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OUTLINES
OF
P S Y C H O L O G Y

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INTRODUCTION.

§ 1. PROBLEM OF PSYCHOLOGY.

1. Two definitions of psychology have been the most prominent in the history of this science. According to one, psychology is the "science of mind": psychical processes are regarded as phenomena from which it is possible to infer the nature of an underlying metaphysical mind-substance. According to the other, psychology is the "science of inner experience": psychical processes are here looked upon as belonging to a specific form of experience, which is readily distinguished by the fact that its contents are known through "introspection", or the "inner sense" as it has been called to distinguish it from sense-perception through the outer senses.

Neither of these definitions, however, is satisfactory to the psychology of to-day. The first, or metaphysical, definition belongs to a period of development that lasted longer in this science than in others. But it is here too forever left behind, since psychology has developed into an empirical discipline, operating with methods of its own; and since the "mental sciences" have gained recognition as a great department of scientific investigation, distinct from the sphere of the natural sciences, and requiring as a general groundwork an independent psychology, free from all metaphysical theories.

The second, or empirical, definition, which sees in psychology a "science of inner experience", is inadequate because it may give rise to the misunderstanding that psychology has to do with objects totally different from those of the so-called "outer experience". It is, indeed, true that there are contents of experience which belong in the sphere of psychological investigation, but are not to be found among the objects and processes studied by natural science: such are our feelings, emotions, and decisions. On the other hand, there is not a single natural phenomenon that may not, from a different point of view, become an object of psychology. A stone, a plant, a tone, a ray of light, are, as natural phenomena, objects of mineralogy, botany, physics, etc.; but in so far as they arouse in us *ideas*, they are at the same time objects of psychology. For psychology seeks to account for the genesis of these ideas, and for their relations both to other ideas and to those psychical processes not referred to external objects, such as feelings, volitions, etc. There is, then, no such thing as an "inner sense" which can be regarded as an organ of introspection, and thus distinct from the outer senses, or organs of objective perception. Ideas, whose attributes psychology seeks to investigate, arise through the outer senses no less than do the sense-perceptions on which natural science is based; while the subjective activities of feeling, emotion, and volition, which are neglected in natural science, are not known through special organs, but are directly and inseparably connected with the ideas referred to external objects.

2. It follows, then, that the expressions outer and inner experience do not indicate different objects, but *different points of view* from which we start in the consideration and scientific treatment of a unitary experience. We are naturally led to these points of view, because every concrete ex-

perience immediately divides into *two factors*: into a *content* presented to us, and our *apprehension* of this content. We call the first of these factors *objects of experience*, the second *experiencing subject*. This division points out two directions for the treatment of experience. One is that of the *natural sciences*, which concern themselves with the *objects* of experience, thought of as independent of the subject. The other is that of *psychology*, which investigates the whole content of experience in its relations to the subject and in its attributes derived directly from the subject. The standpoint of natural science may, accordingly, be designated as that of *mediate experience*, since it is possible only after abstracting from the subjective factor present in all actual experience; the standpoint of psychology, on the other hand, may be designated as that of *immediate experience*, since it purposely does away with this abstraction and all its consequences.

3. The assignment of this problem to psychology, making it an empirical science coordinate with natural science and supplementary to it, is justified by the method of all the *mental sciences*, for which psychology furnishes the basis. All of these sciences, philology, history, and political and social science, have for their subject-matter immediate experience as determined by the interaction of objects with the knowing and acting subject. None of the mental sciences employs the abstractions and hypothetical supplementary concepts of natural science; quite otherwise, they all accept ideas and the accompanying subjective activities as immediate reality. The effort is then made to explain the single components of this reality through their mutual interconnections. This method of psychological interpretation employed in the mental sciences, must also be the mode of procedure in psychology itself, being the method required by the subject-matter of psychology, the immediate reality of experience.

3a. Since natural science investigates the content of experience after abstracting from the experiencing subject, its problem is usually stated as the acquirement of "knowledge of the outer world". By the expression outer world is meant the sum total of all the objects presented in experience. The problem of psychology has sometimes been correspondingly defined as "self-knowledge of the subject". This definition is, however, inadequate because the interaction of the subject with the outer world and with other similar subjects is just as much a problem of psychology as are the attributes of the single subject. Furthermore, the expression can easily be interpreted to mean that outer world and subject are separate components of experience or that they can at least be distinguished as independent contents of experience, whereas, in truth, outer experience is always connected with the apprehending and knowing functions of the subject, and inner experience always contains ideas from the outer world as indispensable components. This interconnection is the necessary result of the fact that in reality experience is not a mere juxtaposition of different elements, but a single organized whole which requires in each of its components the subject that apprehends the content, and the objects that are presented as content. For this reason natural science can not abstract from the knowing subject entirely, but only from those attributes of the subject which either disappear entirely when we remove the subject in thought, as, the feelings, or from those which, on the ground of physical researches, must be regarded as belonging to the subject, as, the qualities of sensations. Psychology, on the contrary, has as its subject of treatment the *total* content of experience in its immediate character.

The only ground, then, for the division between natural science on the one hand, and psychology and the mental sciences on the other, is to be found in the fact that all experience contains as its factors a content objectively presented, and an experiencing subject. Still, it is by no means necessary that *logical* definitions of these two factors should precede the separation of the sciences from one another, for it is obvious that such definitions are possible only after they have a basis in the investigations of natural science and of psychology. All that it is

necessary to presuppose from the first, is the consciousness which accompanies all experience, that in this experience objects are being presented to a subject. There can be no assumption of a knowledge of the conditions upon which the distinction is based, or of the definite characteristics by which one factor can be distinguished from the other. Even the use of the terms object and subject in this connection must be regarded as the application to the first stage of experience, of distinctions which are reached only by developed logical reflection.

The forms of interpretation in natural science and psychology are supplementary not only in the sense that the first considers objects after abstracting, as far as possible, from the subject, while the second has to do with the part the subject plays in the rise of experience; but they are also supplementary in the sense that each takes a different point of view in considering the single contents of experience. Natural science seeks to discover the nature of objects without reference to the subject. The knowledge that it produces is therefore *mediate* or *conceptual*. In place of the immediate objects of experience, it sets concepts gained from these objects by abstracting from the subjective components of our ideas. This abstraction makes it necessary, continually to supplement reality with hypothetical elements. Scientific analysis shows that many components of experience — as, for example, sensations — are subjective effects of objective processes. These objective processes in their objective character, independent of the subject, can therefore never be a part of experience. Science makes up for this lack by forming supplementary hypothetical concepts of the objective properties of matter. Psychology, on the other hand, investigates the contents of experience in their complete and actual form, both the ideas that are referred to objects, and all the subjective processes that cluster about them. Its knowledge is, therefore, *immediate* and *perceptual*: perceptual in the broad sense of the term in which not only sense-perceptions, but all *concrete reality* is distinguished from all that is abstract and *conceptual* in thought. Psychology can exhibit the interconnection of the contents of experience as actually presented to the subject, only by avoiding entirely the abstractions and supplementary concepts of natural science. Thus, while natural science and psychology are

both empirical sciences in the sense that they aim to explain the contents of experience, though from different points of view, still it is obvious that, in consequence of the character of its problem, psychology is the *more strictly empirical*.

§ 2. GENERAL THEORIES OF PSYCHOLOGY.

1. The view that psychology is an empirical science which deals, not with specific contents of experience, but with the immediate contents of all experience, is of recent origin. It still encounters in the science of to-day oppositional views, which are to be looked upon, in general, as the remnants of earlier stages of development, and which are in turn arrayed against one another according to their attitudes on the question of the relation of psychology to philosophy and to the other sciences. On the basis of the two definitions mentioned above (§ 1, 1) as being the most widely accepted, two chief theories of psychology may be distinguished: *metaphysical* and *empirical* psychology. Each is further divided into a number of special tendencies.

Metaphysical psychology generally values very little the empirical analysis and causal synthesis of psychical processes. Regarding psychology as a part of philosophical metaphysics, its chief effort is directed toward the discovery of a definition of the "nature of mind" that shall be in accord with the whole theory of the metaphysical system to which the particular psychology belongs. After a metaphysical concept of mind has thus been established, the attempt is made to deduce from it the actual content of psychical experience. The characteristic that distinguishes metaphysical from empirical psychology is, then, its attempt to deduce psychical processes, not from other psychical processes, but from some

substratum entirely unlike themselves: either from the manifestations of a special mind-substance, or from the attributes and processes of matter. At this point metaphysical psychology branches off in *two* directions. *Spiritualistic* psychology considers psychical processes as the manifestations of a *specific* mind-substance, which is regarded either as essentially different from matter (dualism), or as related in nature to matter (monism or monadology). The fundamental metaphysical doctrine of spiritualistic psychology is the assumption of the *supersensible* nature of mind and, in connection with this, the assumption of its immortality. Sometimes the further notion of preexistence is also added. *Materialistic psychology*, on the other hand, refers psychical processes to the *same* material substratum which natural science employs for the explanation of natural phenomena. According to this view, psychical processes, like physical vital processes, are connected with certain organizations of material particles which are formed during the life of the individual and broken up at the end of that life. The metaphysical character of this trend of psychology is determined by its denial of the supersensible nature of mind as asserted by spiritualistic psychology. Both theories have this in common, that they seek, not to interpret psychical experience from experience itself, but to derive it from presuppositions about hypothetical processes in a metaphysical substratum.

2. From the strife that followed these attempts at metaphysical explanation, *empirical psychology* arose. Wherever it is consistently carried out, it strives either to arrange psychical processes under general concepts derived directly from the interconnection of these processes themselves, or to start with certain, as a rule simpler processes, and then explain the more complicated as the result of the interaction of those with which it started. There may be various fun-

damental principles for such an empirical interpretation, and thus it becomes possible to distinguish several varieties of empirical psychology. In general, these may be classified according to *two* principles of division. The first has reference to the relation of inner and outer experience, and the attitude that the two empirical sciences, natural science and psychology, take toward each other. The second has reference to the facts or concepts derived from these facts, which are used for the interpretation of psychical processes. Every system of empirical psychology has its place under both of these principles of classification.

3. On the general question as to the nature of *psychical experience*, the two views already mentioned (§ 1) on account of their decisive significance in determining the problem of psychology, stand over against each other: *psychology of the inner sense*, and *psychology as the science of immediate experience*. The first treats psychical processes as contents of a special sphere of experience coordinate with the experience which, derived through the outer senses, is assigned as the province of the natural sciences, but though coordinate, totally different from it. The second recognizes no real difference between inner and outer experience, but finds the distinction only in the different *points of view* from which unitary experience is considered in the two cases.

The first of these two varieties of empirical psychology is the older. It arose primarily from the effort to establish the independence of psychical observation, in opposition to the encroachments of natural philosophy. In thus coordinating natural science and psychology, it sees the justification for the equal recognition of both spheres in their entirely different objects and modes of perceiving these objects. This view has influenced empirical psychology in two ways. First, it favored the opinion that psychology should employ empirical

methods, but that these methods, like psychological experience, should be fundamentally different from those of natural science. Secondly, it gave rise to the necessity of showing some connection or other between these two kinds of experience, which were supposed to be different. In regard to the first demand, it was chiefly the psychology of the inner sense that developed the method of *pure introspection* (§ 3, 2). In attempting to solve the second question, this psychology was necessarily driven back to a metaphysical basis, because of its assumption of a difference between the physical and the psychical contents of experience. For, from the very nature of the case, it is impossible to account for the relations of inner to outer experience, or for the so-called "interaction between body and mind", from the position here taken, except through metaphysical presuppositions. These presuppositions must then, in turn, effect the psychological investigation itself in such a way as to result in the importation of metaphysical hypotheses into it.

4. Essentially distinct from the psychology of the inner sense is the trend that defines psychology as the "science of immediate experience". Regarding, as it does, outer and inner experience, not as different parts of experience, but as different ways of looking at one and the same experience, it can not admit any fundamental difference between the methods of psychology and those of natural science. It has, therefore, sought most of all to cultivate *experimental* methods which shall lead to just such an exact analysis of psychical processes as that which the explanatory natural sciences undertake in the case of natural phenomena, the only differences being those which arise from the diverse points of view. It holds also that the special mental sciences which have to do with concrete mental processes and creations, stand on this same basis of a scientific consideration of the immediate contents of

experience and of their relations to acting subjects. It follows, then, that psychological analysis of the most general mental products, such as language, mythological ideas, and laws of custom, is to be regarded as an aid to the understanding of all the more complicated psychical processes. In its methods, then, this trend of psychology stands in close relation to other sciences: as *experimental* psychology, to the natural sciences; as *social psychology*, to the special mental sciences.

Finally, from this point of view, the question of the relation between psychical and physical objects disappears entirely. They are not different objects at all, but one and the same content of experience, looked at in one case — in that of the natural sciences — after abstracting from the subject, in the other — in that of psychology — in their immediate character and complete relations to the subject. All metaphysical hypotheses as to the relation of psychical and physical objects are, when viewed from this position, attempts to solve a problem that never would have existed if the case had been correctly stated. Though psychology must dispense with metaphysical supplementary hypotheses in regard to the interconnection of psychical processes, because these processes are the immediate contents of experience, still another method of procedure is open from the very fact that inner and outer experience are supplementary points of view. Wherever breaks appear in the interconnection of psychical processes, it is allowable to carry on the investigation according to the physical methods of considering these same processes, in order to discover whether the lacking coherency can be thus supplied. The same holds for the reverse method of filling up the breaks in the continuity of our physiological knowledge, by means of elements derived from psychological investigation. Only on the basis of such a view, which sets the two forms of knowledge in their true relation, is it possible for psychol-

ogy to become in the fullest sense an empirical science. Only in this way, too, can physiology become the true supplementary science of psychology, and psychology, on the other hand, the auxiliary of physiology.

5. Under the *second* principle of classification mentioned above (2), that is, according to the *facts or concepts with which the investigation of psychical processes starts*, there are two varieties of empirical psychology to be distinguished. They are, at the same time, successive stages in the development of psychological interpretation. The first corresponds to a *descriptive*, the second to an *explanatory* stage. The attempt to present a discriminating description of the different psychical processes, gave rise to the need of an appropriate *classification*. Class-concepts were formed, under which the various processes were grouped; and the attempt was made to satisfy the need of an interpretation in each particular case, by subsuming the components of a given compound process under their proper class-concepts. Such concepts are, for example, sensation, knowledge, attention, memory, imagination, understanding, and will. They correspond to the general concepts of physics which are derived from the immediate apprehension of natural phenomena, such as weight, heat, sound, and light. Like those concepts of physics, these derived psychical concepts may serve for a first grouping of the facts, but they contribute nothing whatever to the explanation of these facts. Still, empirical psychology has often been guilty of confounding this description with explanation. Thus, the *faculty-psychology* considered these class-concepts as psychical forces or faculties, and referred psychical processes to their alternating or united activity.

6. Opposed to this method of treatment found in the descriptive faculty-psychology, is that of *explanatory* psychology. When consistently empirical, the latter must base its inter-

pretations on certain facts which themselves belong to psychical experience. These facts may, however, be taken from different spheres of psychical processes, and so it comes that explanatory treatment may be further divided into *two* varieties, which correspond to the two factors, objects and subject, that go to make up immediate experience. When the chief emphasis is laid on the *objects* of immediate experience, *intellectualistic psychology* results. This attempts to derive all psychical processes, especially the subjective feelings, impulses, and volitions, from *ideas*, or *intellectual* processes as they may be called on account of their importance for objective knowledge. If, on the contrary, the chief emphasis is laid on the way in which immediate experience arises in the subject, a variety of explanatory psychology results which attributes to those subjective activities not referred to external objects, a position as independent as that assigned to ideas. This variety has been called *voluntaristic psychology*, because of the importance that must be conceded to volitional processes in comparison with other subjective processes.

Of the two varieties of psychology that result from the general attitudes on the question of the nature of inner experience (3), psychology of the inner sense commonly tends towards intellectualism. This is due to the fact that, when the inner sense is coordinated with the outer senses, the contents of psychical experience that first attract consideration are those presented as objects to this inner sense, in a manner analogous to the presentation of natural objects to the outer senses. It is assumed that the character of objects can be attributed to *ideas* alone of all the contents of psychical experience, because they are regarded as *images* of the external objects presented to the outer senses. Ideas are, accordingly, looked upon as the only real objects of the inner sense, while all processes not referred to external objects, as,

for example, the feelings, are interpreted as obscure ideas, or ideas related to one's own body, or, finally, as effects arising from combinations of the ideas.

The psychology of immediate experience (4), on the other hand, tends toward voluntarism. It is obvious that here, where the chief problem of psychology is held to be the investigation of the subjective rise of all experience, special attention will be devoted to those factors from which natural science abstracts.

7. *Intellectualistic* psychology has in the course of its development separated into *two* trends. In one, the *logical* processes of judgment and reasoning are regarded as the typical forms of all psychoses; in the other, certain combinations of successive memory-ideas distinguished by their frequency, the so-called *associations of ideas*, are accepted as such. The *logical theory* is most closely related to the popular method of psychological interpretation and is, therefore, the older. It still finds some acceptance, however, even in modern times. The *association-theory* arose from the philosophical empiricism of the last century. The two theories stand to a certain extent in antithesis, since the first attempts to reduce the totality of psychical processes to higher, while the latter seeks to reduce it to lower and, as it is assumed, simpler forms of intellectual activity. Both are one-sided, and not only fail to explain affective and volitional processes on the basis of the assumption with which they start, but are not able to give a complete interpretation even of the intellectual processes.

8. The union of psychology of the inner sense with the intellectualistic view has led to a peculiar assumption that has been in many cases fatal to psychological theory. We may define this assumption briefly as the *erroneous attribution of the nature of things to ideas*. Not only was an analogy

assumed between the objects of the so-called inner sense and those of the outer senses, but the former were regarded as the images of the latter; and so it came that the attributes which natural science ascribes to external objects, were transferred to the immediate objects of the "inner sense", the ideas. The assumption was then made that ideas are themselves things, just as much as the external objects to which we refer them; that they disappear from consciousness and come back into it; that they may, indeed, be more or less intensely and clearly perceived, according as the inner sense is stimulated through the outer senses or not, and according to the degree of attention concentrated upon them, but that on the whole they remain unchanged in qualitative character.

9. In all these respects *voluntaristic psychology* is opposed to intellectualism. While the latter assumes an inner sense and specific objects of inner experience, voluntarism is closely related to the view that inner experience is identical with *immediate* experience. According to this doctrine, the content of psychological experience does not consist of a sum of objects, but of all that which makes up the process of experience in general, that is, of all the experiences of the subject in their immediate character, unmodified by abstraction or reflection. It follows of necessity that the contents of psychological experience should be regarded as an *interconnection of processes*.

This concept of *process* excludes the attribution of an objective and more or less permanent character to the contents of psychical experience. Psychical facts are *occurrences*, not objects; they take place, like all occurrences, in time and are never the same at a given point in time as they were the preceding moment. In this sense *volitions* are *typical* for all psychical processes. Voluntaristic psychology does not by any means assert that volition is the only real form of psychosis, but merely that, with its closely related

feelings and emotions, it is just as essential a component of psychological experience as sensations and ideas. It holds, further, that all other psychical processes are to be thought of after the analogy of volitions, they too being a series of continuous changes in time, not a sum of permanent objects, as intellectualism generally assumes in consequence of its erroneous attribution to ideas of those properties which we attribute to external objects. The recognition of the *immediate* reality of psychological experience excludes the possibility of the attempt to derive any particular components of psychical phenomena from others specifically different. The analogous attempts of metaphysical psychology to reduce all psychological experience to the heterogeneous, imaginary processes of a hypothetical substratum, are for the same reason inconsistent with the real problem of psychology. While it concerns itself, however, with immediate experience, psychology assumes from the first that all psychical contents contain objective as well as subjective factors. These are to be distinguished only through deliberate abstraction, and can never appear as really separate processes. In fact, immediate experience shows that there are no ideas which do not arouse in us feelings and impulses of different intensities, and, on the other hand, that a feeling or volition is impossible which does not refer to some ideated object.

10. The governing principles of the psychological position maintained in the following chapters may be summed up in *three* general statements.

1) Inner, or psychological, experience is not a special sphere of experience apart from others, but is *immediate experience* in its totality.

2) This immediate experience is not made up of unchanging contents, but of an *interconnection of processes*; not of objects, but of *occurrences*, of *universal human experiences* and their relations in accordance with certain laws.

3) Each of these processes contains an *objective content* and a *subjective process*, thus including the general conditions both of all knowledge and of all practical human activity.

Corresponding to these three general principles, we have a *threefold attitude of psychology* to the other sciences.

1) As the science of immediate experience, it is *supplementary* to the *natural sciences*, which, in consequence of their abstraction from the subject, have to do only with the objective, *mediate* contents of experience. Any particular fact can, strictly speaking, be understood in its full significance only after it has been subjected to the analyses of both natural science and psychology. In this sense, then, physics and physiology are auxiliary to psychology, and the latter is, in turn, supplementary to the natural sciences.

2) As the science of the universal forms of immediate human experience and their combination in accordance with certain laws, it is the *foundation of the mental sciences*. The subject-matter of these sciences is in all cases the activities proceeding from immediate human experiences, and their effects. Since psychology has for its problem the investigation of the forms and laws of these activities, it is at once the most general mental science, and the foundation for all the others, such as philology, history, political economy, jurisprudence, etc.

3) Since psychology pays equal attention to *both* the subjective and objective conditions which underlie not only theoretical knowledge, but practical activity as well, and since it seeks to determine their interrelation, it is the empirical discipline whose results are most immediately useful in the investigation of the general problems of the *theory of knowledge* and *ethics*, the two foundations of *philosophy*. Thus, psychology is in relation to natural science the *supplementary*,

in relation to the mental sciences the *fundamental*, and in relation to philosophy the *propaedeutic empirical science*.

10a. The view that it is not a difference in the objects of experience, but in the way of treating experience, that distinguishes psychology from natural science, has come to be recognized more and more in modern psychology. Still, a clear comprehension of the essential character of this position in regard to the scientific problems of psychology, is prevented by the persistence of older tendencies derived from metaphysics and natural philosophy. Instead of starting from the fact that the natural sciences are possible only after abstracting from the subjective factors of experience, the more general problem of treating the contents of *all* experience in the most general way, is sometimes assigned to natural science. In such a case psychology is, of course, no longer coordinate with the natural sciences, but subordinate to them. Its problem is no longer to remove the abstraction employed by the natural sciences, and in this way to gain with them a complete view of experience, but it has to use the concept "subject" furnished by the natural sciences, and to give an account of the influence of this subject on the contents of experience. Instead of recognizing that an adequate definition of "subject" is possible only as a result of psychological investigations (§ 1, 3a), a finished concept formed exclusively by the natural sciences is here foisted upon psychology. Now, for the natural sciences the subject is identical with the body. Psychology is accordingly defined as the science which has to determine the dependence of immediate experience on the body. This position, which may be designated as "psycho-physical materialism", is epistemologically untenable and psychologically unproductive. Natural science, which purposely abstracts from the subjective component of all experience, is least of all in a position to give a final definition of the subject. A psychology that starts with such a purely physiological definition depends, therefore, not on experience, but, just like the older materialistic psychology, on a metaphysical presupposition. The position is psychologically unproductive because, from the very first, it turns over the causal interpretation of psychical processes to physiology. But physiology has not yet furnished such an interpretation, and never

will be able to do so, because of the difference between the manner of regarding phenomena in natural science and in psychology. It is obvious, too, that such a form of psychology, which has been turned into hypothetical brain-mechanics, can never be of any service as a basis for the mental sciences.

The *strictly empirical* trend of psychology, defined in the principles formulated above, is opposed to these attempts to renew metaphysical doctrines. In calling it "voluntaristic", we are not to overlook the fact that, in itself, this psychological voluntarism has absolutely no connection with any metaphysical doctrine of will. Indeed, it stands in opposition to Schopenhauer's one-sided metaphysical voluntarism, which derived all being from a transcendental original will, and to the metaphysical systems of a Spinoza or a Herbart, which arose from intellectualism. In its relation to metaphysics, the characteristic of psychological voluntarism in the sense above defined, is its exclusion of *all* metaphysics from psychology. In its relations to other forms of psychology, it refuses to accept any of the attempts to reduce volitions to mere ideas, and at the same time emphasizes the *typical* character of volition for all psychological experience. Volitional acts are universally recognized as *occurrences*, made up of a series of continual changes in quality and intensity. They are typical in the sense that this characteristic of being occurrences is held to be true for all the contents of psychical experience.

§ 3. METHODS OF PSYCHOLOGY.

1. Since psychology has for its object, not specific contents of experience, but *general experience in its immediate character*, it can make use of no methods except such as the empirical sciences in general employ for the determination, analysis, and causal synthesis of facts. The circumstance, that natural science abstracts from the subject, while psychology does not, can be no ground for modifications in the essential character of the methods employed in the two fields, though it does modify the way in which these methods are applied.

The natural sciences, which may serve as an example for psychology in this respect, since they were developed earlier, make use of *two* chief methods: *experiment* and *observation*. *Experiment* is observation connected with an intentional interference on the part of the observer, in the rise and course of the phenomena observed. *Observation*, in its proper sense, is the investigation of phenomena without such interference, just as they are naturally presented to the observer in the continuity of experience. Wherever experiment is possible, it is always used in the natural sciences; for under all circumstances, even when the phenomena in themselves present the conditions for sufficiently exact observation, it is an advantage to be able to control at will their rise and progress, or to isolate the various components of a composite phenomenon. Still, even in the natural sciences the two methods have been distinguished according to their spheres of application. It is held that the experimental methods are indispensable for certain problems, while in others the desired end may not infrequently be reached through mere observation. If we neglect a few exceptional cases due to special relations, these two classes of problems correspond to the general division of natural phenomena into *processes* and *objects*.

Experimental interference is required in the exact determination of the course, and in the analysis of the components, of any natural *process*, such as, for example, light-waves or sound-waves, an electric discharge, the formation or disintegration of a chemical compound, and stimulation and metabolism in plants and animals. As a rule, such interference is desirable because exact observation is possible only when the observer can determine the moment at which the process shall commence. It is also indispensable in separating the various components of a complex phenomenon from one another. As a rule, this

is possible only through the addition or subtraction of certain conditions, or a quantitative variation of them.

The case is different with *objects* of nature. They are relatively constant; they do not have to be produced at a particular moment, but are always at the observer's disposal and ready for examination. Here, then, experimental investigation is generally necessary only when the production and modification of the objects are to be inquired into. In such a case, they are regarded either as products or components of natural processes and come under the head of processes rather than objects. When, on the contrary, the only question is the actual nature of these objects, without reference to their origin or modification, mere observation is generally enough. Thus, mineralogy, botany, zoology, anatomy, and geography, are pure sciences of observation so long as they are kept free from the physical, chemical, and physiological problems that are, indeed, frequently brought into them, but have to do with processes of nature, not with the objects in themselves.

2. If we apply these considerations to psychology, it is obvious at once, from the very nature of its subject-matter, that exact observation is here possible only in the form of *experimental* observation, and that psychology can never be a *pure* science of observation. The contents of this science are exclusively *processes*, not permanent objects. In order to investigate with exactness the rise and progress of these processes, their composition out of various components, and the interrelations of these components, we must be able first of all to bring about their beginning at will, and purposely to vary the conditions of the same. This is possible here, as in all cases, only through experiment, not through pure introspection. Besides this general reason there is another, peculiar to psychology, that does not apply at all to natural

phenomena. In the latter case we purposely abstract from the perceiving subject, and under circumstances, especially when favored by the regularity of the phenomena, as in astronomy, mere observation may succeed in determining with adequate certainty the objective contents of the processes. Psychology, on the contrary, is debarred from this abstraction by its fundamental principles, and the conditions for chance observation can be suitable only when the same objective components of immediate experience are frequently repeated in connection with the same subjective states. It is hardly to be expected, in view of the great complexity of psychical processes, that this will ever be the case. The coincidence is especially improbable since the very *intention to observe*, which is a necessary condition of all observation, modifies essentially the rise and progress of psychical processes. Observation of nature is not disturbed by this intention on the part of the observer, because here we purposely abstract from the state of the subject. The chief problem of psychology, however, is the exact observation of the rise and progress of subjective processes, and it can be readily seen that under such circumstances the intention to observe either essentially modifies the facts to be observed, or completely suppresses them. On the other hand, psychology, by the very way in which psychical processes originate, is led, just as physics and physiology are, to employ the experimental mode of procedure. A sensation arises in us under the most favorable conditions for observation when it is caused by an external sense-stimulus, as, for example, a tone-sensation from an external tone-vibration, or a light-sensation from an external light-impression. The idea of an object is always caused originally by the more or less complicated cooperation of external sense-stimuli. If we wish to study the way in which an idea is formed, we can choose

no other method than that of imitating this natural process. In doing this, we have at the same time the great advantage of being able to modify the idea itself by changing at will the combination of the impressions that cooperate to form it, and of thus learning what influence each single condition exercises on the product. Memory-images, it is true, can not be directly aroused through external sense impressions, but follow them after a longer or shorter interval. Still, it is obvious that their attributes, and especially their relation to the primary ideas aroused through direct impressions, can be most accurately learned, not by waiting for their chance arrival, but by using such memory-ideas as may be aroused in a systematic, experimental way, through immediately preceding impressions. The same is true of feelings and volitions; they will be presented in the form best adapted to exact investigation when those impressions are purposely produced which experience has shown to be regularly connected with affective and volitional reactions. There is, then, no fundamental psychical process to which experimental methods can not be applied, and therefore none in whose investigation they are not logically required.

3. *Pure observation*, such as is possible in many departments of natural science, is, from the very character of psychical phenomena, impossible in *individual* psychology. Such a possibility would be conceivable only under the condition that there existed permanent psychical objects, independent of our attention, similar to the relatively permanent objects of nature, which remain unchanged by our observation of them. There are, indeed, certain facts at the disposal of psychology, which, although they are not real objects, still have the character of psychical objects inasmuch as they possess these attributes of relative permanence, and independence of the observer. Connected with these characteristics

is the further fact that they are unapproachable by means of experiment in the common acceptance of the term. These facts are the *mental products* that have been developed in the course of history, such as language, mythological ideas, and customs. The origin and development of these products depend in every case on general psychical conditions which may be inferred from their objective attributes. Psychological analysis can, consequently, explain the psychical processes operative in their formation and development. All such mental products of a general character presuppose as a condition the existence of a mental *community* composed of many individuals, though, of course, their deepest sources are the psychical attributes of the individual. Because of this dependence on the community, in particular the social community, this whole department of psychological investigation is designated as *social psychology*, and distinguished from individual, or as it may be called because of its predominating method, *experimental psychology*. In the present stage of the science these two branches of psychology are generally taken up in different treatises; still, they are not so much different departments as different *methods*. So-called social psychology corresponds to the method of pure observation, the objects of observation in this case being the mental products. The necessary connection of these products with social communities, which has given to social psychology its name, is due to the fact that the mental products of the individual are of too variable a character to be the subjects of objective observation. The phenomena gain the necessary degree of constancy only when they become collective.

Thus psychology has, like natural science, *two* exact methods: the experimental method, serving for the analysis of simpler psychical processes, and the observation of general

mental products, serving for the investigation of the higher psychical processes and developments.

3a. The introduction of the experimental method into psychology was originally due to the modes of procedure in physiology, especially in the physiology of the sense-organs and the nervous system. For this reason experimental psychology is also commonly called "physiological psychology"; and works treating it under this title regularly contain those supplementary facts from the physiology of the nervous system and the sense-organs, which require special discussion with a view to the interests of psychology, though in themselves they belong to physiology alone. "Physiological psychology" is, accordingly, an intermediate discipline which is, however, as the name indicates, primarily *psychology*, and is, apart from the supplementary physiological facts that it presents, just the same as "experimental psychology" in the sense above defined. The attempt sometimes made, to distinguish psychology proper from physiological psychology, by assigning to the first the psychological interpretation of inner experience, and to the second the derivation of this experience from physiological processes, is to be rejected as inadmissible. There is only *one* kind of causal explanation in psychology, and that is the derivation of more complex psychical processes from simpler ones. In this method of interpretation physiological elements can be used only as supplementary aids, because of the relation between natural science and psychology as above defined (§ 2, 4). Materialistic psychology denies the existence of psychical causality, and substitutes for this problem the other, of explaining psychical processes by brain-physiology. This tendency, which has been shown (§ 2, 10a) to be epistemologically and psychologically untenable, appears among the representatives of both "pure" and "physiological" psychology.

§ 4. GENERAL SURVEY OF THE SUBJECT.

1. The immediate contents of experience which constitute the subject-matter of psychology, are under all circumstances processes of a composite character. Sense-perceptions of ex-

ternal objects, memories of such sense-perceptions, feelings, emotions, and volitional acts, are not only continually united in the most various ways, but each of these processes is itself a more or less composite whole. The idea of an external body, for example, is made up of partial ideas of its parts. A tone may be ever so simple, but we localize it in some direction, thus bringing it into connection with the idea of external space, which is highly composite. A feeling or volition is referred to some sensation that aroused the feeling or to an object willed. In dealing with a complex fact of this kind, scientific investigation has *three* problems to be solved in succession. The *first* is the *analysis* of composite processes; the *second* is the *demonstration of the combinations* into which the elements discovered by analysis enter; the *third* is the *investigation of the laws* that are operative in the formation of such combinations.

2. The *second*, or synthetic, problem is made up of several partial problems. In the first place, the psychical elements unite to form composite *psychical compounds* which are separate and relatively independent of one another in the continual flow of psychical processes. Such compounds are, for example, ideas, whether referred directly to external impressions or objects, or interpreted by us as memories of impressions and objects perceived before. Other examples are composite feelings, emotions, or volitions. Then again, these psychical compounds stand in the most various interconnections with one another. Thus, ideas unite to form larger simultaneous ideational complexes or regular successions, while affective and volitional processes form a variety of combinations with one another and with ideational processes. In this way we have the *interconnection of psychical compounds* as a class of synthetic processes of the *second* degree, consisting of a union between the simpler combinations, or those of elements into

psychical compounds. The separate psychical interconnections, in turn, unite to form still more comprehensive combinations, which also show a certain regularity in the arrangement of their components. In this way, combinations of a *third* degree arise, which we designate by the general name *psychical developments*. They may be divided into developments of different scope. Developments of a more limited sort are such as relate to a *single mental trend*, for example, the development of the intellectual functions, of the will, or of the feelings, or of merely one special branch of these functions, such as the aesthetic or moral feelings. From a number of such partial series arises the *total development of a psychical personality*. Finally, since animals and in a still higher degree human individuals are in continual interrelation with like beings, there arise above these individual forms the *general psychical developments*. These various branches of the study of psychical development are in part the psychological foundations of other sciences, such as the theory of knowledge, pedagogy, aesthetics, and ethics, and are, accordingly, treated more appropriately in connection with these. In part they have become special psychological sciences, such as child-psychology, animal and social psychology. We shall, therefore, in this treatise discuss only those results from the three last mentioned departments which are of the most importance for general psychology.

3. The solution of the last and most general psychological problem, the ascertainment of the *laws of psychical phenomena*, depends upon the investigation of all the combinations of different degrees, the combination of elements into compounds, of compounds into interconnections, and of interconnections into developments. And as this investigation is the only thing that can teach us the actual composition of psychical processes, so we can discover the

attributes of *psychical causality*, which finds its expression in these processes, only from the laws followed by the contents of experience and their components in their various combinations.

We have, accordingly, to consider in the following chapters:

- 1) Psychical Elements,
 - 2) Psychical Compounds,
 - 3) Interconnection of Psychical Compounds,
 - 4) Psychical Developments,
 - 5) Psychical Causality and its Laws.
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II. PSYCHICAL COMPOUNDS.

§ 8. DEFINITION AND CLASSIFICATION OF PSYCHICAL COMPOUNDS.

1. By "psychical compound" we mean any composite component of our immediate experience which is marked off from the other contents of this experience by particular characteristics, in such a way that it is apprehended as a relatively independent unity and is, when practical necessity demands it, designated by a special name. In developing these names, language has followed the general rule that only *classes* and the most important *species* into which phenomena may be grouped, shall have special designations, while the discrimination of concrete compounds is left to immediate perception. Thus, such expressions as ideas, emotions, volitional acts, etc., designate general classes of psychical compounds, such expressions as visual ideas, joy, anger, hope, etc., special species included in these classes. So far as these designations, which have arisen from practical experience, are based upon actual distinguishing characteristics, they may be retained by science. But science must give an account of the nature of these characteristics and also of the peculiar contents of each of the chief forms of psychical compounds, in order to give every single term an exact meaning. In doing this, we must avoid from the first *two* presuppositions to which the existence of these names might easily mislead us. The first is the view that a psychical compound

is an absolutely independent content of immediate experience. The second is the opinion that certain compounds, as, for example, ideas, have the nature of *things*. The truth is that compounds are only *relatively* independent units. Just as they are made up of various elements, so they themselves unite to form a complete interconnection, in which relatively simple compounds may continually combine to form more composite ones. Then, again, compounds, like the psychical elements contained in them, are never things, but *processes* which change from moment to moment, so that it is only through deliberate abstraction, which is, indeed, indispensable for the investigation in many cases, that they can be thought of as constant at any moment (§ 2, p. 13 sq.).

2. All psychical compounds may be resolved into psychical elements, that is, into pure sensations and simple feelings. The two kinds of elements behave, however, in an essentially different manner, in accordance with the peculiar properties of simple feelings as described in § 7. The sensational elements found by such a resolution, always belong to one of the sensational systems already considered. The affective elements, on the other hand, include not only those which correspond to the pure sensations contained in the compounds, but also those due to the interconnection of the elements into a compound. The systems of sensational qualities, accordingly, always remain the same, no matter how great a variety of compounds arises, while the systems of simple affective qualities continually increase. Connected with this increase is another attribute which is thoroughly characteristic for the actual nature of psychical processes. The attributes of psychical compounds are never limited to those of the elements that enter into them, but *new* attributes, peculiar to the compounds themselves, always arise as a result of the combination of these elements. Thus, a visual idea has not only

the attributes of the light-sensations and of the sensations of ocular position and movements contained in it, but also that of the spacial arrangement of the sensations, which these elements in themselves do not have. Again, a volition is not only made up of the ideas and feelings into which its single acts may be resolved, but there result from the combination of these acts, new affective elements which are specifically characteristic of the complex volition. Here, again, the combinations of sensational and affective elements are different. In the first case, on account of the constancy of the sensational systems, no new sensations can arise, but only peculiar *forms of their arrangement*. These forms are the *extensive spacial* and *temporal manifolds*. When, on the other hand, affective elements combine, *new simple feelings* arise, which unite with those originally present to make *intensive* affective units of composite character.

3. The classification of psychical compounds is naturally based upon the character of the elements that make them up. Those composed entirely or chiefly of sensations are called *ideas*, those consisting mainly of affective elements, *affective processes*. The same limitations hold here as in the case of the corresponding elements. Although compounds are more the products of immediate discrimination among actual psychical processes than the elements are, still, there is at bottom no pure ideational process and no pure affective process, but in both cases we can only abstract to a certain extent from one or the other component. As in the case of the two kinds of elements, so here we can neglect the accompanying subjective states when dealing with ideas, but must always presuppose some idea for the affective processes. Still, these ideas may be of very different kinds for the single species and varieties of affective processes.

We distinguish, accordingly, three chief forms of *ideas*:

1) intensive ideas, 2) spacial ideas, 3) temporal ideas; and three forms of *affective processes*: 1) intensive affective combinations, 2) emotions, 3) volitions. Temporal ideas constitute a sort of link between the two kinds of processes, for certain feelings play an important part in their formation.

§ 9. INTENSIVE IDEAS.

1. A combination of sensations in which every element is connected with any second element in exactly the same way as with any other, is called an intensive idea. Thus, for example, a compound clang made up of the tones *d f a* is such an intensive idea. For the immediate apprehension, each of the partial combinations into which this compound clang can be resolved, as *df*, *da*, *fd*, *fa*, *ad*, *af*, are all entirely equivalent, in whatever order they are thought of. This is obvious at once if we compare the compound clang with any succession of the same tones, where *df*, *da*, *fd*, *fa*, etc., are essentially different ideas. We may define intensive ideas, accordingly, as *combinations of sensational elements, in which the order of the elements may be indefinitely varied*.

It follows from their nature, that intensive ideas do not have, arising from the way in which their elements are united any characteristics, by means of which they can be resolved into separate parts. Such a resolution is possible only through the differences in the constituent elements themselves. Thus, we discriminate the elements of the compound clang *d f a*, only because we hear in it the qualitatively different tones *d*, *f*, and *a*. Still, the separate components in such a unitary idea are less clearly distinguishable than in their isolated state. This fact, that the elements are pushed into the background by the impression of the whole, is of great im-

or as components of the general interconnection of psychical compounds. A simple reaction always includes, along with the volitional process, purely physiological factors (conduction of the sensory excitation to the brain and of the motor excitation to the muscle). If, now, we insert further psychical processes (discriminations, cognitions, associations, acts of choice), a modification which can be made only when sensorial reactions are employed, the duration of clearly definable psychical processes may be gained by subtracting the interval found for simple reactions from those found for the compound reactions. In this way it has been determined that the time required for the cognition and for the discrimination of relatively simple impressions (colors, letters, short words) is 0.03 — 0.05"; the time for choice between two movements (right and left hand) is 0.06", between ten movements (the ten fingers) 0.4", etc. As already remarked, the value of these figures is not their absolute magnitude, but rather their utility as checks for introspection, while at the same time we may apply this introspective observation to processes subject to conditions which are prescribed with exactness by means of experimental methods and which may therefore be repeated at pleasure.

III. INTERCONNECTION OF PSYCHICAL COMPOUNDS.

§ 15. CONSCIOUSNESS AND ATTENTION.

1. Every psychical compound is composed of a number of psychical elements which do not usually all begin or end at exactly the same moment. As a result, the interconnection which unites the elements to a single whole always reaches beyond the individual compounds, so that different simultaneous and successive compounds are united, though indeed somewhat more loosely. We call this interconnection of psychical compounds *consciousness*.

Consciousness, accordingly, does not mean anything that exists apart from psychical processes, nor does it refer merely to the sum of these processes without reference to how they are related to one another. It expresses the general synthesis of psychical processes, in which the single compounds are marked off as more intimate combinations. A state in which this interconnection is interrupted, as deep sleep or a faint, is called an *unconscious* state; and we speak of "disturbances of consciousness" when abnormal changes in the combination of psychical compounds arise, even though these compounds themselves show no changes whatever.

Consciousness in this sense, as a comprehensive interconnection of simultaneous and successive psychical processes, shows itself in experience first of all in the psychical life of

the *individual as individual consciousness*. But we have an analogous interconnection in the combination of individuals, although it is limited to certain sides of mental life, so that we may further include under the more general concept consciousness the concepts of *collective consciousness*, of *social consciousness*, etc. For all these broader forms, however, the foundation is the individual consciousness, and it is to this that we will first turn our attention. (For collective consciousness see § 21, 14.)

2. Individual consciousness stands under the same external conditions as psychical phenomena in general, for which it is, indeed, merely another expression, referring more particularly to the mutual relations of the components of these phenomena to one another. As the substratum for the manifestations of an individual consciousness we have in every case an individual animal organism. In the case of men and similar higher animals the cerebral cortex, in the cells and fibres of which all the organs that stand in relation to psychical processes are represented, appears as the immediate organ of this consciousness. The complete interconnection of the cortical elements may be looked upon as the physiological correlate of the interconnection of psychical processes in consciousness, and the differentiation in the functions of different cortical regions as the physiological correlate of the great variety of single conscious processes. The differentiation of functions in the central organ is, indeed, always merely relative; every psychical compound requires the co-operation of numerous elements and many central regions. When the destruction of certain cortical regions produces definite disturbances in voluntary movements, or in sensations, or when it interferes with the formation of certain classes of ideas, it is perfectly justifiable to conclude that this region furnishes certain links in the chain of psychical

elements that are indispensable for the processes in question. The assumptions often made on the basis of these phenomena, that there is in the brain a special organ for the faculties of speech and writing, or that visual, tonal, and verbal ideas are stored in special cortical cells, are not only the results of the grossest physiological misconceptions, but they are absolutely irreconcilable with the psychological analysis of these functions. Psychologically regarded, these assumptions are nothing but modern revivals of that most unfortunate form of faculty-psychology known as phrenology.

2a. The facts that have been discovered in regard to the localization of certain psycho-physical functions in the cortex, are derived partly from pathological and anatomical observations on men and partly from experiments on animals. They may be summed up as follows: 1) Certain cortical regions correspond to certain peripheral sensory and muscular regions. Thus, the cortex of the occipital lobe is connected with the retina, a part of the parietal lobe with the tactual surface, and a part of the temporal with the auditory organ. The central ganglia of special groups of muscles generally lie directly next to or between the sensory centres functionally related to them. 2) Certain complex disturbances have been demonstrated when certain cortical regions which are not directly connected with peripheral organs, but are inserted between other central regions, fail to carry out their functions. The only relation of this kind which has been proved with certainty, is that of a certain region of the temporal lobe to the functions of *speech*. The front part of this region is connected in particular with the articulation of words (its disturbance results in interference with motor coordination, so-called "ataxic aphasia"), the part further back is connected with the formation of word-ideas (its disturbance hinders sensorial coordination and produces in this way the so-called "amnesic aphasia"). It is also observed that these functions are as a rule confined entirely to the *left* temporal lobe and that generally apoplectic disturbances in the right lobe do not interfere with speech, while those in the left lobe do. Furthermore, in all these cases, in both simple and complex disturbances, there

is usually a gradual restoration of the functions in the course of time. This is probably effected by the vicarious functioning of some, generally a neighboring cortical region in place of that which is disturbed (in disturbances of speech, perhaps it is the opposite, before untrained, side that comes into play). Localization of other complex psychical functions, such as processes of memory and association, has not yet been demonstrated with certainty. The name "psychical centres", applied to certain cortical regions by many anatomists, is for the present at least based exclusively either on the very questionable interpretation of experiments on animals, or else on the mere anatomical fact that no motor or sensory fibres running directly to these regions can be found, and that their connective fibres in general are developed relatively late. The cortex of the *frontal brain* is such a region. In the human brain it is noticeable for its large development. It has been observed in many cases that disturbances of this part of the brain soon result in marked inability to concentrate the attention or in other intellectual defects which are possibly reducible to this; and from these observations the hypothesis has been made that this region is to be regarded as the seat of the function of *apperception* which will be discussed later (4), and of all those components of psychical experience in which, as in the feelings, the unitary interconnection of mental life finds its expression (comp. p. 89). This hypothesis requires, however, a firmer empirical foundation than it has at present. It is to be noted that those cases where, in contrast with the first ones mentioned, a partial injury of the frontal lobe is sustained without any noticeable disturbance of intelligence, are by no means proofs against this hypothesis. There is much evidence to show that just here, in the higher centres, local injuries may occur without any apparent results. This is probably due to the great complexity of the connections and to the various ways in which the different elements can, therefore, take the place of one another. The expression "centre" in all these cases is, of course, employed in the sense that is justified by the general relation of psychical to physical functions, that is, in the sense of a parallelism between the two classes of elementary processes, the one regarded from the point of view of the natural sciences, the other from that of psychology (comp. § 1, 2 and § 22, 9).

3. The interconnection of psychical processes, which constitutes what we understand under the concept consciousness, is in part a simultaneous, in part a successive interconnection. The sum of all the processes present at a given moment is always a unitary whole whose parts are more or less closely united. This is the *simultaneous* interconnection. A present state is derived directly from that immediately preceding either through the disappearance of certain processes while others change their course and still others begin, or, when a state of unconsciousness intervenes, the new processes are brought into relation with those that were present before. These are *successive* interconnections. In all these cases the scope of the single combinations between preceding and following processes determines the state of consciousness. Consciousness gives place to unconsciousness when this interconnection is completely interrupted, and it is more incomplete the looser the connection of the processes of the moment with those preceding. Thus, after a period of unconsciousness the normal state of consciousness is generally only slowly recovered through a gradual reestablishment of relations with earlier experiences.

So we come to distinguish *grades* of consciousness. The lower limit, or zero grade, is unconsciousness. This condition, which consists in an absolute absence of all psychical interconnections, is essentially different from the disappearance of single psychical contents from consciousness. The latter is continually taking place in the flow of mental processes. Complex ideas and feelings and even single elements of these compounds may disappear, and new ones take their places. This continuous appearance and disappearance of elementary and composite processes in consciousness is what makes up its *successive* interconnection. Without this change, such an interconnection would, of course, be impossible. Any psychical element that has disappeared from consciousness, is to be

long as any concrete image of the concept is chosen as its representative, as, for example, when a particular individual stands for the concept man, while it disappears almost entirely so soon as the representative idea differs entirely in content from the objects included under the concept. *Word-ideas* fulfil this condition and that is what gives them their importance as universal aids to thought. These aids are furnished to the individual consciousness in a finished state, so that we must leave to social psychology the question of the psychological development of the processes of thought active in the formation of language (comp. § 21, A).

18. From all that has been said it appears that the activities of imagination and understanding are not specifically different, but interrelated, inseparable in their rise and manifestations, and based at bottom on the same fundamental functions of apperceptive synthesis and analysis. What was true of the concept "*memory*" holds also of the concepts "*understanding*" and "*imagination*": they are names, not of unitary forces or faculties, but of complex phenomena made up of elementary psychical processes of the usual, not of a specific, distinct kind. Just as memory is a general concept for certain associative processes, imagination and understanding are general concepts for particular forms of apperceptive activity. They have a certain practical value as ready means for the classification of an endless variety of differences in the capacity of various persons for intellectual activity. Each class thus found may in turn contain an endless variety of gradations and shades. Thus, neglecting the general differences in grade, we have as the chief forms of individual imagination the *perceptive* and the *combining* forms; as the chief forms of understanding, the *inductive* and *deductive* forms, the first being mainly concerned with the single logical relations and their combinations, the second more with general con-

cepts and their analysis. A person's *talent* is his total capacity resulting from the special tendencies of both his imagination and understanding.

§ 18. PSYCHICAL STATES.

1. The normal state of consciousness upon which the discussion of the foregoing paragraphs has been based may undergo such a variety of changes that general psychology must give up the attempt to discuss them in detail. Then, too, the more important of these changes, namely, those which are observed in the various forms of nervous diseases, brain-diseases, and insanity, belong to special branches of pathology which border upon psychology and are more or less dependent upon it. All that psychology can do is to indicate the main psychical conditions for such abnormal states of consciousness. We may distinguish in general, in accordance with what has been said about the attributes of psychical processes and their interconnection in consciousness *three* kinds of such conditions. They may consist 1) in the abnormal character of the psychical elements, 2) in the way psychical compounds are constituted, and 3) in the way psychical compounds are combined in consciousness. As a result of the intimate interconnection of these different factors it scarcely ever happens that one of these three conditions, each of which may appear in the most various concrete forms, is operative alone; but they usually unite. The abnormal character of the elements results in the abnormality of the compounds, and this in turn brings about changes in the general interconnection of conscious processes.

2. The psychical elements, sensations, and simple feelings, show only such changes as result from some disturbance in the normal relation between them and their psycho-physical conditions. For sensations such changes may be reduced to

without any doubt in the case of higher animals, so that the difference is after all more one of the degree and complexity of the psychical processes than one of kind.

Animal instincts presented a very great difficulty to the older forms of psychology, such as the faculty-theory and the intellectualistic theories (§ 2). Since the attempt to deduce these instincts from the conditions given in each individual case led to an improbably high estimation of the psychical ability of the animal, especially when the instinct was more complex, the conclusion was often accepted that instincts are incomprehensible, or, what amounts to the same thing, due to connate ideas. This "enigma of the instincts" ceases to be an enigma when we come to look upon instincts, as we have done above, as special forms of impulsive action, and to consider them as analogous to the simple impulsive acts of men and animals, for which we have a psychological explanation. This is especially true when we follow the reduction of what were originally complicated acts, to impulsive or reflex movements in the phenomena of habit, so easily observed in the case of man, as, for example, the habituation to complex movements in learning to play the piano (comp. p. 192 sq.). It is often argued against this theory of instinct that it is impossible to prove empirically the transmission of acquired individual variations which we have assumed, that, for example, there are no certain observations in proof of the transmission of mutilations, as used to be asserted so frequently. Many biologists accept the view that all the properties of the organism arise through the selection resulting from the survival of the individual best adapted to natural conditions, that all such properties are accordingly deducible from "natural selection", and that in this way alone changes can be produced in the germ and transmitted to descendants. Though it must be admitted that an attribute acquired by a *single* individual, generally has no effect on the descendants, still, there is no apparent reason why habitual acts, which are indeed indirectly due to outer natural conditions, but depend primarily on the inner psycho-physical attributes of the organism, may not cause changes in the nature of the germ when these acts are repeated through many generations, just as well as the direct influences of natural selection. As further evidence for this view we have the fact that in some cases whole families inherit peculiar

expressive movements or technical ability in some line (p. 285). This does not exclude in any case the cooperation of natural influences, but is in full agreement with the facts of observation which show that these influences act in two ways: first, directly in the changes that natural selection brings about in the organism while the organism remains passive, and secondly, indirectly in the psycho-physical reactions that are caused by the outer influences, and then in turn give rise to changes in the organism. If we neglect the latter fact, we not only lose an important means of accounting for the eminently purposive character of animal organisms, but further, and more especially, we render impossible a psychological explanation of the gradual development of volition and its retrogradation into purposive reflexes as we see it in a large number of connate expressive movements (§ 20, 1).

§ 20. PSYCHICAL DEVELOPMENT OF THE CHILD.

1. The fact that the psychical development of man is regularly slower than that of most animals is to be seen in the much more gradual maturing of his *sense-functions*. The child, to be sure, reacts immediately after birth to all kinds of sense-stimuli, most clearly to impressions of touch and taste, with the least certainty to those of sound. Still, it is impossible to doubt that the special forms of the reaction-movements in all these cases are due to inherited reflexes. This is especially true for the child's crying when affected by cold and tactual impressions, and for the mimetic reflexes when he tastes sweet, sour, or bitter substances. It is probable that all these impressions are accompanied by obscure sensations and feelings, yet the character of the movements can not be explained from the feelings whose symptoms they may be considered to be, but must be referred to connate central reflex tracts.

Probably nothing is clear in consciousness until the end of the

first month, and even then, as the rapid change of moods shows, sensations and feelings must be relatively very changeable. It is at about this time that we begin to observe symptoms of pleasurable and unpleasurable feelings in the child's laughter and in lively rhythmical movements of his arms and legs after certain impressions. Even the reflexes are not completely developed at first — a fact which we can easily understand when we learn from anatomy that many of the connecting fibres between the cerebral centres do not develop until after birth. Thus the associative reflex-movements of the two eyes are wanting. From the first each of the eyes by itself generally turns towards a light, but the movements of the two eyes are entirely irregular, and it is only in the course of the first three months that the normal coordination of the movements of the two eyes with a common fixation-point, begins to appear. Even then the developing regularity is not to be regarded as a result of complete visual perceptions, but, quite the reverse, as a symptom of the gradual functioning of a reflex-centre, which then renders clear visual perceptions possible.

2. It is, generally speaking, impossible to gain any adequate information about the qualitative relations of *psychical elements* in the child's consciousness, for the reason that we have no certain objective symptoms. It is probable that the number of different tonal sensations, perhaps also the number of color-sensations, is very limited. The fact that children two years old not infrequently use the wrong names for colors ought not however, to be looked upon as unqualified evidence, that they do not have the sensation in question. It is much more probable that lack of attention and a confusion of the names is the real explanation in such cases.

Towards the end of the first year the *differentiation of feelings* and the related development of the various emotions

take place, and show themselves strikingly in the characteristic expressive movements that gradually arise. We have unpleasurable feelings and joy, then in order, astonishment, expectation, anger, shame, envy, etc. Even in these cases the dispositions for the combined movements which express the single emotions, depend upon inherited physiological attributes of the nervous system, which generally do not begin to function until after the first few months, in a way analogous to the combined innervation of the ocular muscles. As further evidence of this we have the fact that not infrequently special peculiarities in the expressive movements are inherited by whole families.

3. The physical conditions for the rise of *spacial ideas* are connate in the form of inherited reflex-connections which make a relatively rapid development of these ideas possible. But for the child the spacial perceptions seem at first to be much more incomplete than they are in the case of many animals. There are manifestations of pain when the skin is stimulated, but no clear symptoms of localization. Distinct grasping movements develop gradually from the aimless movements that are observed even in the first days, but they do not, as a rule, become certain and consciously purposive until aided by visual perceptions, after the twelfth week. The turning of the eye toward a source of light as generally observed very early, is to be regarded as reflex. The same is true of the gradual coordination of ocular movements. Still it is probable that along with these reflexes there are developed spacial ideas, so that all we can observe is the gradual completion of these ideas from very crude beginnings, for the process is continuous and is always interconnected with its original physiological substratum. Even in the child the sense of sight shows itself to be decidedly more rapid in its development than the sense of touch, for the symptoms

though the processes are in each case entirely concrete and sensible. The development of the functions of understanding and that of speech accordingly go hand in hand, and the latter is an indispensable aid in retaining concepts and fixing the operations of thought.

10a. Child-psychology often suffers from the same mistake that is made in animal psychology: namely, that the observations are not interpreted objectively, but are filled out with subjective reflections. Thus, the earliest ideational combinations, which are in reality purely associative, are regarded as acts of logical reflection, and the earliest mimetic expressive movements, as, for example, those of a new-born child due to taste-stimuli, are looked upon as reactions to feelings, while they are obviously at first nothing but connate reflexes which may, indeed, be accompanied by obscure concomitant feelings, but even these can not be demonstrated with certainty. The ordinary view as to the development of volition and of speech, labors under a like misconception. Generally there is a tendency to consider the child's language, because of its peculiarities, as a creation of his own. Closer observation, however, shows that it is created by those about him, though in doing this they use the sounds that the child himself produces, and conform as far as possible to his stage of consciousness. Thus it comes that some of the very detailed and praise-worthy accounts of the mental development of the child in modern literature can serve only as sources for finding objective facts. Because they stand on the basis of a reflective popular psychology, their psychological deductions require correction along the lines marked out above.

§ 21. DEVELOPMENT OF MENTAL COMMUNITIES.

1. Just as the psychical development of the child is the resultant of his interaction with his environment, so matured consciousness stands continually in relation to the mental community in which it has a receptive and an active part. Among most animals such a community is entirely wanting.

In animal marriage, animal states, and flocks, we have only incomplete forerunners of mental communities, and they are generally limited to the accomplishment of certain single ends. The more lasting forms, animal marriage and the falsely named animal states (p. 279), are really sexual communities; the more transient forms or flocks, as, for example, flocks of migratory birds, are communities for protection. In all these cases it is certain instincts that have grown more and more fixed through transmission, which hold the individuals together. The community, therefore, shows the same constancy as instinct in general, and is very little modified by the influences of individuals.

While animal communities are, thus, mere enlargements of the individual existence, aiming at certain physical vital ends, *human* development seeks from the first so to unite the individual with his mental environment that the whole is capable of development, serving at once the satisfaction of the physical needs of life and the pursuit of the most various mental ends, while permitting also great variations in these ends. As a result the forms of human society are exceedingly variable. The more fully developed forms, however, enter into a continuous train of *historical* development which extends the mental ties that connect individuals almost unlimitedly beyond the bounds of immediate spacial and temporal proximity. The final result of this development is the formation of the notion of *humanity* as a great general mental community which is divided up according to the special conditions of life into single concrete communities, peoples, states, civilized societies of various kinds, races, and families. The mental community to which the individual belongs is, therefore, not *one*, but a changing plurality of mental unions which are interlaced in the most manifold ways and become more and more numerous as development progresses.

V. PSYCHICAL CAUSALITY AND ITS LAWS.

§ 22. CONCEPT OF MIND.

1. Every empirical science has, as its primary and characteristic subject of treatment, certain particular facts of experience whose nature and reciprocal relations it seeks to investigate. In solving these problems it is found to be necessary, if we are not to give up entirely the grouping of the facts under leading heads, to have *general supplementary concepts* that are not contained in experience itself, but are gained by a process of logical treatment of this experience. The most general supplementary concept of this kind that has found its place in all the empirical sciences, is the concept of *causality*. It comes from the necessity of thought that all our experiences shall be arranged according to reason and consequent, and that we shall remove, by means of *secondary* supplementary concepts and if need be by means of concepts of a hypothetical character, all contradictions that stand in the way of the establishment of a consistent interconnection of this kind. In this sense we may regard all the supplementary concepts that serve for the interpretation of any sphere of experience, as applications of the general principle of causation. They are justified in so far as they are required, or at least rendered probable, by this principle; they are unjustifiable so soon as they prove to be arbitrary

fictions resulting from foreign motives, and contributing nothing to the interpretation of experience.

2. In this sense the concept *matter* is a fundamental supplementary concept of natural science. In its most general significance it designates the permanent substratum assumed as existing in universal space, to whose activities we must attribute all natural phenomena. In this most general sense the concept *matter* is indispensable to every explanation of natural science. The attempt in recent times to raise *energy* to the position of a governing principle, does not succeed in doing away with the concept *matter*, but merely gives it a different content. This content, however, is given to the concept by means of a second supplementary concept, which relates to the *causal activity* of *matter*. The concept of *matter* that has been accepted in natural science up to the present time, is based upon the mechanical physics of Galileo, and uses as its secondary supplementary concept the concept of *force*, which is defined as the product of the mass and the momentary acceleration. A physics of *energy* would have to use everywhere instead of this the concept *energy*, which in the special form of mechanical *energy* is defined as half the product of the mass multiplied by the square of the velocity. *Energy*, however, must, just as well as *force*, have a position in objective space, and under certain particular conditions the points from which *energy* proceeds may, just as well as the points from which *force* proceeds, change their place in space, so that the concept of *matter* as a substratum contained in space, is retained in both cases. The only difference, and it is indeed an important one, is that when we use the concept *force*, we presuppose the reducibility of all natural phenomena to forms of mechanical motion, while when we use the concept of *energy*, we attribute to *matter* not only the property of motion without a change in the form of

energy, but also the property of the transformability of qualitatively different forms of energy into one another without a change in the quantity of the energy.

3. The concept of *mind* is a supplementary concept of psychology, in the same way that the concept matter is a supplementary concept of natural science. It too is indispensable in so far as we need a concept which shall express in a comprehensive way the totality of psychical experiences in an individual consciousness. The particular content of the concept, however, is in this case also entirely dependent on the secondary concepts that give a more detailed definition of psychical causality. In the definition of this content psychology shared at first the fortune of the natural sciences. Both the concept of mind and that of matter arose primarily not so much from the need of explaining experience as from the effort to reach a systematic doctrine of the general interconnection of all things. But while the natural sciences have long since outgrown this mythological stage of speculative definition, and make use of some of the single ideas that originated at that time, only for the purpose of gaining definite starting-points for a strict methodical definition of their concepts, psychology has continued under the control of the mythological, metaphysical concept of mind down to most modern times, and still remains, in part at least, under its control. This concept is not used as a general supplementary concept that serves primarily to gather together the psychical facts and only secondarily to give a causal interpretation of them, but it is employed as a means to satisfy so far as possible the need of a general universal system, including both nature and the individual existence.

4. The *concept of a mind-substance* in its various forms is rooted in this mythological and metaphysical need. In its development there have not been wanting efforts to meet

from this position, so far as possible; the demand for a psychological causal explanation, still, such efforts have in all cases been afterthoughts; and it is perfectly obvious that psychological experience alone, independent of all foreign metaphysical motives, would never have led to a concept of mind-substance. This concept has beyond a doubt exercised a harmful influence on the treatment of experience. The view, for example, that all the contents of psychical experience are ideas, and that these ideas are more or less permanent objects, would hardly be comprehensible without such presuppositions. That this concept is really foreign to psychology, is further attested by the close interconnection in which it stands to the concept of material substance. It is regarded either as identical with the latter, or else as distinct in nature, but still reducible in its most general formal characteristics to one of the particular forms of the concept matter, namely to the *atom*.

5. *Two* forms of the concept mind-substance may be distinguished, corresponding to the two types of metaphysical psychology pointed out above (§ 2, p. 6). The one is *materialistic* and regards psychical processes as the activities of matter or of certain material complexes, such as the brain-elements. The other is *spiritualistic* and looks upon these processes as states and changes in an unextended and therefore indivisible and permanent being of a specifically spiritual nature. In this case matter is thought of as made up of similar atoms of a lower order (monistic, or monado-logical spiritualism), or the mind-atom is regarded as specifically different from matter proper (dualistic spiritualism) (comp. p. 7).

In both its materialistic and spiritualistic forms, the concept mind-substance does nothing for the interpretation of psychological experience. Materialism does away with psychology entirely and puts in its place an imaginary brain-

physiology of the future, or when it tries to give positive theories, falls into doubtful and unreliable hypotheses of cerebral physiology. In thus giving up psychology in any proper sense, this doctrine gives up entirely the attempt to furnish any practical basis for the *mental sciences*. Spiritualism allows psychology as such to continue, but subordinates actual experience to entirely arbitrary metaphysical hypotheses, through which the unprejudiced observation of psychical processes is obstructed. This appears first of all in the incorrect statement of the problem of psychology, with which the metaphysical theories start. They regard inner and outer experience as totally heterogeneous, though in some external way interacting, spheres.

6. It has been shown (§ 1, p. 3) that the experience dealt with in the natural sciences and in psychology are nothing but components of *one* experience regarded from different points of view: in the natural sciences as an interconnection of objective phenomena and, in consequence of the abstraction from the knowing subject, as *mediate experience*; in psychology as *immediate and undervived experience*.

When this relation is once understood, the *concept of a mind-substance* immediately gives place to the *concept of the actuality of mind* as a basis for the comprehension of psychical processes. Since the psychological treatment of experience is supplementary to that of the natural sciences, in that it deals with the immediate reality of experience, it follows naturally that there is no place in psychology for hypothetical supplementary concepts such as are necessary in the natural sciences because of their concept of an object independent of the subject. In this sense, the concept of the actuality of mind does not require any hypothetical determinants to define its particular contents, as the concept

of matter does, but quite to the contrary, it excludes such hypothetical elements from the first by defining the nature of mind as the immediate reality of the processes themselves. Still, since one important component of these processes, namely the totality of ideational objects, is at the same time the subject of consideration in the natural sciences, it necessarily follows that substance and actuality are concepts that refer to one and the same general experience, with the difference that in each case this experience is looked at from a different point of view. If we abstract from the knowing subject in our treatment of the world of experience, it appears as a manifold of interacting substances; if, on the contrary, we regard it as the total content of the experience of the subject including the subject itself, it appears as a manifold of interrelated occurrences. In the first case, phenomena are looked upon as *outer phenomena*, in the sense that they would take place just the same, even if the knowing subject were not there at all, so that we may call the form of experience dealt with in the natural sciences *outer* experience. In the second case, on the contrary, all the contents of experience are regarded as belonging directly to the knowing subject, so that we may call the psychological attitude towards experience that of *inner* experience. In this sense outer and inner experience are identical with mediate and immediate, or with objective and subjective forms of experience. They all serve to designate, not different spheres of experience, but different supplementary points of view in the consideration of an experience which is presented to us as an absolute unity.

7. That the method of treating experience employed in natural science should have reached its maturity before that employed in psychology, is easily comprehensible in view of the practical interest connected with the discovery of regular