperæmia). The influence which all stir of feeling has on the circulation of the blood is in favour of this view. In all volition there is in fact some stir of feeling.[3]

An activity of will is present not least in the *retention of the connection between our ideas* and in all thought. This activity is necessary to prevent purely fortuitous associations of ideas from taking the lead in the arrangement of the elements of consciousness. As a waking is distinguished from a sleeping state by the stronger "latent innervation" which prevents the body from falling into positions determined purely by gravity, so a waking is distinguished from a dreaming consciousness by the more or less conscious direction of all thoughts to a single end. In its most primitive form this end is the knowledge of the external world, as a means to the maintenance of existence. But even at the highest stages of mental development, a purpose and a feeling aroused by this purpose rule the course of thought. The more

[1] *Elemente der Psychophysik*, ii., pp. 475, 491. The expression of a person sunk in thought is especially remarkable for the undetermined direction of the eyes: their lines of vision are often even divergent on account of the relaxation of certain muscles consequent on the concentration of tension on other organs. The head is usually sunk, equally on account of muscular relaxation. Darwin, *Expr. of Emot.*, 2nd ed., p. 239.

[2] Wundt, i., p. 218 *seq.* (3rd ed. i., p. 233 *seq.*).—Kussmaul, *Die Störungen der Sprache*, p. 187.

[3] *Mental Physiology*, p. 382, *seq.*

such a mental centre of gravity (the real self, *cf.* V. *B.* 5) is wanting, the more disconnected will consciousness become, until at last it will be resolved into momentarily changing ideas.

In involuntary as in voluntary attention, feeling and will act in immediate conjunction. Several of the phenomena coming under the present head might, therefore, have been dealt with in the chapter on the psychology of feeling. The unity of mental life becomes evident here, when we consider the importance of attention in sensuous perception and thought, the intimate union of the feeling and the will, and the union, deeper than all association between ideas, of the feeling and the idea.

6*a*. Before tracing further the development of the will in its interaction with cognition and feeling, we must note how the will gradually brings bodily movements under its control. This is the first important course of training for the will, and is so important that *motor-ideas* have even been considered as essential elements of all conscious volition. To all appearance action is always outwardly directed; but there is constantly presupposed an *inner action*, a determining of the ideas by the thought of the end. The thought of the end is thus the most important element, and it becomes only a special, if a frequent, case, when the thought of the end attracts and determines motor-ideas.

The condition for the formation of motor-ideas, is that movements shall be made, which are felt. As has been seen, the organism does not wait for external incentives to set it in motion; it is itself a little world with the power of creating incentives from within. Spontaneous and reflex movements are the material which serves as the basis of the motor-ideas. By involuntary incentive we are thus led to acquire the experiences necessary for the development of the externally directed will.

As the psychology of cognition begins with the *sensation*, so the psychology of the will ends with the *motor-impulse*. Only indirectly do we learn what precedes the sensation—the transmission, namely, of the physical excitation from the object to our sense-organ, and thence through the nerve-fibres to the brain—and what succeeds the motor-impulse—the transmission, namely, of the physiological process corresponding to the act of volition, through the central motor-organs and nerves, to the muscles, together with the changes in the external world produced by muscular movements.

In the most primitive expressions of the will the distinction be-

tween sensation and motor-impulse does not yet appear. Reflex movements and instinctive actions are characterized by the fact that the excitation immediately sets up movement; a sensation may, indeed, be felt, and also a feeling of pleasure or pain together with a certain disquiet (especially if the movement is not at once executed or meets with obstacles); but memory, and consequently motor-memories, play no part. A motor-impulse presupposes the memory of executed movement. This may be either the *memory of the appearance of the movement* or a *motor-idea proper* (reproduction of the motor-sensation).[1] If the movement has had unfavourable, painful consequences, its memory-image will be associated with pain, which may prevent the repetition of the movement when the same state of consciousness reappears. On the other hand there will be a tendency to the repetition of movements, the execution and consequences of which were attended with pleasure.

If attention is turned to a motor-idea when we are already predisposed to execute the movement, we accomplish it quickly and easily. This *pre-disposition* or *internal preparation*,—by means of which a movement is, as it were, adopted or fixed in consciousness, since we become absolutely one with the motor-idea and the corresponding feeling,—does not admit of more minute description. It is the fundamental element in the consciousness of an intended movement, and can be known only by direct introspection, as is the case generally with the internal process by which we call out and retain an idea or a train of thought. As in memory I identify myself with the self that experienced an event in the past, so the decisive act of volition consists in the thought of my present self as acting in a certain manner in a more or less distant future. While memory is directed to the past, is mainly *passive perception*, the act of volition is directed to the future, is mainly *active perception*.

The will and the motor-impulse are not entirely coincident, but the latter is an element of the former when the act of volition concerns an externally directed movement, just as the impulse to think, *i.e.* the incentive to set up a certain series of ideas, is in thought proper an element of the volition (*cf.* V. *B.* 11). I will to see a definite object, and therefore direct my eyes to it; but the impulse to move the eyes need not appear as something independent beside the will

[1] As already mentioned (VII. *A.* 4), memories of the appearance of movements may be preserved, although motor-ideas proper have dropt out.

to see the object. And similarly, when the will aims at following a train of ideas; the impulse to stir up each separate member of this train does not appear as something independent beside the will to think of the thing as a whole, except, indeed, where special difficulties have to be overcome. When the movement necessary to the attainment of an end meets with opposition, it may become the object of express volition.

The intended movement is often carried out without either impulse or volition stirring at the moment of its accomplishment. Thus the investigations into physiological time have proved that if preparation is made to execute a certain movement at a given signal, the movement comes involuntarily, no time being required to set it up, and no fresh volition being necessary. Conversely it takes some time to undo that state of preparation, or, as it were, to annul the first volition; and if the signal occurs before this is accomplished, the movement may be set up with or without our will. It may happen, for example, that a signal expected with strained attention is kept back, and the person making the experiment turns round impatiently to see if the apparatus is out of order; that then the signal sounds, and the movement previously intended but now given up simultaneously takes place.[1] The preparation for the movement still takes effect, although the act of will has given way. By thus preparing, in the event of a given signal, to carry out a certain movement, the person making the experiment puts himself in a condition analogous to that of an animal guided by instinct, or to that which moves an individual to obey commands received in a state of somnambulism and afterwards entirely forgotten.

(*b*) Nature paves the way for our volition. But she gives us at once too much and too little. The original spontaneous movement is strong; but it has to be guided into a definite direction, and modified in degree and form, before it can serve for our purposes. In involuntary movements several muscles are set in activity at once. It then becomes sometimes important to resolve these conjoint movements, and to form instead of them other complex movements, so that a process of selection is carried on, which leads partly to *isolation*, partly to *combination* of movements.

In this way the voice organs are at first involuntarily moved, as the child gives vent to its dissatisfaction or to its satisfaction. Of the sounds thus produced, it is especially those which showed

[1] Sigm. Exner, *Experimentelle Untersuchungen der einfachsten psychischen Prozesse* (Pflüger's *Archiv.* 1883), p. 616, *seq.*

themselves conducive to pleasant effects, that are afterwards retained. This is the child's first language, succeeded by the period in which it tries to imitate what it hears. Similarly with many other movements of the body; at first they are produced involuntarily and at random, but afterwards are either retained and repeated or inhibited and suppressed. At first no reflex movements are inhibited, but education represses them more and more (as when a child becomes accustomed to cleanliness). The little child, whose cerebrum has as yet no active influence, lacks the central controlling apparatus which is the condition of self-restraint. The development of voluntary movement presupposes a certain development of ideas, consequently also of the brain.

A child undertakes many movements wholly instinctively, as soon as it has the strength for them. According to Preyer, a child sucks, bites, smacks its lips, chews, and licks, just as instinctively as a chicken picks up corn and insects. The same holds good in great measure of sitting, standing, creeping, walking and running. Imitation plays even here a subordinate part; at the most it serves as an encouragement. Even a child who had never seen any one crawl or walk would execute these movements as soon as it had strength enough.[1] Movements are really *willed* only when they are made with a definite intention and directed to a definite end. The earliest and most important examples of this are the movements of grasping, where the desire to take possession of an object causes a movement of the hand towards it and its seizure.

The limits to the isolation and combination of movements, lie in the nature of the organism. There are conjoint movements which cannot be resolved, and independent movements which cannot be combined.—The extent to which practice and accommodation can go may be seen from the Siamese twins, whose bodies had grown into one, and who had brought their movements into such harmony that, as necessity required, and without preconcerted signal, they could walk, run, and jump just as though they had been one single individual.

(*c*) This process, by which the will obtains such power over the body, that the individual can confront the external world with energy and concentration, goes on more slowly in men than in animals. Kittens go through their necessary course of education in less than a month, while children need nearly two years for

[1] Preyer, *Die Seele des Kindes*, pp. 146-176 (Eng. trans. i. 235-281).

theirs. This difference shows the importance of the inherited basis. Since the movements of men are self-acquired to a much greater extent than those of animals, injury of the motor-centres in the brain produces much more effect in them than in the latter.[1] Conformably to a general physiological law, in a process of dissolution the more lately developed and exercised functions give way sooner than the more elementary (*cf.* IV. 4; V. *B.* 7 *b*).

The importance of the inherited basis may be seen, too, in a comparison between normal and idiotic children. Except by special and wearisome instruction, the latter are not able to learn the use of their senses and motor-organs. "Even in the lesser degrees of idiotcy, an idiot may be easily recognized through his lack of a proper glance and of a firm carriage of the body. The lack of a proper glance is shown in some idiots by a lifeless stare, in others by wild rolling of the eyes; the lack of a firm carriage, with some, in the form of constant immobility and dulness, together with a certain disposition to a uniform swinging or circular movement of some parts of the body—with others, in the form of perpetual unrest and aimless working of the arms and legs." Education consists, therefore, here also in a selection, which becomes effective partly by the strengthening of some movements, partly by the inhibiting and neutralizing of others. The inertia must be counteracted, and the restless and disorderly play of the muscles constrained. In education it is customary to start from the given basis. A girl idiot who incessantly swung her body and flourished her arms and legs, was made to wind thread, by which means the restless movements were directed to a definite end, which could afterwards itself serve as a motive to movement through the satisfaction excited. It was attempted to inhibit over-strong movement, by causing the patients to run up and down in the garden until constrained by fatigue to remain quite still.[2]

B.—The Will and the other Elements of Consciousness.

1. *The higher development of the will, as conditioned by the development of cognition and of feeling.*

(*a*) No consciousness, as already frequently observed, can be conceived that is resolvable into absolutely simple, momentary

1 Panum, *Nervevävets Fysiologi* ("The Physiology of the Nerve-tissue"), p. 218.
2 Eschricht, *Om Muligheden af at Helbrede og Opdrage Idioter* ("On the Possibility of Curing and Educating Idiots"), p. 7, 66.

sensations. A certain degree of memory, and with it a certain duality, a weaker or stronger opposition between two currents, must always be assumed. But the relation between the two currents may vary to infinity. We have already seen that the opposition between *sensuous perception* and *thought* passes through a whole scale of degrees, and that the same is true of the opposition between *elementary* and *ideal feelings*. In the province of the will a similar opposition is met with: between *instinct* and *volition proper*. Instinct involves no proper memory (*cf.* IV. 4, and VII. *A.* 4), but is called into being by immediate sensations; it stands therefore on a level with the elementary feelings, which are similarly determined by mere sensations. The transition from instinct to volition proper is effected through the *impulse*, the *wish* and the *purpose*.

Impulse, we have already had to describe in the psychology of feeling (VI. *B.* 2 *c*; *cf.* also IV. 4), and it has been referred to also in the inquiry into the originality of the will.

In impulse, consciousness is already freed from the control of momentary impressions. A striving beyond the momentary state makes itself felt, the equilibrium is destroyed. The psychological condition of the impulse is, that with the momentary feeling and sensation should be combined a more or less clear idea of something which may augment the pleasure, or diminish the pain of the moment. Impulse involves a contrast between the actual and a possible or future. This is what distinguishes it from reflex movement and instinct (*A.* 4), where the excitation may perhaps cause a sensation, but where no idea asserts itself of what must follow. In impulse proper there lies always a more or less conscious demand.— In the wider sense of the term, impulse embraces all tendencies to movement which are accompanied by feeling and sensation. It would be best, if it were possible, to avoid the use of the word "impulse" in psychology, except in the narrower sense, as something distinct from reflex movement and instinct. But this the customary use of language does not permit; it is unavoidable even in psychology to speak of an impulse of self-preservation, an impulse to movement, and so forth, as a short and contracted way of expressing unconscious or semi-conscious tendencies to movement. Moreover, as will have become clear from the above, experience shows numerous intermediate links between the different stages and kinds of movement. These may so far be represented as different forms of the development of

impulse, culminating in *desire*, where the end of movement is the object of *distinct* consciousness.—Impulse proper and desire are distinguished from mere instinct in possessing always an idea of the end, though not always of the means, while instinct leads to means being applied to an unconscious end. Instinct is a manifestation of impulse in so far as the actions and movements leading to the end become the object of ideation and of interest.

In the psychology of feeling and in that of will, impulse is observed from different sides. It includes, namely, both a feeling of pleasure or of pain and an incentive to activity, directed to the (real or supposed) cause of the pleasurable or painful feeling. These two sides of impulse must not be confused or confounded, though language might easily lead us to do so, since we speak of taking pleasure in a thing in the sense of mere feeling, and taking pleasure in something in the sense of striving after. Nor must the relation between them be so conceived, that the object of impulse is supposed to be always a feeling of pleasure (or the removal of a feeling of pain). The statement that all impulse (and especially all will) tends towards the attainment of pleasure or the removal of pain, has often been thought to afford a simple and incontrovertible proof that egoistic motives are at the bottom of all action and volition.

The account of impulse we have already given shows the untenability of this view. Because the end or the object of the impulse is something that excites, or seems to excite, pleasure, it need not necessarily be the feeling of pleasure itself. The impulse is essentially determined by an idea, is a striving after the content of this idea. In hunger, *e.g.* the impulse has reference primarily to the food, not to the feeling of pleasure in its consumption. The impulse to cognition is not directed to the joy of cognizing but to the object cognized, it is this that is desired. The sympathetic impulses, *e.g.*, the impulse to mitigate the sorrows or to promote the welfare of others, are guided by the idea of the improved condition of others, depicted more or less in the imagination, as also by that of the pleasure they feel in their improved condition,—but it is not in the least necessary for the idea of the pleasure afforded to us by the sight of their improved condition to make itself felt (*cf.* VI. *C.* 7). It is the result of a distinct abstraction, when the feeling of pleasure, which we foresee in the attainment of the original object of the impulse, arouses our impulse. Such an abstraction is always more or less morbid and leads to egoism, if it

is unduly kept in mind and applied, since the idea of our own self as the subject of the feeling will, from the nature of the case, obtrude itself and determine the impulse, will become the constant thought in the background.

The justice and force of this distinction will be easily seen, if we consider the affinity of impulse with instinct and with the other half or wholly unconscious tendencies to movement. The actions induced by these are directed to no feeling of pleasure, but to certain definite objects which do not come into the consciousness of the individual. In instinct the individual has no consciousness either of the end of the action or of the feeling of pleasure to which its attainment will conduce. Impulse is distinguished from these tendencies to movement principally through the consciousness of the end or object of the action, but there is a further step before the consciousness of the pleasure which the object will bring with it can arise. The *motive*, the moving force of the impulsive action (as also of the properly volitional action) is the feeling excited by the idea of the end, but not (at any rate not at first or always) the feeling which is excited by the idea that we shall feel pleasure on attaining the end.

It is true that there is usually a certain harmony between the impulse and the satisfaction induced by the attainment of what the impulse aimed at. This harmony is due partly to the connection of impulse with instinct, partly to the fact that the end of the impulse is originally the cause of feeling (VI. *B.* 2 *c*). But it is not necessary that this harmony should be perfect. Some of the most remarkable of psychological phenomena arise from just the fact, that a discordance is possible between the strength of the impulse and the pleasure caused by its satisfaction. An impulse may by very frequent excitement and gratification take such deep root in nature as to obtain the control, even when no pleasure of a strength corresponding to the energy of the impulse is afforded by it. In all passion (*cf.* VI. *E.* 5) this discordance occurs more or less, and hence the special feeling of want of freedom which may be present when passion prevails. With the drunkard, the passionate craving is far stronger than the pleasure accompanying its gratification. The impulse to self-preservation may be roused with irresistible force, even when it is not possible to discover what joy continued existence can cause. This relation is of especial importance in the impulses which are connected with the disinterested feelings. The impulse to be absorbed in something, to work for an idea or to

sacrifice self for others, may be so strong that it could find nothing like sufficient reason in the feeling of pleasure conferred on the individual in consequence of the action.

After a time, however, this want of harmony between feeling and impulse becomes unendurable. Either the impulse will be weakened and disappear, or the feeling will be more strongly inflamed. A certain harmony between the impulses and the conditions of life, and consequently between the impulses and the feelings caused by their gratification, must always be brought about; continued development in contrary directions would lead to destruction (*cf.* VI. *D.* 3).

Of the two sides of the nature of impulse, feeling and activity, the latter is the more deeply imbedded. This follows from the general principle that unconscious movement precedes conscious. Spontaneous, reflexive, instinctive and impulsive activity is the beginning of life; as ideation and feeling gradually develop, they come to determine the activity; but this, in its most primitive form, is present before them.

It is a momentous juncture when a definite idea unites with the feeling of pleasure or of pain, and so becomes an expression for the object of the impulse (*cf.* VI. *B.* 2 *a*, *b*). The movement is hereby guided into a definite direction, and cannot be changed into another without a definite exercise of force. Once impulse is aroused, the equilibrium is destroyed, and it is then a question of whether the movement can be kept under control.—It is not the learned, nor is it the absolutely ignorant, who strive after knowledge; for this strife to be excited, there must be a painful sense of ignorance accompanied by the idea of something better than ignorance.—It is at this stage that revolutions arise in the internal and in the external world. The extreme of suffering checks and overwhelms; movement breaks out only when so much mitigation and progress are attained that the idea of a better condition may make itself felt, whatever may be the means of attaining it. The promoters of revolutions are neither the free nor the enslaved, but the semi-free. As Tocqueville has observed, the most dangerous moment for a bad Government is that in which it begins to improve. The smallest acts of tyranny under Louis XVI. seemed harder to bear than all the despotism of Louis XIV.[1] The recent history of Russia affords exactly parallel examples.

(*b*) If the life of ideas is somewhat further developed, there may

[1] *L'Ancien Régime et la Révolution*, livre ii., chap. 1.; livre iii., chap. 4.

arise thoughts of ends, whose attainment would afford pleasure, but which do not set the impulse immediately in motion. Such ends and the feelings determined by them correspond to the free memory images in the sphere of cognition: just as the latter need not necessarily be produced by present sensations, so also it is not necessary for the former to move at once to action. This is what distinguishes the *wish* from the impulse. Wishes, from a purely practical point of view, are a luxury. As compared with impulse, the wish is contemplative. On the other hand, however, the wish may be the first form of the impulse. What at first appears a distant possibility, the mere thought of which fills the mind with pleasure, may, when as constant thought it has become more part and parcel of ourselves, excite an impulse.

(*c*) But the same higher development which makes the wish possible, will also produce the consciousness how important it is that action should not follow immediately upon the impulse, but that there should be an interval between the thought and its execution, so that ideas and feelings naturally associated with the thought of the end may come to the fore, and exercise an influence upon the action (*cf.* IV. 4-6). Such an interval may arise quite simply, by the action being prevented and by experience teaching how well it was that it could not be carried out; the importance of the interval may also be impressed by wisdom learnt from suffering, namely, when the consequences of rash actions are seen; and finally, it can be induced by the fact that the idea of the end is so closely connected with other ideas (the idea of the required means, for example), that these emerge at the same time, and so inhibit the impulse to movement. In cases of this kind—in which either the consequences of the action or the means to its execution make themselves felt in consciousness—the laws of association of ideas are operative. In Holberg's comedy *Jeppe vom Berge*, Jeppe did so want to drink another shilling's worth; but his back[1] warned him of the consequences. "My stomach says you shall; my back, you shall not." The association of ideas and the feelings excited thereby interpose, inhibiting the impulse or the wish of the moment. Besides the feelings excited by the association of ideas, other feelings may arise which inhibit the impulse or the wish, but through the effect of contrast (VI. *E*).

Here the will sustains the same alteration observed in the transition of elementary into ideal feeling. The action is determined by

[1] He was afraid of being beaten by his wife if he squandered in drink the money she had given him to buy soap.

more comprehensive considerations than impulse and wish permit. Of course these wider considerations must originally make themselves felt in the form of impulse or of wish; the decisive feature is, however, that a single incentive is not immediately and solely in force. The process thus introduced, of which Jeppe's internal struggle at the door of the public-house affords a simple instance, may be developed into higher forms, the more comprehensive the association of ideas. Here the distinctness of the memory,[1] the liveliness of the imagination and the clearness of the thought, become of great importance in the development of the will. The more firmly and clearly the thought of the remote, as compared with the momentary end, presents itself to consciousness, or the thought of the difficulty or disadvantage attending the action demanded by impulse and wish; and the more powerful the feelings which this thought is able to excite—feelings in which the conjectured consequences of the action are anticipated and enjoyed or suffered from—the more easily will the momentary incentive be inhibited, and the will determined by more remote or higher considerations. Even if the wish is stirred, it now remains a "vain" wish, the consciousness of the impossibility or unfitness of its realization coming into play. It then comes to be a trial of strength between the logic of the impulse and the higher logic. The impulse makes, according to its nature, directly for the object, and is capable of answering other considerations with sophisms (*cf.* VI. *F.* 2). Jeppe asks himself, "Is not my stomach more to me than my back? I say, Yes"—and finally comforts himself with thinking that Jacob the cobbler (the host) will give him credit, although he knows perfectly that he won't. The more firmly the wish is established, the greater the difficulty which other thoughts may have in preventing its actualization.

Psychologically, it is a question only of the strength, not of the worth, of the forces determining the action. The momentary incentive may be pernicious, but it may also be ethically justified and yet succumb, as in the suppression of enthusiasm by egoistic and prosaic considerations. It is then purely a question of what thoughts and memories are excited by the idea connected with the impulse, and what strength of feeling these can command as compared with the immediate incentive. If the object of the impulse or of the wish is adhered to in spite of scruples, its attainment is

1 "Purpose is but the slave to memory," (*Hamlet*, Act iii., Sc. 2). *Cf.* Spinoza, *Eth.* iii., prop. 2, Schol.: "Nihil ex mentis decreto agere possumus, nisi ejus recordemur."

made an *aim*, and the aim further brings with it the *purpose* to undertake such actions as may contribute to its realization.

When the momentary incentives are dominant, there is properly no inner centre, no self, of consciousness. But the more memory, and the dominant feelings determined by memory, obtain a hearing, the more does a man's nature as a whole, and not merely a single, momentarily predominant side of it, obtain influence upon the action. A man's true self has its expression in the thoughts and feelings, which in the course of his life have taken deepest root in him (*cf.* V. *B.* 5). And only when the action is determined by this permanent core, can a man be said to have willed his action, to be self-determined. Now the cognitive, now the feeling, elements preponderate, so that a distinction may be drawn between a will governed by thought, and a will governed by feeling. It must here be remembered that the feeling which at the moment is the most violent, is not always the strongest in reality, that is to say, the most deeply rooted in the nature of the individual. It is the more important that the moment should not be the sole determinant; for this reason again is the formation of the interval so important.

Even the purpose is conditioned by such an interval, and by the ideas, feelings and impulses occupying it. A man who acts with purpose knows what he is doing (and for this reason impulse as compared with purpose, may be called blind, as instinct in comparison with impulse). But the purpose need not be deeply grounded in the self of the person willing; it may (as is so frequently the case with impulse) owe its origin to a superficial movement of the mind. If the action to which the purpose is directed is to be a complete expression of self, then the idea of it must be brought into interaction with every important side of the self, that it may be made the object of a universal debate in consciousness. In such debate, which may take the character of a powerful and exhausting inner struggle, consists *deliberation* (or reflection), by which mere purpose becomes *resolve*, since a choice is made among the possibilities offered. The difference between purpose or intention and resolve[1] is one of degree, but may be of extreme importance. It depends partly on the length

[1] As we say, the road to hell is paved with good intentions (not resolutions). In Danish criminal law a distinction is made between intentional homicide, punishable by the house of correction, and deliberate homicide, punishable by death (§ 186 and § 190). The relation between intention and deliberation is still more clearly brought out in German criminal law, which distinguishes between intentional homicide without deliberation, and intentional homicide with deliberation (§§ 211-212).

of the interval, partly upon the depth and energy of the reflection.

The choice or resolve does not admit of a closer description. In the treatment of a particular case, the volition to execute a bodily movement (VII. *A.* 6 *a*), attention has already been called to this indescribable element in every volitional act. In resolution I wholly identify myself with the thought of the action; it seems henceforth a part of myself, something pertaining to the innermost essence of my being. I recognize myself (perceive myself) in the subject of the action, in that particular "moment,"—the rejected possibilities seeming, as it were, to fade away or recede from me.

By the closeness with which the volitional act in resolution and choice is adopted into our nature, is to be partly explained the *sense of freedom* accompanying strong resolves. The action is felt as a radiation of our own innermost being. This sense of freedom is, however, also due to the contrast with the uncertain, inhibitive and wavering state of mind during deliberation. So long as the deliberation lasts, no thought or impulse takes firm hold of the mind; no sooner is the one thought followed up than its contrary comes to the fore and claims the attention. The contending feelings and impulses give rise to a more or less painful mental restlessness and mental disunion which may itself sometimes become the motive for making a resolve.

The resolve is the highest form of the will. It is mainly determined from within, not by the individual sensation or idea. Impulse knows but a single possibility, a single motive; will proper develops through the interaction or the conflict of various motives and possibilities. It is often determined by something which lies far beyond the present moment, even beyond the possible experience of the individual, but which takes effect nevertheless in his consciousness, is represented in it. The psychological intelligibility of the volitional act depends on the possibility of tracing the course of development of the individual, and of following it step by step up to the moment of action, each intermediate transition being explained according to general psychological laws. This is of course an ideal; but an approximation to it is the condition of all psychological research and of the practical life and occupations of man.

2. *The reaction of the will upon cognition and feeling.*

Such reaction takes place at all stages of the development of the

will. It leads us into a tissue of psychological processes impossible to disentangle and survey. We must be content to discover certain guiding points of view; and (referring to previous sections for what relates to elementary phenomena) we shall here treat chiefly of the way in which the more highly developed will can exercise a determining and guiding effect upon cognition and feeling.

(*a*) *The reaction of the will upon cognition.*

As with externally directed movement, so also with the activity of ideation and thought, nature helps us forward before we ourselves play a conscious part. The involuntary activity forms the basis and the content of the voluntary. The will is in no way creative, but only modifying and selective.—Of this we will adduce some examples.

(1) As already shown, we work our way out through numerous deceptions to the apprehension of reality. Prejudices, passions, and imperfect observations, lead us easily astray. Besides, there may sometimes arise involuntary hallucinations and illusions, with which, if the mind is otherwise sound at bottom, a hard struggle will be fought. Thus a patient once strove for twenty-seven years against hallucinations which tempted him to attack others. Even his best friends suspected nothing until the day when he declared himself vanquished, and took refuge in a lunatic asylum.—Conversely, some persons have the power of intentionally calling up hallucinations; but it often happens to them as to Goethe's *Zauberlehrling* ("Apprentice Magician"), that the phantoms gain power over them and will not be again dispersed.[1]

The flow of memories and ideas is subject to definite laws. If certain ideas can be intentionally produced or excluded, this is only by means of these same laws, just as it is only by means of its laws that external nature can be modified and made to serve our purposes. The condition of an intervention of the will in the flow of ideas, is that a searching, an interest, must come into play. If it is a question of checking or excluding an idea, this can be effected only indirectly, according to the "laws of obliviscence" (V. *B.* 8 *d*). If it is a question of calling up an idea, a need must first be excited, a wish or an impulse to have the idea must be stirred, which involves an indefinite idea of its place or its connection with other ideas. If of two ideas, *a* and *b*, standing

[1] Brierre de Boismont, *Des Hallucinations*, 3rd ed., pp. 27, 427, *seq.*, 525.

in connection with one another, *b* disappears or is even unknown to us, although we observe that there is a place which must be filled up, then the concentration of attention upon *a* will make it the centre of association (VI. *F.* 1) : the ideas associated more or less closely with *a*, will then rise up, and be persistently rejected, until one is presented which stands in the precise relation to *a* of the idea required. The will gives the first impetus and acts as an auger, to use Goldschmidt's striking expression,[1] but once a hole is bored, the water must flow out by virtue of its own force, and it only remains to us to compare what breaks out with what is sought for.

The influence of the will upon the ideas is manifested, like its influence on the bodily movements, in the two forms of isolation and combination. Partly a dissolution of the involuntary combinations of ideas, partly a formation of new combinations, may take place. The elaboration which ideas must undergo in order to become concepts, is effected in both ways.

This "boring" and voluntary intervention may be necessary, but does not always bring about so valuable a result as do involuntary suggestions. Intentional thoughts and images have, as a rule, a more abstract and paler character than those which emerge "of themselves." The thought is most successful which "carries us away."

(2) In an ethical connection it is of great importance that the thoughts and ideas on which the conduct of life is based should be made the subject of repeated observation and reflection.[2] In this way they obtain a firmer hold in consciousness, and are consequently more easily recalled in all the changing relations of life, and with more difficulty suppressed by the impressions and passions of the moment. At the same time they gain in clearness and connectiveness, and so become better adapted to control action.

(3) Not only does the will thus obtain in particular cases direct or individual influence upon the course of ideas, but moreover the development of the will in general reacts upon the thought, strengthening and modifying it. A firm resolve, carried out with decision and without hesitation, clears up the whole mental atmosphere and scatters the clouds which dim the clearness of thought ; it makes one single idea the central point of

[1] Goldschmidt, *Erindringer* ("Memories"), i., p. 183, *seq.*

[2] *Cf.* James Sully, "On Some Elements of Moral Self-Culture" (in his work *Sensation and Intuition*, London, 1874).

consciousness, and obliges all other ideas to give way before this one, or to subordinate themselves to it. Hence arises a firm and systematic connection of consciousness. Sequence of thought and firmness of character are closely related.—And only through firm volition is actual *self-consciousness* possible. What is expressed in the unity and the continuity of memory, and in immediate feeling of self, is completed in the act of will, in which all elements of consciousness co-operate with concentrated force. In our resolves and acts of will, the real unity of our "self" (V. *B.* 5) is most strikingly manifested; in them we learn to know ourselves most clearly and best.

(*b*) *The reaction of will upon feeling.*

It might seem as though involuntary rise and development were so characteristic of feeling, that no intervention of the will would be conceivable in it. The activity of the will is more indirect here than even in the flow of ideas, and its scope is quite certainly also more limited and conditional. There is, however, great theoretical and practical interest in seeing what paths are open to it.

(1) Even if we cannot prevent a feeling from arising, we may possibly prevent it from spreading, by inhibiting the organic movement which accompanies it, and indulgence in which augments it. The art of self-control consists principally in such inhibition, since it cannot deal immediately with the feeling at its first stage. On the other hand, the concealment of a feeling may cause it to penetrate deeper into the nature of an individual. The result in any given case depends on the person's character, but in the long run, to check the indulgence and expression of the feeling will always have a weakening influence.

Conversely, we may excite a feeling by first adopting the attitude proper to it, by putting on the correct expression and making the proper movements. Savages excite themselves for battle by violent dances. Participation in outer ceremonies may lead, according to Pascal's view, to real conversion. The frame of mind is certainly different in clenching and in folding the hands, in holding out the arms and in crossing them. A forcible contrast is especially apparent between the mood during muscular tension and that during muscular relaxation.—It is in this way that hypnotized persons can be put by the experimenter in different frames of mind.[1]

[1] Carpenter, *Mental Physiology*, pp. 602-605. Preyer, *Die Entdeckung des Hypnotismus*, pp. 36-41, 85.

Campanella maintained that the feelings of others might be clearly entered into by imitating their ways and movements. A visitor, who called on him when he was writing a letter, found him with the precise expression of countenance of the man to whom he was writing.[1]

(2) Change in external conditions of life may prevent the birth of many feelings, or at any rate deprive them of sustenance. The power of customs and institutions rests on the influence of the conditions of life, and political reforms are indirect reforms of the life of feeling. Even our every-day habits and surroundings are often in this respect of great importance. By bringing ourselves under certain definite conditions, we may further or prevent the birth of certain feelings. Much which the will cannot aim at directly is attained, if we so pledge ourselves as to be unable afterwards to get free. There is a mental just as much as a bodily hygiene.

(3) If the feeling cannot be modified in these ways, the diversion of the attention to another end may succeed. But if this is to be effected by personal endeavour, it is a necessary condition that the feeling of the moment shall not occupy the entire consciousness. The will cannot "bore" without definite points of departure; and the first condition is therefore that there shall be a searching, a "hunger and thirst." If a man is wholly absorbed in his present state, if he "laughs and is full" (St. Luke vi. 25), there is no motive for a new feeling. The individual may, however, sometimes have the desire for a change of feeling, but not be able to take measures to effect it without help; thus Lichtenberg desired "the first differential of impetus" to enable him to master his hypochondria.

The feelings whose motive can be given by exertion of the will, all belong of course to the ideal feelings. The effort of the will develops feeling by means of the laws of association of ideas, through which it becomes possible for one new idea, retained in spite of its opposition to the powerful feeling, to be succeeded presently by others. The feelings which are most easily remembered and suffer least by repetition, are also those which are most easily produced by way of inner effort. Through their great versatility, ideas become instruments in the service of the will; what I make my constant thought will gradually determine my feeling also. It is of course true of such feelings, as of the

[1] *Vita Campanellæ*, Autore E. S. Cypriano, Amstelod, 1722, p. 48; *cf.* also Burke, *On the Sublime and Beautiful*, part iv., sect. 4; Fechner, *Vorschule der Æsthetik*, i., p. 156, *seq.*

ideas generated by voluntary effort, that they do not easily become so vivid as those which arise involuntarily.

In order to obtain control over feeling, we must utilize the intervals between strong emotions. Education must in this respect necessarily precede self-education, and even after the matter has been taken into our own hands we need frequent aids (differentials of impetus) to prevent our sinking back.

(4) A clear insight into its causes reacts upon the feeling, clearing it up and modifying it. The very endeavour to understand the ruling feeling will enable me to confront it with more freedom. —A feeling has as a rule an indefiniteness, which is a part of its power, and which may vanish before clear knowledge, as spectres before the light of day.—The need experienced by feeling for explanation and justification leads, as has been seen (VI. *F.*·4 *c*), to whole theories and hypotheses being developed and elaborated; when clear perception has acquired sufficient influence for the vanity of such theories to appear, this reacts upon the feeling. It is principally, however, insight into the causes of the feeling that is of great importance. It is a general experience that sorrow is lessened by a conviction of its inevitableness. Most of all is the knowledge of causes effective with feelings such as hypochondria, which cherish illusions and suspicions. Kant became master of the hypochondria "which in his early years bordered on weariness of life," through the knowledge that it resulted from his flat and narrow chest. "The oppression remains" he says,[1] "for its cause lies in my bodily structure. But I have become master of its influence upon my thoughts and actions by diverting the attention from it, as though it did not concern me at all." Lichtenberg relates that during his nervous illness he felt better when he put his fingers in his ears, because he then regarded the pathological buzzing as artificially produced.

Once knowledge leads to the conviction of an unalterable system of things in which we, with all our desires and cares, are so interwoven that its laws are the laws also of our life, then the road to resignation is paved. There are men who, instead of being daily sensible of "the slings and arrows of outrageous fortune," abandon themselves once for all, with Spinoza and Goethe, to resignation. "Such men are convinced of an eternal and necessary order, and try to frame conceptions which are invulnerable, and not to be upset

[1] In the little work, *Von der Macht des Gemüths, durch den Blossen Vorsatz seiner Krankhaften Gefühle Meister zu sein* ("On the Power of the Mind to master Pathological Feelings by the Exercise of Mere Resolution"), (Kehrbach's ed., p. 26).

but rather confirmed by the thought of the transitory."[1] The character of such a resignation may be that of despair, of trust, of humour, or of melancholy.

(*c*) Through its influence on cognition and feeling, the *will reacts upon itself.* Ideas and feelings are the motives of the will, and according to the view just given, it is possible for the motives to become themselves objects of the will. In this sense will itself can be willed.—So it can, too, in the sense that it can be made an aim to encourage the power of forming resolutions, of putting an end to internal debate and deliberation.—Finally, the willing of the will may also mean, to will the firm retention and execution of the resolve, not permitting later moods to upset it. This applies chiefly to cases where the end selected involves the employment of a whole series of means, a variety of single actions ; *a* is willed, and consequently also *b*, *c*, and *d*, and the carrying out of all these secondary resolutions will be possible only by the firm retention of the main resolution, while the motives which might lead in other directions are repressed.

The will can never be regarded as self-contained or as having an absolute beginning. It is impossible to show a point where receptivity, passivity, yields wholly to activity, or *vice versâ.* No psychological dissecting knife, however sharp and however skilfully handled, could light upon a line dividing the attractive power of imagination and of feeling from voluntary suggestion. The relation of the two sides may vary to infinity, but neither of them can wholly vanish. When it is said in Goethe's *Fischer*, "Half she drew him down and half he sank," the duality is repeated in the second term, for to sink is to let oneself sink. Here, then, is neither first nor last, but a relation of infinite interaction, between action and suffering.[2]

3. *Relation of opposition between the will and the other elements of consciousness.*

The higher development of volition is possible only through the influence of cognition and of feeling. In the course of the transition from lower to higher forms of will, there may, however, in consequence of a want of harmony between the different elements of consciousness, be breaks and gaps. In the main the general law of inhibition operates here (II. 4 *c*, 6 *e*; VII. *A.* 3), since sensations, ideas, and feelings, which are unable to

[1] *Aus Meinem Leben*, book 16. Spinoza, *Eth.* v., 20, Schol. (*cf.* also *De Intellectus Emendatione*, at the beginning).

[2] *Cf.* V. *A.* 7 ; *B.* 11. VI. *C.* 8 ; *F.* 2.

merge with the given motive to action, tend to supplant and suppress it.

When children learn to walk, self-confidence is an important help. An action is more easily executed when there is a strong conviction that it will succeed. The sanguineness with which all conscious life begins, is an expression of the instinct of self-preservation, and makes it possible for the action to absorb the full attention. All reflection and all doubt is crippling, and in any case introduces a period during which the energy is diffused and divided. A child may be able to walk fast, when it is not spoken to, but will totter and fall, when other impressions distract its attention. The will must, from its nature, be always limited. Its object is one single, definite thing, and thoughts and feelings linked to other things must always have a more or less crippling effect. This is why new intuitions, opening up wider spheres and horizons, often cause a falling off of energy, so that there comes to be an inverse relation between range and strength. If strength alone is considered, then instinct and authority appear manifestly the first of the forces in determining the will. With direct assurance they point out the way; the future almost loses the stamp of possibility. Elucidation and reflection, on the other hand, involve a constant danger, since they divide and dissipate the interest and the energy, and rob the individual of his absolute confidence and his refuge within a limited horizon. It becomes a question whether the instinctive will can become a reasonable will of equal energy, as in the life of feeling it is a question of developing the ideal feelings to the degree of strength possessed by the physical. Some people hold that the negro has retrograded since his emancipation, and from the same cause must be explained much distrust in the effect of religious and political freedom.

This throws a light also on what seems to be a fact, namely, that suicide becomes more frequent as civilization advances, as freedom and clearness of understanding increase. Instinct and impulse do not weigh the value of life, such a weighing takes place only after reflection has been roused, and there is no pledge that the result will be favourable. The more a life of thought and feeling grows up independent of the action of the will, there will also arise a relaxation and enervation such as was called in the Middle Ages acedia (*animi remissio, mentis enervatio*), by which was understood a melancholy making the mind heavy and hindering action. This was numbered among the cardinal sins as a contrast to hope,

which was reckoned one of the cardinal virtues. In modern times this description of feeling has certainly not become more rare, and where opposition is met with, it readily leads to the striking of a parley. It arises very naturally in periods of transition, during which instinct and authority have lost their commanding influence, and no new basis has as yet been found.—As a matter of course, the individual temperament plays here a great part. Where it is, to begin with, of a passive character with a special disposition to the feeling of pain, there is a greater liability to the transition from instinct to reflection. Some natures more than others are disposed to introspection and self-reflection. Their ideas then pass easily from the object of impulse and of interest to the observation of the probable effect upon their feeling of the attainment of this object (*cf.* VII. *B.* 1 *a*). For example, instead of finding pleasure in working at a definite task, they worry over the question whether the solution of the problem would really make them happier. Stuart Mill had to pass through a crisis of this kind in his youth, and drew the conclusion that "those only are happy who have their minds fixed on some object other than their own happiness. . . . . The only chance is to treat, not happiness, but some end external to it as the purpose of life."[1] This self-forgetfulness, which is a matter of course where instinct predominates, and is easily arrived at wherever traditional ideas and types take possession of the mind without having their force weakened by doubt or criticism, is attained to with more difficulty in periods of transition, when everything is tested and subjected to reflection.

Shakespeare's Hamlet is the celebrated type of such a state of transition. In him the poet has described his own thoughts and feelings and those of his own age; but he has set his hero in an age when purgatory was believed in, and the blood-feud was a duty. Even if this merely results from his preserving the framework and outlines of the old story, with a change of character in the principal figure, still Hamlet, as presented in the tragedy, betrays a life of thought and feeling incompatible with the task given him. The Amleth of the old legend handed down to us by Saxo has no scruples, although he acts carefully enough. He carries out each step of his involved plans with firmness, guided by the instinct of self-preservation and the impulse of revenge. Hamlet has the wisdom and the parts of Amleth but not his

[1] John Stuart Mill, *Autobiography*, p. 142.

decision, though he is far more favourably placed for action, as he himself allows when he says

> " I have cause and will and strength and means
> To do't."

What is only suggested in Orestes (by Æschylus and, very characteristically, rather more strongly by Euripides), namely, a hesitation and wavering of resolution, constitutes Hamlet's whole character. Want of energy and incapacity of resolution cannot, indeed, be attributed to him; for he shows presence of mind enough on several occasions; but there is a duality in his nature, a disposition to lose himself in reflections and feelings, excited indeed by his situation and his task, but leading him far from thence, and consuming a portion of the energy, which in Amleth and Orestes are immediately available for action. This he says himself,

> " Thus conscience does make cowards of us all;
> And thus the native hue of resolution
> Is sicklied o'er with the pale cast of thought."

Hamlet is justly regarded as the representative of the modern youth, in so far as it is characteristic of this age for reflection to be roused and to be turned with inquiry and criticism to instinct and authority. The problem is whether a new decision can be acquired in place of that lost.

It is originally in the proper interest of the will and of action that an interval should be established between the first rise of the motive and the resolve. In fact, consciousness itself arises only when the excitation ceases to set up immediate movement (see IV. 4, 6). During the interval the motives may be tried one with another, so that the innermost nature of the mind may determine the action. This play of possibility may, however, exercise a power, alluring or distressing, over the mind, so as to absorb it without letting it come to resolution and action. This way madness lies. "As long as emotion preserves its original energetic character, it but seldom leads to madness, because it exercises the understanding and the will to the utmost and so keeps them both in the path of reasonableness. Passive emotion only, which is reduced to an empty longing, vain desire, foolish hope, or cowardly denial, is the root of madness."[1] A special variety of the insane temperament

[1] Ideler, *Biographieen Geisteskranker*, p. 156.

(the vacillating or self-tormenting variety) appears in the subjection of the simplest actions, in the normal state executed quite mechanically, to endless reflection and doubt.[1]

It is therefore needful to turn back from the world of possibilities to that circumscribed by circumstances. This limitation and narrowing calls for a resignation. To will is to bind ourselves to something quite definite. Reflection therefore, however many winding paths it may strike into, must ultimately lead back to a simple starting point given immediately in our own nature; it is a question of grasping something which lies close at hand. Expansion must be succeeded by concentration. It has been already said by Aristotle "that if a man goes on deliberating for ever he will never come to a conclusion"—and "we always stop in our inquiry how to do a thing, when we have traced back the chain of causes to ourselves."[2] If the will is not diseased, it must be possible to find such a principle or beginning (*ἀρχή*). The misery of the doubter and dreamer is that he never can trace back to himself.[3]

A discord between the will and the other sides of consciousness may equally well arise through the will being developed to an undue degree of strength, without preserving the natural interaction with thought and feeling. A contrast to Hamlet is found in Don Quixote, whose zeal to labour and fight for what is good, and to help the suffering, makes him hasten away under the influence of the most fantastic ideas, without allowing himself time for their closer investigation. He is so eager to come to action that it is only on his deathbed that he sees the world as it is. As another contrast might be named Lassalle (as described by George Brandes), whose force of will found no natural application or full outlet corresponding to its intensity, and so took a form which was overstrained and conducive to his ruin. "The malady that killed him was too much will."[4] Characters such as these are instances of a strongly marked volitional temperament, one-sidedly favoured by circumstances.

[1] Maudsley, *The Pathology of Mind*, p. 311.

[2] *Eth. Nicom.* (Peter's trans., iii., 3, 16). This concentration or return to an active starting-point may be effected with a wrench. Thus, Plutarch makes Cæsar tear himself away in anger from deliberation, to confide himself to the future and to cross the Rubicon (*μετὰ θυμοῦ τινος ὥσπερ ἀφεὶς ἑαυτὸν ἐκ τοῦ λογισμοῦ πρὸς τὸ μέλλον*, Cæsar, ch. 22).

[3] The indulgence in opium produces failure of initiation, cripples the faculty of beginning and attempting. De Quincey, *Confessions of an Opium Eater*. "The opium-eater loses none of his moral sensibilities or aspirations; he wishes and longs as earnestly as ever to realise what he believes possible and feels to be exacted by duty; but his intellectual apprehension of what is possible infinitely outruns his power, not of execution only, but even of power to attempt."

[4] G. Brandes, *Ferdinand Lassalle*.

4. *The consciousness of will.*

(*a*) It has appeared to be characteristic of volition proper as compared with instinct, that we know what we will, that we are conscious of the end and content of the volition. On the other hand, the question still remains how we know the fact that we will, or what it actually is that stirs in us when we will something.

In the phenomena of cognition and of feeling there was no reason for propounding a similar question. Sensations, ideas, and feelings are clearly evident elements of consciousness, but to establish immediately the volitional elements is not so easy. What we experience in consciousness when we will, can be reduced on closer examination to cognitive and feeling elements. In impulse is given a feeling of pleasure or of pain, a certain restlessness induced by faint motor-sensations, as also a more or less distinct idea of an end of movement. In resolution, the typical expression of will proper, there is the thought of an end selected and of the means available to attain it, as also the feeling of pleasure at the thought of its realization, and a more or less lively sensation of straining and of gathering oneself together. Thus neither in impulse nor in resolution are any elements presented which would not be otherwise given. A special feature of resolution, the most distinct form of the will, is the concentration or the bringing to a point, which results from our regarding the possible action as our own. Before the action is actually executed, it is recognized (perceived) as a part of our self. We adopt or anticipate the action, and that is regarded as a completed act which, looked at from outside, appears merely as a possibility. In contrast to the inner action expressed in resolution, the numerous changing wishes and fancies are presented as mere possibilities.

(*b*) But this gives rise to the problem of reality in the province of inner experience. What criterion can be given, that a volition has really arisen, that an inner action has taken place? How is the possibility (the wish and the fancy) to be distinguished from the reality (the resolve)?

Concentration differs from expansion only in degree. In every lively wish there is also a certain concentration. The wishes are to the resolve as the nebulæ to the articulate system of the stars, but in the former it is not so easy to make sure of the extent to which the formation has advanced. If no external action follows upon the internal, how can I be certain that I have really willed? Here appears the great need for a mental dynometer.—The

resolve appears as the conclusion of an inner debate, but what security is there that the debate will not be again renewed and the conclusion perhaps "Sicklied o'er with the pale cast of thought"? And when this happens, can that resolve be said to be anything more than a wish?

In practice we rely upon our immediate feeling. We believe that we can mark immediately in ourselves, that a resolution has been taken. We experience a specially active expectation, feel ourselves prepared for a certain movement. Men who are constrained by their position to make firm and unalterable decisions (as officers and judges), acquire in this respect greater assurance than others, though often, indeed, only in the exercise of their calling.—Absolute assurance is never to be attained.[1] We can attain only to a practical faith in ourselves, based upon self-experience and the knowledge of our character. In any case, what is obtained is an inference and no immediate fact, such as a sensation, a thought, or a feeling.

Although in practice a sharp line is drawn between wishes and resolutions, it must, on the other hand, be allowed that it is very difficult to acquire a knowledge of self. Nowhere is there so much danger of mistake and delusion, as in the question of possibility *versus* reality in the province of inner nature. The anticipating and realizing influence of feeling (VI. *F.* 4*a*) is nowhere more easily and dangerously manifested than here, where an external corrective is lacking. Many people regard themselves as great heroes of the will because they have revelled in great resolves, although these never acquired the tangible and prosaic form of external actions. A constant criticism must therefore be practised here, of the same kind as that applied to the facts of external nature (see V. *D.*). The consciousness of the will, of our inner reality, is just as little immediate as the consciousness of external reality. The mark of reality in the province both of internal and of external nature, is the firm connection of experiences. A single percept or a single feeling may be the result of illusion. Every idea of activity is obtained by inference; experience gives only

[1] In the masterly psychological analysis, which Dostojewski gives of Raskolnikow's resolution to commit the murder, there is shown, indeed, on the one hand, that there was one instant in which the thought of the murder appeared to him as more than a phantom of the brain; he saw it in a new, terrible, quite unfamiliar light; it was as a "blow on the head." But on the other hand, it is observed as a strange property of all the "fixed" resolutions already taken by him respecting the affair, that the more they were "fixed" the more terrible and impossible they seemed in his eyes. Even immediately before committing the deed, he did not believe in his final resolution.

the results of activity. The consciousness of the will therefore is never quite immediate and simple.

An example will make this relation clearer. A woman was arrested in a garden, into which she had stolen one evening in order to set the house of a rival on fire. She declared before the court that before her arrest other thoughts had come into her mind. But although she was able to swear with a good conscience that she would not have set fire to the house, even if she had not been arrested, she still did not venture to swear that she had already positively given up her purpose, and resolved to go away without executing it.[1] Here appears clearly the difference between a conclusion drawn from the complete mental condition with the aid of self-knowledge, and the immediate consciousness of what takes place at the moment. The one may be trustworthy, even if the other is not.

The ethical view is here entirely in accord with the psychological, since it pronounces judgment upon thoughts and wishes equally with resolutions and actions. But on the other hand, the ethical view proceeds with equal justice on the conviction that our innermost nature lies in the will. The difficulty of finding the will clearly and distinctly in any one single phenomenon is attributable to the very fact that the will does not begin at one given point, but is active from the beginning of conscious life, in all association of ideas and in all movement of feeling. In the resolve appears, in a concentrated form, an energy, which in a less intensive form is applied in all cognition and in all feeling. The psychology of the will embraces therefore properly the whole province of consciousness (*cf.* IV. 7 *e*). The phenomena especially called volitional denote only the extreme points of a process which extends over the whole of consciousness.

5. *The will and the unconscious mental life.*

(*a*) It is true of the will even more than of the other forms of mental life, that it cannot be fully understood, so long as we confine ourselves to the clear daylight of consciousness. Even when our resolutions and actions are determined by motives which have their rise in our innermost nature, it does not follow that these motives always stand out clearly in consciousness. In such cases we know, indeed, the fact *that* we will and *what* we will, but not clearly *why* we will it.

[1] The case is fully described in Bischoff, *Merkwürdige Kriminal-Rechtsfälle*, i., pp. 457-474.

Here as everywhere (see III.) there is a whole scale of intermediate stages between the unconscious and the conscious. In every moment, indeed, one thought, one mood, is in the centre of consciousness, while the other thoughts and feelings experienced at the moment fade gradually into the unconscious. Whatever is determined by the constant thoughts, and springs from the dominant feeling, is best understood both by ourselves and by others; but it is not necessarily the thing most deeply rooted in our nature that is taken as the central point of consciousness in any one moment or even in the greater number of moments. The central point of individuality does not always coincide with the central point of consciousness. When it becomes a question of action, therefore, it is not to be wondered at if something happens which astonishes both the spectator and the actor. Something may emerge that had never previously appeared in the foreground of consciousness, and that the individual does not properly recognize as his own.

Nature gives us from the first an impetus, for we find ourselves already active at the birth of consciousness. Consciousness only gradually acquires an influence over the activity (whether inward or outward), and this influence never becomes complete. The spontaneous impulse to movement, the reflex movements, and the half-conscious movements accompanied by obscure feeling, preserve a certain independence, even after conscious thought has nominally taken the direction of affairs. Similarly with involuntary series of ideas and with emotions. The unconscious and involuntary plays a part, to an extent varying in the individual cases, in all conscious volition, and sometimes breaks into open revolt. Under this head come, for example, the obscure incentives familiar, no doubt, to everybody, to knock down different objects, to interrupt a serious speech, or to do other senseless and motiveless things. These phenomena have been styled the "antilogy of the will."[1] An impulse, inexplicable even to ourselves, raises itself against the rational will; it is, as a rule, overcome, but in many cases only with a great effort. Such phenomena show the justice of the saying, that we learn to know our character only from our actions. Since our nature, or our character, is more comprehensive than the small part of it which consciousness clearly illumines, and since, moreover, our actions can never manifest our nature to our-

[1] Spitta, *Die Willensbestimmungen und ihr Verhältnis zu den Impulsiven Handlungen*, Tübingen, 1881.

selves and others in its fulness and manysidedness, there remains always the possibility of new experiences.

The unconscious tendencies to activity are not noticed so long as they tend in the same direction as the conscious thoughts and feelings. Their force merges with that of the conscious motives, which receive the honour or the shame of the whole action. We feel ourselves free and unchecked in our activity. It is only when these tendencies work against the end of conscious endeavour that attention is called to the fact of a something in us, of which we are never, or at any rate not at the moment, master. The sense of inner division, of a contradiction, is at the same time a feeling of constraint.

Such a feeling of constraint often denotes the transition to a higher stage of the life of the will. It is the condition which makes it possible for us to pronounce judgment upon our earlier volition, for while our will works on with undivided energy there is no room for an estimation or a judgment, but we go straight ahead. Here is seen the great importance of the interval already mentioned. It may conduce to a stoppage, even to a hesitation and a discord, in the mind, but it is necessary to higher development. It may lead to the absolute condemnation and rejection of the previous bent of the will. Looking back in memory to times when contending forces were at work in us, we often take the part of the vanquished, and with chagrin and repentance recognize that it was the better, the justified part of our self, which succumbed. And just as deliberation may lead to our losing ourselves in endless reflection, so repentance may lead to a pathological brooding over what cannot be undone. In repentance, however, there works a natural impulse to higher development, aroused, like every impulse, through the sense of contrast between the ideal and the real. The self-condemnation and self-contempt to which repentance may lead, would be unendurable, were not repentance itself a token of nobler powers within us. What inflicts the wound, therefore, also heals it. The great psychological and ethical importance of all self-condemnation lies in its being a token of our power of extricating ourselves from the previously dominant bent of will, just as the patient's knowledge that he has been ill is a token of recovery from insanity.

(*b*) So long as we keep to the purely empirical ground of what, before and during the action, takes place in and before consciousness, it is not possible to demonstrate the validity of the causal law

in the sphere of the will or of the mental life in general. Here as everywhere the causal law is provisionally a mere assumption, a postulate, with which each department of research is first approached. Where anything at all is understood, it is by our finding a causal connection, and if the volitional life is to be understood, the causal law must consequently be supposed applicable in this as in other departments. This view justifies itself, and cannot be gainsaid. For even where no explanation, not even a hypothetical one, can be found, the most natural supposition is that the causes lie too deep, or that the conditions under which they operate are too complicated, to be penetrated into. This is the conclusion drawn in every department of research, when explanation fails; nor can psychological observation lead to any other result. It may very possibly present phenomena, the causes of which cannot be found; but from the nature of the case it can never prove that there is no cause of that which is to us inexplicable.

Psychology, like every other science, must be deterministic; that is to say, it must start from the assumption that the causal law holds good even in the life of the will, just as this law is assumed to be valid for the remaining conscious life and for material nature. If there are limits to this assumption, they will coincide with the limits to psychology.—Apart from this main consideration, it is, however, easy to show the essential importance for psychology of maintaining the causal connection in the department of the will.

(1) Much confusion has arisen through the meaning that has been attached to the word *motive*. If by motive is understood a determining force distinct from ourselves, from our nature, it becomes easy to prove that those who maintain the will to be governed by motives, make it a slave to something external. This is to be ourselves the slaves of a habit of speech, which treats the motives as working upon us like weights set upon the balance from outside. But the motive, the power determining the will, is in reality always the individual himself in a definite form or from a definite side. Our motives are the definite ideas and feelings, without which no definite volition is possible;—and all volition must proceed from something definite, must have a definite content or aim. The content or the aim is embraced by the idea, and determines the feeling, and what we call volition is the yielding to this end or content, an act which—as has been seen—appears in one of its simplest forms in the manner in which we prepare for the execution of a certain movement (VII. *A.* 6 *a*).

The motives are, however, determined, not only by our original nature, but also by our own earlier volition and action. The involuntary and the voluntary stand, as so often set forth, in a relation of extraordinarily complex interaction. Our acts of will and our actions are important not merely on account of their external effects; they take effect also on our involuntary and unconscious life, determining and transforming it. Merely the fact that a feeling has once found a vent or discharge in a certain way, may be of decisive import for the manner of its later expression; it may have either an inhibitive, a strengthening, or a transforming effect. Hence the possibility of a more or less conscious (though of course point for point determined) reaction upon the motives. The will may, in this way, educate itself (*cf.* VII. *B.* 2). How far in any given case the individual can reach in this respect, must be brought to the test and can be determined only by experiment. Any one in whom neither impulse nor wish is aroused, will of course not even make the attempt.

(2) Determinism asserts the continuity of development of consciousness, since it asserts the causal connection in the department of the will. Indeterminism, which teaches the existence of causeless acts of will, absolutely destroys the inner connection and the inner continuity of conscious life. Between these two conceptions a choice must be made; the causal law must either hold good or not hold good, continuity must either be present or not be present. And it does not matter whether the breach of causality is great or small; the question is one of principle. A weight suspended by a string falls to the ground, whether the string is cut in one place or in many. An act of will without a cause would be something absolutely foreign, not pertaining to the nature of the self. Here, as so often in the foregoing, a psychological conception is met with, which to a smaller or less degree, with more or less consistency, reduces the conscious life to a series or sum of members, atoms, or forces, having nothing to do with one another. In opposition to this we have constantly endeavoured to prove that there is such want of causality only where consciousness has either not reached its full development, or is on the road to dissolution. So far as the will specially is concerned, it need only be remembered that purpose and resolution are linked with memory, and that consequently no rules and laws can be supposed to hold good for memory and association of ideas which do not also hold good for the will.

That the will is closely linked with memory implies further that it is linked with the self, with the formal and real unity of consciousness (V. *B.* 5). An action without a cause could not proceed from a self; the two conceptions, self-determination and freedom from the causal law, which are so often thought to mean the same thing, really neutralize one another, so soon as a definite meaning is given to the word "self."

It accords with this that a clearer understanding may be attained of the will, the higher its development. We can understand characters that are energetic and consistent, because every expression and action is determined by thoughts and feelings which stamp the character; and such strongly-marked characters as a rule subscribe themselves to the determinist view (the Stoics, the Calvinists, the English philosophers). The cases in which a psychological understanding cannot be attained are, as a rule, those in which we have before us restless, fermenting characters, the savage and the ungovernable; consequently, phenomena which are the very opposite of self-determination and true volition. If anything could be found in the psychological province not subject to the causal law, it would be above all in the disconnected ideas (*Ideen-jagd*) and in the changing suggestions of lunatics and of idiots. But in conscious life such as theirs, it is precisely constraint which dominates and not freedom, if the word is used, not in the sense of freedom from the causal law, but in the natural sense in which it was employed even by Socrates, namely, of the concentration and independence of the will, which cause a man to be, in his whole life and action, in harmony with his innermost conviction and his deepest feeling. Freedom in this sense is the end to which mental development tends: the contrary, not to necessity, but to chance and blindness.

(3) Indeterminism conflicts, not only with psychology, but also with physiology, inasmuch as it enters into irreconcilable contradiction with the principle of conservation of energy in the organic province. If a volition without a cause is admitted, then the functions of the brain and of the nervous system must be allowed to originate without a cause.

(4) These arguments are so strong, that indeterminism has more and more renounced all claim to any theoretical basis and justification, and in the present day appeals mainly to moral grounds. It has been perceived that, when indeterminism explains actions, otherwise inexplicable, through a will provided for this end and not

subject to the causal law, this is as purely a veiling of ignorance, as was the appeal to a vital force in the explanation of organic phenomena. On the other hand, indeterminism is laid down as a necessary presupposition of moral responsibility and sanity. The discussion of this assertion belongs rather to ethics than to psychology.[1]

It may here be observed that in the feeling of responsibility and in repentance is implied no more than that the individual recognizes that he has willed the action, and by virtue of the better mind to which he has come condemns himself for having done so. The idea that it would have been equally possible to have acted in the opposite way, does not make itself felt in all individuals, and where manifested must be explained partly as the confusion of a metaphysical notion with psychological experience, partly as an illusion which is very natural when the individual with his new conviction and with the strong desire to have acted otherwise, vividly conceives himself at the moment of action, without, however, being able to survey and realize all the inner and outer conditions in actual operation at the time.

C.—The Individual Character.

1. All conscious life is individual. Memory and thought, pleasure and pain, impulse and resolution, all presuppose a common inner centre. It is the task of psychology to set forth the elements, forms, and laws, common to all conscious life, but as actually presented they appear in infinitely various combinations and shades. The general abstract individuality of which psychology treats is merely an outline, which in each given case is filled up differently. This diversity cannot be exhaustively dealt with by general psychology; it is a matter for experience of life, for art, in particular for poetry, and for history. Psychology has only to indicate certain typical differences, conditioned by the relation between the different mental elements and forms of activity.

In the first place, it makes an essential difference whether the cognitive elements or those of feeling or of will have the upper hand in the individual. And further, within each several species of dominant element, there may again be one single bent that has most weight. Thus in the province of cognition, sensuous perception

[1] See the last chapter of my work, *Die Grundlage der Humanen Ethik*.

and thought are presented as opposites; in sensuous perception the different senses (*cf.* for example, the difference between the endowment of the painter and that of the musician), and in thought association by similarity and by contiguity. In the province of feeling the contrast between physical and ideal feelings is of great importance; and after that the contrast between pleasure and pain, egoism and sympathy. Finally, in respect of the will, there are individuals who are principally led by impulse and instinct, while others toil wearisomely through a succession of resolutions. There are some in whom the will acts mainly as a check, others in whom its positively selective and sustaining activity is most prominent. And to all these differences may be added in each several department, differences of strength, of rapidity, and of scope.

From antiquity downwards psychology has laid the greatest stress upon the original bents of feeling, which give the keynote to the mental life, whatever line it may strike out. Both talent and character are determined by the temperament, just as feeling occupies a central position in relation to cognition and will. The temperament is determined by the organic constitution, and manifests itself in the vital feeling, the fundamental mood which controls the mind independently of definite external experiences. It is one of the most important constituents of the real self (V. *B.* 5), the feeling-regulator of the individual (VI. *E.* 2). As a background given from the beginning, it determines the mode in which all experiences are received by the individual, and consequently the mode in which the individual reacts upon the external world.

Already in antiquity Galen propounded the doctrine of the four temperaments, answering to the four elements of Empedocles and the four organic fluids of Hippocrates. The physiological theory on which the doctrine of the temperaments was originally based has been long since abandoned. Now as a rule, with Haller, excitability is taken as a basis. The differences of temperament depend, therefore, upon the varying strength, rapidity, and vividness, with which external impressions are received and preserved. Kant distinguished as follows between the temperaments in which feeling preponderates and active temperaments; the former are light-blooded (sanguine) and thick-blooded (melancholy) temperaments, while the volitional temperaments are hot-blooded (choleric) and cold-blooded (phlegmatic). Quite recently Wundt has utilized the relation between the strength and the rapidity of emotion

as a basis, and has thus returned in a new way to the old four-fold division; the choleric temperament (strong and quick), the melancholy (strong and slow), the sanguine (weak and quick), and the phlegmatic (weak and slow).[1] However essential the point of view here taken may be, inasmuch as excitability or power of reacting appears the fundamental property of all life, there remains something that does not properly appear in the old four-fold division, viz. the tendency to one or other of the two great opposites of the life of feeling, which gives colour and direction to the whole disposition. To the four ancient temperaments might be added, therefore, the bright and the dark temperament; and this opposition is more fundamental than that upon which the other four temperaments are based, because it has its root in the fundamental conditions for the preservation of the individual organism. Pleasure and pain correspond, as has been seen, in the main to the progress or retrogression of the vital process itself (VI. *D.*). Physiologically, the contrast between the bright and the dark temperament points, moreover, to the influence of the vegetative functions upon the brain, while the other four temperaments can be traced back to the greater or lesser ease with which external stimuli can set in motion the central nerve-organs.[2]

2. The origin of the individual character refers back to the origin of the individual organism. We have had in another connection (VI. *C.* 3) an opportunity of observing how very early the germ arises, out of which a new organism is developed. When impregnation has taken place and growth begins, the result is at every point decided by the relation between the inwardly conditioned growth and differentiation on the one side and the mechanical conditions of development on the other. In the individual cases it is extraordinarily difficult to say whether the structure of a form is conditioned by inner processes or by the influence of "mechanical forces." Deformities often arise out of a healthily disposed germ, which went wrong in the course of development.[3]—Even after birth physical conditions (food, climate, etc.) help to determine the result. The stunting of the body, for

[1] Kant, *Anthropologie*, 2nd ed., p. 255, *seq.*; Wundt, *Physiol. Psychol.*, ii., p. 347, *seq.* (3rd ed. ii. p. 421, *seq.*).

[2] *Cf.* James Sully, *Pessimism: a History and a Criticism*, London, 1877, pp. 405-414.

[3] Kölliker, *Entwickelungsgeschichte des Menschen*, 2nd ed., p. 385, *seq.*; Panum, *Bidrag til Kundskab om Misfostrenes Fysiologiske Betydning* ("Contribution to the Knowledge of the Physiological Significance of Abortions"), Copenhagen, 1877, p. 70, *seq.*

example, leads also to the stunting of the mind, and statistics show the influence of external conditions upon human actions. But in respect of every single individual, the force of external conditions is always modified by the inner conditions with which the individual confronts the external world. Individuality is thus always presupposed.

The same holds good also in respect of social causes. Imitation, education, relations to authority play an extraordinarily large part in the mental development of every individual. Even Fichte, who so one-sidedly and energetically maintained the personality, with its capacity of self-determination, to be innate and original, is unable to explain evolution from lower to higher stages, without supposing external intervention, even if this consist only in the touching of a spring. In mental growth it is even more difficult than in bodily to keep apart the inner and outer influences. While some regard the individuality as given from the first, so that what is experienced, exercised and acquired has only a quite secondary importance; some on the other hand (as Helvetius and in modern times John Stuart Mill) have referred all differences of mental capacities to difference in up-bringing. But this is contradicted by the experience that education produces most effect upon mediocre natures. That great differences arise, in spite of similarity of education, shows that at any rate a natural basis always plays some part.

A profounder point of view is afforded by heredity. Individual organisms arise by propagation. The germs of the new organisms are evolved out of earlier organisms, and, as it now appears that they inherit in a greater or smaller degree the nature of these, it seems to be a natural view that the individuality owes its origin and its properties to the race whence it springs. Properties not explicable by physical and social causes, may perhaps find their explanation if we go back to the earlier generation. What seems inexplicable in the individual may be explicable in the race. There is no individual trait on which light may not be thrown from some side or other, if the history of the race is investigated. Such an investigation is exceedingly difficult and complicated, owing to the fact that heredity branches out to infinity, and that several generations may be skipped (atavism).[1]

[1] The expression "atavism" was first employed by Duchesne in reference to plants. Proper Lucas, *Traité Philos. et Physiol. de l'Hérédité Naturelle*, Paris, 1847-50, ii., p. 43. Aristotle was already acquainted with the phenomenon, *Hist. Anim.*, vii., 6 (ed. Bekker, p. 585b); *De Gener. Anim.*, i., 18, (p. 722a).

What has once taken hold in the human organism is not to be easily rooted out. Thanks to this interaction between an enduring type (which, even when interrupted, may re-emerge by means of atavism),—with properties which are implanted by crossing,—and properties which are introduced by accommodation to new conditions of life, by exercise and suffering,—the prospect is afforded of an infinity of different combinations or syntheses.

Heredity in the race has often been compared with the faculty of memory in the individual. But even as memory does not retain everything that passes in the life of the individual, and consequently does not explain the whole of it, so too heredity is not anything more than a natural tendency to retain what has been acquired. The scope of this tendency, and its power of vanquishing new conditions and experiences, is a question presented afresh in each individual case. There is always therefore a place left for empiricism, which infers the content and the nature of consciousness from individual experiences. In the race, as in the individual consciousness, there are two currents or tendencies (*cf.* V. *B.* 2), and these may stand in most varied relations to one another. There is indeed a special class of individual differences depending on whether the inherited constitution or the personal experiences have most to do with forming the character. Thus the sanguine and the choleric temperaments can be more strongly influenced from without than the melancholy and phlegmatic temperaments.

Without entering here more closely into the theories of heredity, we will call attention to one or two general results.[1]—1. The more deeply anything is taken into the organism, the more easily it is transmitted. What is only recently acquired is in unstable equilibrium, and is easily annulled by contrary influences.—2. Physical properties are more easily transmitted than mental ; simple, straightforward faculties more easily than such as depend upon the co-operation of several mental powers. Instincts are inherited most easily of all ; after them tendencies of feeling and faculties of sense ; intellectual capacities last of all.—3. It is only elementary forms and dispositions that are transmitted. What is inherited has therefore more or less indeterminateness, and the degree and

[1] *Cf.* Decandolle, "Sur la part d'Influence de l'Hérédité, de la Variabilité et de la Sélection dans le Développement de l'Espèce Humaine" (in the work, *Histoire des Sciences et des Savants depuis deux Siècles*, Genève, Bâle, Lyon, 1873, pp. 308-402). Ribot, *L'Hérédité Psychologique*, deuxième éd., Paris, 1882.

direction in which it is developed is a question of individual experiences.

3. The physical, social, and inherited conditions supply the elements out of which the structure of individuality is raised. Experience shows us no other regions in which to look for stones for the structure. Only by some mystical roundabout way could the interminable inquiries be escaped, which are consequently necessary to explain any individuality. Some have regarded the individuality as absolutely original; as an "original state," or as an eternal "monad." With such an assumption as a basis, the problem of the origin of individuality is of course wholly done away with, but such an assumption is arbitrary and unscientific. It may, indeed, be said, that there is in nature a law of individuality, inasmuch as all evolution has the character of differentiation, leads to the formation of differences and individual peculiarities; but the problem of research is precisely to discover the elements out of which these totalities are formed and the laws according to which they arise. Research may and must admit that, as regards the individuals, it does not succeed in giving every detail, that there is always something which escapes it,—that the individuality appears in consequence an irrational whole, which admits of only approximate determination. But it is of decisive importance, in this as in all provinces, to protect empirical research from mystical and speculative interference.

From a purely psychological standpoint it is necessary to go a step further. Even though the individual organism, which in spite of its completeness and relative independence is still a republic of cells, were to be explained as compounded out of elements, and its origin made intelligible through the law of the persistence of energy, this would not explain the individual consciousness, the formation of a special centre of memory, of action, and of suffering. That it is possible for such an inner centre to come into being is the fundamental problem of all our knowledge. Each individual trait, each individual property, might perhaps be explained by the power of heredity and the influence of experience; but the inner unity, to which all elements refer, and by virtue of which the individuality is a *psychical* individuality, remains for us an eternal riddle. As was observed in an earlier connection, it is impossible to apply to the mental province anything analogous to the persistence of

energy. Psychical individuality is one of the practical limits of science.

In recent times the attempt has been made to explain by heredity, not only the properties of the individuals and of the family and race, but also the forms and characteristics which apply to all consciousness. Even before Darwin's hypothesis of the origin of species, Herbert Spencer (in the first edition of the *Principles of Psychology*, 1855) propounded the theory, that the fundamental forms and powers of consciousness had been developed through the adaptation of the ancestral races to their conditions of life. The forms of thought and feeling which are typical of the human race, would therefore be *a priori* in respect of the individual, that is to say, they could not be fully explained by the individual experiences, but these experiences would, on the contrary, be conditioned by an original substratum. On the other hand, those forms would find their explanation if account were taken of the whole race, and of the infinite series of experiences the race must have gone through in the course of its development. What would be *a priori* to the individual, would to the race therefore be *a posteriori*.

This hypothesis is an attempt to lead the dispute between apriorism and empiricism into a new channel, and in so doing to allow due weight to each. Apriorism carries the day with reference to the individual, while empiricism holds good for the race. The earlier treatment of this problem (*cf.* the conflict between Locke and Leibniz, Hume and Kant, John Stuart Mill and Whewell) took into consideration only the individual consciousness. Spencer has yielded up one of the most prominent positions of empiricism in order the more energetically to defend a more retired position, the possession of which was denied to the older empiricism by the narrowness of its own standpoint.

This attempt at a solution, however, suggests doubts of two kinds.

In the first place, the race is a collective conception. At any given time it is composed of a certain number of individuals. These individuals carry on the struggle for existence, exercise their powers, and, by accommodation to the conditions of life, acquire a certain organization which may be transmitted to the next generation. But however far back we go, the individuals still start always with a certain organization, with certain forms and powers which they have not themselves acquired, consequently with something *a*

priori. At every stage of the great process of evolution there is a given basis, by which the effect of all experiences is determined. It must therefore be true of the race as of the individual, that the external always presupposes the internal, that what is acquired is conditioned by what is originally innate. This is a fundamental relation that constantly repeats itself.

Spencer's theory recalls Plato's mystical doctrine of knowledge as a reminiscence of a pre-existing state [1] There is, indeed, the great difference that, while Plato explained everything in consciousness which could not be derived from personal experience, as acquired in a spiritual pre-existence, in which the soul in the company of the gods contemplated the eternal ideas,—according to Spencer, the basis of our mental life is formed by the work, the sufferings and struggles of millions of human beings. Both Plato and Spencer overlook, however, that we have here to do with a question of principle, and that, if *existence* involves an *a priori*, this is also involved in any kind of *pre-existence*, whether we conceive it realistically or mystically. An absolute beginning or end cannot, from the nature of our knowledge, be reached. The fundamental relation between a something internal and a something external, which is the general law of life and consequently also of mental life, is only a special case of the general law of relativity. From one single principle, one single assumption, no result, as has been already shown (V. *D.* 5), can be gained.

In the second place, a definite separation must be made between psychological and epistemological points of view. Psychologically, the evolution hypothesis is a great advance; it opens up a wider horizon, a prospect of explanation previously closed to us. Psychologically, as physiologically, the doctrine that that which is inexplicable in the individual may be explicable in the race, is fully justified, and will certainly prove more and more a fruitful principle. But from the point of view of the theory of knowledge, it is a different affair. The final principles which the analysis of our knowledge affords, are the final assumptions attainable for us. All explanations, proofs and hypothesis, consequently also the evolution hypothesis itself, rest upon these. It is the business of epistemology, but not of psychology, to inquire how far this logical basis of all our knowledge is comprehensive. Psychology is a

[1] *Cf.* my paper on Plato's psychology, in *Tidsskrift for Filologi* ("Magazine of Philology"), Copenhagen, 1876, p. 209, *seq.*

special discipline, which presupposes the general principles of our knowledge, but cannot explain their validity. The unassailable standpoint of idealism is given in the necessity of thought, which lies at the bottom of every admissible realistic hypothesis. However far it may be possible to explain man through the world, the world in its turn is always explained through man; for we can go no farther back than that which is to man a necessity of thought.

INDEX

INDEX

A

Abstraction, 165—173
Acedia, 336
Activity and passivity, 48, *seq.*; 98, *seq*; 119, *seq.*; 160, 173, *seq.*; 281, *seq.*; 300, *seq.*; 325, 335
Æschylus, 338
Æsthetic feeling, 264, *seq.*
After-image, 144
Agraphia, 147, 313
Alcmæon, 53
Anger, 234
Aristotle, founder of empirical psychology, 26, *seq.*; psychological bipartite division, 88, *seq.*; development of higher mental forms out of lower, 90; on sympathy for those on whom we have conferred benefits, 245; on the seat of feeling, 268; on the biological importance of feeling, 272; distinction between squib and comedy. 295; close of deliberation, 339; atavism, 351
Art, origin of, 264; direct and associative factor in artistic effect, 265; artistic and natural beauty, 266; artistic imagination, 180, *seq.*
Association of ideas, laws of, 149—160
Associationist-psychology, 49, 95, 157, 177
Atavism, 351
Attention, 95; involuntary attention, 119, *seq.*, 314; voluntary attention, 315; attention and association of ideas, 160, 299
Aversion, 234

B

Bacon (Francis), on knowledge and power, 214
Baer (K. E. v.), on growth and generation, 247
Bain (Alexander), the number of nerve-cells in the cerebral cortex, 40; spontaneous movement, 118, 131, 310, *seq.*; apprehension of space, 193, 199; feelings of relativity, 279; neutral feelings, 287
Bell (Charles), the brain as seat of feeling, 268
Beneke, on the unconscious, 73; on the expansion of feeling, 303
Bernard (Claude), on the effect of curare, 11; the blood as *milieu intérieur*, 34; on the physiological standpoint, 35; on sensibility as faculty of organic matter, 83
Bernouilli, 276
Bichat, on the seat of the feelings, 268; on the influence of repetition, 281
Blind persons, 108, 123, 195, 197, 205
Bonnet, on hallucinations, 144; on the will, 314
Bouillier, on satisfaction in sorrow, 258
Braid, on monoideism as condition of hypnotism, 45
Brain: brain-physiology, 38, *seq.*; brain and consciousness, 50, *seq*; 267, *seq.*; 312, *seq.*
Brandes (George), on the character of Lassalle, 339
Broca, on the organ of speech, 41
Brochner, on the unconscious, 75
Broussais, 15, 61
Burdach, on the psychical relation of the impression, 80
Burke, on the sublime, 290

C

Cabanis, on the psychological importance of the fœtus-life, 3; on matter, 61; on genius in the years of puberty, 254
Calderon, life a dream, 219
Campanella, 333
Cardanus, relativity of feeling, 275; pain a condition of pleasure, 285

Carpenter, on unconscious cerebration, 81; on expectant attention, 304; physiology of attention, 316
Causal concept, its application presupposes succession, 56, *seq.*; its epistemological basis, 208; its psychological development, 213, *seq.*; 301, *seq.*; its application to the life of the will, 344, *seq.*
Cellini, illusion on the basis of an hallucination, 145
Choice, elementary, 121, 160; conscious choice, 328
Clifford, on animation in general, 82
Cognition, psychology of, 101—220; cognition and feeling, 94—98, 161, 221, *seq.*; 233, *seq.*; 298, *seq.*; cognition and will, 95, 119, *seq.*; 160, 330, *seq.*
Colour, sensations of, 103, *seq*; 108, 112, *seq.*; their effects on feelings, 230, *seq.*
Complex ideas (individual ideas), 164
Concept, 175, *seq.*
Condillac, on attention, 120, *seq.*
Conscience, 260, 277, 301
Consciousness: preliminary account, 45, *seq.*; consciousness and cerebral activity, 50, *seq.*; consciousness and unconsciousness, 71, *seq*; element of consciousness, 88; centre of consciousness and centre of individuality, 343
Contrast, effect of, in the province of sensations, 112, *seq.*; between fresh and repeated sensations, 121; between sensations, 161; between feelings, 275, *seq*; 260, 301

D

Darwin (Charles), on the capacity of producing sounds, 156; expressions of anger in young children, 234; egoism of the male, 249; the courtship of animals, 251; development of sympathy, 252; smiling in young children, 291; smiling and laughter in monkeys, 292; the physiognomy when lost in thought, 316
Darwin (Erasmus), on the psychological importance of the fœtus-life, 3
Deliberation, 328
Descartes, conception of the mind, 9; on the relation between mind and body, 58, *seq.*; on the apprehension of distance, 194; the seat of feeling, 268; wonder as the forerunner of all feelings, 279
Desire, 235, *seq.*; 323
Determinism, 344, *seq.*
Differentiation, 85, *seq.*; 90, 169, *seq.*; 232, *seq.*
Disinterested feeling, 257, *seq.*
Distance, apprehension of, 192, *seq.*; *cf.* 164, *seq.*
Double consciousness, 140
Dostojewski, psychology of crime, 300; consciousness of the will, 341
Dream and reality, 206, *seq.*; 217, *seq.*
Dream-images, 145
Dreaming, state of, 78, *seq.*
Dualistic hypothesis, as to the relation between mind and body, 55, *seq.*; *cf.* 5, *seq.*; 58, *seq.*
Dubois-Reymond, on the phenomena of consciousness and the causal law, 83; the principal law of the physiology of the nervous system, 106
Duty, feeling of, 260

E

Effort, sensation of, 225, *seq.*
Egoism, feeling of, 242, *seq.*
Element of consciousness, 88; conscious element and material element (atom), 66, 141, *seq.*
Elementary choice, 121
Elementary feelings, 221, *seq.*; 232
Elementary memory and comparison, 116
Elementary sensations, 105
Emotion, 282, *seq.*
Energy, conservation of, 31; consequences as regards the relation between mind and body, 55, *seq.*; the conservation of energy and the principle of individuality, 66, 86; the conservation of energy and indeterminism, 347
Epistemology, 15, 27, 61, 214, 216, 355
Eschricht, on the psychology of idiots, 291, 321
Ethics and psychology, 27, *seq.*; 221, 284, 348
Ethical feeling, 259
Euripides, sentimentality, 258; character of Orestes, 338
Evolution, hypothesis of, see *Spencer*
Expansion of feeling, 303; concentration and expansion (differentiation) of mental life, 91, *seq.*
Expectation, 131, *seq.*; 292, 304

F

Fear, 226, 228, 237
Fechner, formula for the increase of sensations, 22, *seq.*; 110; on the relation between mind and body, 69; after-image of an unconscious excitation, 76; assertion of absolute sensations, 115; memory-after-images, 147; direct and associative factor in æsthetic effect, 265; biological significance of feeling, 272; sensations in attention, 315, *seq.*
Feeling, unconscious growth, 77; independence of the other sides of consciousness, 89, 222, *seq.*; 239, *seq.*; feeling and cognition, 95—98, 160, 221, *seq.*; 233, *seq.*; 298, *seq.*; feeling and will, 98, 235, 301, 330, *seq.*; physiology and biology of feeling, 267, *seq.*; slowness of feeling as

compared with cognition, 223, 237, 240, 245, 298, 302. *seq.*
Feilberg (Ludwig), on emotional effect, 303
Feuerbach (Anselm von), capacity of passion to excite emotions of another kind, 283; on the blinding force of passion, 300
Fichte (J. G.), subjective idealism, 218; connection between ethical and religious feeling, 263; spontaneous movement, 310; individuality and external influences, 351
Flourens, polemic against localization in the brain, 40. *seq.*; instinct correlated with the cerebrum, 312
Freedom (of the will), 342, *seq.*
Free ideas, 126
Function, 60

G

Gall, theory of localization, 40; seat of feeling in the brain, 268
Galton, sight and visual memory, 147; on generic images, 168
General feeling, (vital feeling), 4, 77, 98, 139, 225, 285, 291, 299, 349
General ideas, 166, *seq.*
General sensation, 4, 139, 225
Genetic theory of the perception of space, 202
George Sand, transition from instinct to ideal feeling, 251
Goethe, concept of function, 60; on primary colours, 103; hallucinations, 145; Phantasy, 103, 183; effect of colours upon feelings, 229; "Der Schäfer," 254; "Das Blümlein Wunderschön," 254; on the effect of repetition upon feeling, 282; expansion of feeling, 303; "Der Zauberlehrling," 330; resignation, 334; "Der Fischer," 335
Goldschmidt (M.), 306, 331
Goltz, on localisation in the brain, 41, 312, *seq.*
Griesinger, dissolution of consciousness through insanity, 46; on sensations accompanying brain activity, 53; on psychical reflex movement, 58
Guislain, on insanity in its first stage, 306

H

Hallucinations, 144 *seq.*, 207
Hamilton (Sir William), inverse relation between sensation and perception, 129; fundamental law of association of ideas, 158; relativity of cognition, 217; consciousness as one with cognition, 239; on the attractiveness of deep sorrow, 258
Hartley (David), on psychical chemistry, 163; psychological evolution from egoism to sympathy, 244
Hatred, 235; disinterested hatred, 252, *seq.*
Hearing, sensations of, 104, 107, 114, 228, *seq.*
Hecker, physiological explanation of laughter, 291
Helmholtz, unconscious judgments, 74; compound character of sensations of hearing, 104, *seq.*; sensation and perception, 123; on the apprehension of space, 193
Herbart, attempt at a mathematical psychology, 22; atomistic theory of mind, 49, 142, 144
Heredity, 351, *seq.*, *cf.*, 26, 106, 203, 252
Hering, on primary colours, 103; "Nativistic" theory of the apprehension of space, 201
Hobbes, law of psychological relativity, 45, 275; influence of feeling on the associations of ideas, 161; laughter as expression of sense of power, 293, 298
Holbach, 15, 61
Homer, materialism, 9; description of melancholy, 238; blinding of passion and repentance, 260
Hope, as original sanguine disposition, 133; as a species of vital feeling. 226; as effect of sensuous excitations, 228; as determined by ideas, 237
Hornemann (E.), on the death struggle, 11
Horwicz (Adolf), consciousness begins as mere feeling, 96; against the notion of neutral feelings, 288
Hume, consciousness as mere succession, 47; criticism of the causal concept, 209, *seq.*; on the association of feelings, 241; feeling overcome only by feeling, 284; expansion of feeling, 303
Humour, 295, 298, 335
Hunger, 226, *seq.*
Hypnotism, 45

I

Idealism, epistemological idealism (subjectivism), 61, 68, 217, 356; artistic idealism, 182, *seq.*; idealism of feeling, 262
Idealization, 183
Ideation, 121—184; ideation and perception, 129, *seq.*; 145; ideation and feeling, 160, 233, *seq.*; 301, *seq.*; ideation and will, 315, *seq.*; 321, *seq.*; 331, *seq.*
Identity, principle of, in logic, 175, 177; principle of identity and the causal principle, 211
Identity-hypothesis of the relation between mind and body, 64, *seq.*
Idiots, smiling and laughter, 291; late control of the senses and of the limbs, 321
Illusions, 145

Imagination (see also under *Memory*), 135, 178, *seq.*; importance of, for sympathy, 255, *seq.*; for the will, 346, *seq.*
Impulse and instinct, 92; impulse and feeling, 235, *seq.*; impulse and will, 312, 322, *seq.*
Indeterminism, 346, *seq.*
Individuality, as fundamental form of mental existence, 66; law of individuality in nature, 86, 353; limited energy of each individual, 93, 99, 233, 240, 336; centre of individuality and centre of consciousness, 343; typical individual differences, 348, *seq.*; origin of individuality, 48, 246, 321
Individual ideas, 164
Inhibition, 43, 52, 93, 312, 335
Instinct, its relation to reflex movement and to impulse, 91, 235, *seq.*, 312, 322; instinct of self-preservation, 243; sympathetic instincts, 248; instinct and feeling, 248, 251; instinct and reflection, 319; instinctive movements in children, 320
Intellectual feeling, 263
Interval between stimulation and reaction, 92, 326
Irritability, 34, 309, 350

J.

James (W.), on different ideas, 169; feeling as a species of sensation, 271
Joy, 235
Judgment, 175, *seq.*
Justice, feeling of, 259

K

Kant (Immanuel), consciousness as synthesis, 48; critique of the metaphysical psychology, 16; identity hypothesis, 69; psychological tripartite division, 89; matter and form in cognition, 117; inverse relation of sensation and perception, 129; importance of memory for perception, 130; the causal concept, 212; cognition as the essence of consciousness, 239; the feeling of duty, 260; connection between ethical and religious feeling, 263; passion and emotion, 282; pain as a condition of pleasure, 285; feeling of the **sublime**, 289, 290; the ridiculous, 296; struggle against hypochondria, 334; doctrine of temperament, 350
Kierkegaard (S.), on repetition, 280
Kussmaul, on the mental life of infants, 4; physiology of speech, 42; word-deafness and word-blindness, 125; forgetting of words, 148, *seq.*; loss of power of speech without loss of intelligence, 171

L

Lange (Albert), on the conception of simultaneous presentation, 191
Lange (Carl), on latent innervation, 226
Language, expression for mental phenomena, 2; physiology of language, 42; origin of language, 156; language and ideas, 170—173
Laplace, 276
Larochefoucauld, supremacy of egoism, 244
Latent innervation, 226
Laughter, as a purely physiological phenomenon, 290, *seq.*
Laycock, effect of narcotics, 36; reflex action of the brain, 58; nightmare, 226; laughter consequent on a swelling in the brain, 291
Lehmann (A.), on the effect of colour on feeling, 230
Leibniz, on verbal expressions for mental phenomena, 2; unconscious growth in mental life, 78; the unconscious as potential consciousness, 81, *seq.*; on the criterion of reality, 220
Leopardi, 284
Lessing, 295
Lichtenberg, 303, 307, 333, 334
Littre, on a case of "automnésie affective," 242
Local signs, 200, *seq.*
Locke, on verbal expressions for mental phenomena, 2; on association of ideas, 157; on abstract ideas, 166
Logic and Psychology, 27, 173, *seq.*
Lotze, on substance, 13; on nervous activity, 36; on the relation between mind and body, 63, *seq.*; on local signs, 200, *seq.*; on the biological significance of mental life, 273; on the influence of the vital feeling on the production of ideas, 299
Love, in the most general sense, 235; love as sympathy, 247, *seq.*; the feeling of love, 250

M

Madvig, language denotes the non-spatial by the spatial, 3; on the origin of language, 156
Maimon (S.), pure sensations a mere abstraction, 117; criticism of Kant's causal theory, 212
Marshall Hall, theory of reflex movements, 58
Materialism, 15, 59, *seq.*
Maternal feeling, 248
Mechanical explanation of nature, 10, 30, *seq.*, 216, 302
Melancholy, 238, 240

Memory, a fundamental mental phenomenon, 47; memory not always a proof of conscious apprehension, 77; elementary memory, 116; implicate memory, 124; free memory, 126, *seq.*; remembrance and obliviscence, 142, *seq.*, 161, seq; vivacity of memory-images, 146; conditions of preservation and rise of memory-images, 147, *seq.*; consciousness of things remembered as reproductions of past experience, 133; remembrance of feelings, 241, *seq.*; remembrance and the will, 327, 346
Memory-after-images, 147
Metaphors, 153
Metaphysics and Psychology, 14—16, 62, *seq.*, 67, *seq.*
Mill (James), 157, 161, 244
Mill (John Stuart), consciousness as a series of states, 47, *cf.*, 137; unconscious cerebration, 81; logical theory, 177; subjective idealism, 218; psychological development of sympathy, 244; importance of education, 351
Mind, notion of the, 1, 6, 12; metaphysical doctrine of the mind, 12, *seq.*; mind and body, 29—70; extent of the mental life, 71—85
Mixed feelings, 236—239, 290
Modality (of sensation), 106
Monism (in the narrower sense), see *Identity-hypothesis*
Monistic hypotheses, 59, *seq*
Monoideism, 45
Motive, 324, 335, 345, *seq.*
Motor-ideas, 147, 172, 317, *seq.*
Motor-sensations, 118, 225, *seq*, 227, 317,
Movement and sensuous perception, 118; different kinds of movement, 308, *seq*
Muller (Joh.), on the sensation of effort, 119; on spontaneous movement, 310
Muller (Max), on verbal expressions for mental phenomena, 2; on radical and poetical metaphors, 153, *seq.*; stages in the development of language, 163
Munk, on localization in the brain, 41, 268, 313; mental blindness and mental deafness, 125
Music, 265, 305, *seq.*
Mythological Conception of the Mind, 7, *seq.*; mythological causal concept, 215

N

Nahlowsky, on sensation and feeling, 221; the analogy of sensations, 306
Nativism, 194, 198, 201, *seq.*
Nature, feeling for the beauty of, 266
Necessity, 208, 302
Nerve-process, 36, *seq.*: 82, 271. *seq*
Nervous system, 37, *seq.*
Neutral feelings, 287
Nightmare, 226.

O

Obliviscence, 141, *seq.*; 161, *seq.*
Organic life, 33, *seq.*
Örsted (H. C.), on the æsthetic effects of colour, 229

P

Panum, physiology as organic physics, 10, 35, *seq*; differences in the capacity of organic beings to feel pain, 11; on the organic basis of the apprehension of space, 204; on the relation between physical and physiological observation of colours, 232
Parallelism between the functions of the nervous system and the activity of consciousness, 50, *seq.*
Passion, as distinct from emotion, 282, *seq.*
Paternal love, 249
Perception, 18, 124, *seq.*; 129, *seq.*; 318
Personal equation, 18
Pflüger, on the power of animal organism to form organic substances, 35; on the irritability of organic tissue, 309
Physiology, standpoint and method, 9, *seq*; 33, *seq.*; 57, *seq.*; physiology and psychology, 24, *seq*; 69, 83, *seq.*; physiology of cognition, 40, *seq.*; 50, *seq.*; 125; physiology of feeling, 267, *seq.*; physiology of laughter, 291; physiology of volition, 311, *seq.*
Physiological time, 51, 94
Platner, on a blind person's idea of space, 197
Plato, mind and body, 9; seat of thought in the head, 53; the "parts" of the mind 87, 267, *seq.*; higher and lower forms of mental life, 90; mixed feeling, 238; self-preservation and propagation, 247; Eros, 250; passion as false knowlege, 284; doctrine of pre-existence, 355
Preyer, the unity of the Ego not original, 138; on the memory of the experiences of childhood, 149; a child's judgments, 176; pain predominant in early childhood, 286; laughter of a child, 291; first movements in the embryo, 310
Psychology, provisional description, 1; ultimate sources, 11; experiential psychology and metaphysics, 11—16; method, 16. *seq.*; experimental psychology, 21; subjective and objective psychology, 24; psychology and physiology, 24, *seq.*; 69, 83, *seq.*; psychology and logic, 27, 173, *seq.*; psychology and ethics, 27, *seq.*; 221, 284, 348; psychology and epistemology, 19, 27, 61, 214, 216, 355
Psychophysics (experimental psychology), 21
Purpose, 328

Q

Quincey, De, emergence of forgotten memories, 143; the swelling of time, 189; lost power of coming to a decision, 339

R

Realism as artistic tendency, 182, *seq.*; as contrast to epistemological idealism, 355
Reality, criterion of, in the province of external experience, 206, *seq.*; *cf.* 130, *seq.*; in the province of will, 340, *seq.*
Reflex movement, 37, *seq.*; 57, 91, 310, *seq.*
Relativity, law of, in the province of sensation, 114, *seq.*; in the province of representations and concepts, 216, *seq.*; in the province of feeling, 275, *seq.*; in the province of volition, 314, 329
Religious feeling, 261, *seq.*
Repentance, 244, 260, 344, 348
Repetition, as condition of conscious life, 121, *seq.*; its importance for thought, 176, *seq.*; 213; its influence on feeling, 279, *seq.*
Resignation, 334
Resolve, 328, *seq.*
Reverence, 261
Richet, memory as condition of pain, 96, 224; pain is intermittent, 278
Ridiculous, the feeling of the, 290—297
Rousseau, independence and importance of feeling, 88, *seq.*; 96; the feeling for the beauty of nature, 267; polemic against Molière, 295

S

Schiller, "Der Tanz," 154; pleasure and love, 251; origin of art, 265
Schiödte (J. C.), 183
Schneider (G. H.), on manifestations of consciousness in the lowest animals, 97; on successive and simultaneous contrast, 115
Schopenhauer, "der Wille zum Leben," 93; on the sexual instinct, 251; negative character of pleasure, 284
Self and Not-Self, 3—6, 223, *seq.*; psychological conception of the self, 136, *seq.*
Sensation, 101—121; sensation and perception, 121, *seq.*; sensation and feeling, 221—233; analogy of sensations, 306
Sexual selection, 251, 264
Shaftesbury, 251
Shakspeare, King Lear, 109, 155; Othello, 237; Hamlet, 238, 337; Richard III., 252; Macbeth, 300; Shakspeare's humour, 297
Sibbern, identity-hypothesis, 69; evolution takes place sporadically, 85; feeling and will in relation to cognition, 98; on sensation and perception, 125; association between the whole and the parts, 154; mixed feelings, 238
Single element of consciousness, 137
Smith (Adam), birds' instinctive knowledge of surroundings, 194; an impulse of imitation the basis of sympathy, 246
Space, apprehension of, 190—205; absolute space and psychological space, 205
Speculative philosophy, see *Metaphysics*
Spencer (Herbert), on the mythological conception of the mind, 7, *seq.*; laws of evolution common to mind and matter, 85; explanation of the modalities of sense by the evolution-hypothesis, 106; rhythm of movement, 122; the inverse relation of sensation and perception, 129; the apprehension of space explained by the evolution-hypothesis, 203; sympathy explained by the evolution-hypothesis, 250, 252; on pleasure in sorrow, 258; play as the germ of art, 265; biology of feeling explained by the evolution-hypothesis, 274; rhythm of the expressions of emotion, 278; the ridiculous, 296; expansion of feeling, 303; hypothesis as to the evolution of conscious life, 354
Spinoza, notion of substance, 13, 85; on association of feelings, 239; psychological development of sympathy, 244; disinterested malice, 252; disinterested love, 259; the law of relativity in the province of feeling, 275, 278; feeling can be suppressed only by feeling, 284; dependence of the will on memory, 327; resignation, 334
Spiritualism, 12, *seq.*; dualistic spiritualism, 55, *seq.*; monistic spiritualism, 62, *seq.*
Spontaneous movement, 118, 131, 309, *seq.*
Staël (Madame de), on improvization, 181; on expansion of feeling, 303
Stumpf, polemic against the law of relativity, 116; nativist theory of the apprehension of space, 198, 201, 204
Subject and Object, 217
Subjectivity, theory of, 219
Sublime, the feeling of the, 288, *seq.*; 297
Successive apprehension clearer than simultaneous, 114, *seq.*; 163, 199, 237, *seq.*; 290
Sympathy, 235, 244, *seq.*

T

Tegnér (E.), want of verbal expressions for certain ideas, 172
Teleology, 302
Temperament, 349
Thirst, 226, *seq.*
Thought, elementary thought in all sensation, 116; thought in all perception, 130; in all association of ideas, 159; on thought

proper in relation to the involuntary flow of ideas, 173, *seq.*
Time, apprehension of, 184—190
Tocqueville, 325
Tone, sensations of, see *Hearing*
Totality, law of, 159
Typical individual idea, 165

U

Unconscious mental activity, 71, *seq.*; the unconscious as potential consciousness, 81, *seq.*; the will and the unconscious mental life, 342, *seq.*
Unity, as characteristic mark of conscious life, 47; formal and real unity of consciousness, 139, *seq.*

V

Vives. (L.), 291, 292
Vogt (Carl), 60

W

Weber (E. H.), on touch and common sensation, 115, 123; the delicacy of the sense of touch in different parts of the body, 120; sensation arises more quickly than feeling, 223
Wilkens, 250
Will, as first and last, 99, 308; the will-moment of thought, 95, 173, *seq.*; 315, *seq.*; will and feeling, 98, *seq.*; 301, 317; psychology of the will, 308—348; physiological seat of the will, 311, *seq.*; impulse and will, 329; will and movement, 308
Wish, 326
Word-blindness and word-deafness, 125
Wundt, on physiological time, 94; on association between the whole and the parts, 154; on apperception (conscious attention), 161; on estimation of time, 187; on apprehension of space, 200, 204; sensation and feeling, 223; analogy of sensations, 306; motor-centres in the cerebrum, 313; physiology of attention, 316; doctrine of temperaments, 349

THE END

Richard Clay and Sons, Ltd., Brunswick St., Stamford St., S.E.

150
H690 Hoffding, H.
2326
outlines of Psychology
26-10-61 C 100
Purchased
6 AUG 1963
4 NOV 1964