

MIND AS MIDDLE TERM

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Into much recent discussion there enters, in some aspect or other, the controversy as to what place the mental system shall be accorded in psychological science. The problem reappears in many guises and general statements as well as particular working conceptions have been formulated regarding it. The preliminary chapters of text-books customarily define the author's position in the matter, and in numerous papers and addresses of late special modifications of the psychological conception of mind and reconstructions of the limiting criteria by which the field of investigation is determined have been made.

The older psychology was not troubled by doubt in regard to these matters. It defined psychology in terms which gave a precise formal limitation to its field; and since, supported by philosophical and theological assumptions, the distribution of its subject-matter was restricted to mankind and approached by a purely introspective method, the maintenance of a clear demarcation of its province from that of adjacent sciences presented no great difficulty. The relation of consciousness to physical structures and changes was incidental not essential. The soul in its temporary alliance made use of the body as an instrument, but in action as well as quality was ultimately independent of the latter. It was not considered in reference to either a determining stimulus or a necessary reaction. In itself the mind composed a unity of functions and the object in studying it was to determine the place of each of these functions in a rational system. Psychology was thus concerned with the logical problem of the mind's constitution and its direction in ideal activity.

In this conception of mind as a self-contained system of phenomena whose limits are stated strictly in terms of consciousness psychology has concurred in its more recent defini-

tions as well. The formulations with which current text-books introduce their subject-matter adhere to this postulate. Psychology is the science of self and the facts of self as manifested in individual experience; it is concerned with psychical phenomena, conscious processes or psychoses; the description and explanation of the phenomena of mind or consciousness is its aim. In these mental activities and conscious states as such psychological interest centers. Its business is the systematic exploration, under the methods which inductive science imposes, of the constitution of mind and its internal correlations.

This substitutes an empirical study—systematically directed introspection under experimental control—for the logical reflection upon which earlier rational psychology depended. Nevertheless its field is defined in similar terms, as the system of psychical activities or phenomena. The psycho-physical correlations which may exist, whether conditioning or dependent, are incidental to the discussion. The study of stimulus and reaction may be helpful in many ways to psychological science, but with neither of these, if we adhere to the implications of such current definitions, is the latter directly concerned. It is the reaction in consciousness which follows external stimulation or physiological change in the one case, and in the other the mental complex which, generically or in particular, precedes a given form of reaction that alone affords material for psychological study.

But in the more recent development of the science this conception has undergone a variety of modifications due in part to natural changes accompanying the extension from within of the field of psychological investigation, and in part caused by external pressure through the study, from the standpoint of independent sciences, of those phenomena with which the correlations of mind bring it into contact. The movement from within has been a complex one. Its most obvious constituent is to be found in the development of comparative psychology and its extension both of the experimental method of study and of the guiding conceptions of psychology until by a succession of rapid strides the whole animal kingdom from man to protozoan had been included within its field of research.

The enormous multiplication of individual types to be studied, in which this extension has resulted, is accompanied by a still more profoundly modifying factor, namely the extreme qualitative variety of the forms of consciousness to which in the course of his work the psychologist must adapt his conceptions. The simple and precise formulæ which served the earlier human and classic psychology fall to pieces when the psychic life of microorganisms is to be included along with the complex and highly articulated consciousness of man in a common system. This problem has been met, by the psychologist himself, in a variety of ways. To one phase he has responded by simplifying and universalizing the essential constituents of the unity of consciousness, as when the existence of irritability, discriminative selection and adaptive reaction, demonstrated in the simplest organic types, are construed as a manifestation of the psychological trinity—affection, cognition and volition. To another aspect of the problem he has reacted by substituting for this unitary system of common characters the conception of individual mental functions, such as sensitivity, organic memory, space-orientation, learning by imitation, and the like, the evolutionary history of each being traced as the succession of organic forms is passed in review. In a similar way the comparative psychologist has modified his working conceptions to meet still other demands imposed by the continuous extension of his field.

A second general constituent in this modifying process is to be found in the complication of phenomena by which the psychological student is confronted within the limits of human experience itself, or of the human type. In this field extension has taken three general directions. The first is from the normal through the exceptional, abnormal and pathological to the final disintegration of the unitary self in individual impulses, elementary idea-systems and persistent reaction-types. This field has hitherto been the most productive of such supplementary modifications. It has occasioned the conceptions of subliminal or subconscious phenomena, of psychic disaggregation and split-off selves, of motor and psychic automatisms, with a host of other working hypotheses.

The other extensions lead, the one downward through sub-normal and defective types, imbeciles and idiots, towards a limit which the anencephalous monster may be taken to represent; and the other backward from adulthood to youth and infancy, and from foetal to embryonic conditions until, in the fertilized ovum, it meets the comparative psychologist on common ground in dealing with a simple undifferentiated organism. The need of devising, in the service of continuity, an adequate system of conceptions thus receives a new and greater emphasis.

All these demands have arisen from within in the course of the psychologist's own work; but to the readjustments by which they have been met he has been urged by an independent and extraneous stimulus. This also has had a complex character, covering both systems of physical change with which mental activity is correlated, the field of the stimulus and that of the reaction.

The study of the physical conditions of consciousness, especially of its physiological locus, has been approached in independence of any primary interest in mental phenomena. While the psychologist has availed himself largely of the results both of physical and physiological research in the technical arrangement of his problems as well as in the correlation of results, he has not been hampered with any confusion, as to aims or methods, between the general province of physics and that of his own special studies. The science of optics, for example, is not confounded with the study of space perception nor climatology with psychic reaction to weather changes. In the case of physiology, however, the uniformity of association between the primary series of reactions in nervous and other tissues and the mental activities with which the psychologist deals has led to the inclusion of the latter group of facts within the system of phenomena which, in the most general sense, is to be considered. For physiology these mental reactions can never become an independent system coördinate with the neural processes, and the account it gives of them assumes their dependence upon physiological changes throughout. Thus the psychosis is conceived not as a psychological object but merely

as one product of nervous action, and its treatment constitutes only a highly specialized topic within physiology at large.

The study of sensory stimulation in all its forms and of the mechanism of simple and complex reaction-types has been so extensive in recent years and the mass of detailed information it has afforded concerning psycho-physiological correlation has been of such importance to psychology that physiological methods and conceptions have attained dominance in this field even with psychologists. A sketch of the nervous system and its functions is made the introduction to psychological study; mental processes are explained in terms of nervous habits and rearrangements; in general, a treatment of the direct psychological relation of experience to the external world as condition and object of the will's reactions is replaced by speculative constructions of its physiological relation to mediating processes in the central nervous system. These modifications in the psychologist's working conception often involve more than a reformulation of criteria and amount to a plain confusion between the standpoints of independent sciences.

The second of these two external influences proceeds from the biological study of reactions. The biologist not infrequently makes use of the physiological method in his work, and a rigid application of his own postulates would perhaps require the application of this conception throughout; but, as distinguished from the latter, ecological biology is concerned not with the special mechanisms of reaction but with their teleological relations. It construes the response of the organism in terms of its serviceableness to some end, and its object is to determine the complex of adaptations which thus characterizes the systematic reactions of any given type or individual. Each organism maintains certain permanent relations with the environment. Its energies are directed to securing food, shelter, warmth, protection and alliance—in a word, provision for the satisfaction of certain needs and desires. Each reaction may therefore be conceived in terms of its approximation to the realization of those conditions which determine the maintenance of these relations in an ideal form. Many such adaptive reactions we know to be pervaded by

consciousness; to a much greater range we impute the same general character to them, and it may perhaps be questioned whether the terms in which the biologist defines his object have, in strictness, any meaning apart from the implications of consciousness and its values. But at least the biologist does not start from this assumption. Reaction consciously directed to an end is but a special form of response having its place in a more general field of organic adaptation with which, as a whole, the science is concerned. Biology, in this phase of its work, is the science of behavior, whether behavior be construed in terms of consciousness or not.

In recent years, as the systematic study of life in its ecological relations has extended, it has been brought into more intimate as well as more extensive contact with the system of phenomena which functional psychology considers in its study of mental adaptation. Especially is this true in the case of comparative psychology where method is necessarily objective. These two sciences may be said to have come face to face in the study of animal behavior. The results in this field have been similar to those already pointed out. The difficulty of securing a satisfactory criterion for determining the distribution of consciousness, especially in view of the apparent variability in its association with a given function, and the sense of identity in the fundamental nature of behavior in all organic species has led to modifications not merely in the formulæ applied to particular types of life but to a recasting of the terms in which the subject-matter itself is stated—for example, when the scope of psychology is defined as a study of ‘organosis’ in its most general application.

In this new approximation towards a neighboring science the primary conception from which procedure starts is again objective, but instead of the conditioning stimulus it is now the consequent reaction which becomes the determining element. Behavior must always be considered, it need not be said, as well as physiological function and external stimulus. The mind is historically and socially conditioned in reaction as well as incitement, and its materials of expression must be regarded equally with its provoking stimuli. This modifica-

tion, however, goes farther than to employ the form of response as a means of interpreting the subjective attitude. It proposes a study of the objective rearrangement in its effects upon the conditions of life as a substitute for the inquiry into the forms of conscious activity by which, under certain limitations, such readjustments are characterized.

In still other connections the same general question as to the nature of the system of facts with which psychology is actually concerned has been raised. One of these may be used to point the consideration which all in common provoke, since it is not dependent upon the complex extensions of recent psychological investigation into fields which bring it into contact with the physical and biological sciences but has been introduced as a comment upon the earlier classic method of introspection by the normal human mind. It is the query concerning what is actually meant by the terms mind and experience, mental facts and mental laws, as psychology conceives them.

In this particular modification of the central psychological conception mind is construed as the system of characteristics and habits which the individual presents in his reaction to stimuli. It is what the mind does, not what it is, which is here considered; and what it does is expressed in its attitudes and social reactions. What comes under review by the psychologist, according to this conception, is not the form and conditions of the mental activity as such but its logical and practical aspects, its products and consequences. These lie open in some degree to even the casual observer, and the intimate companion of any man is in a position to make a comprehensive system of judgments concerning the character of his mind in this sense of the term. It is thus we learn the habits and character of the individual, the range and accuracy of his knowledge; by observing the plans he has formed and carried out or given up we judge his originating and organizing capacity and his tenacity of purpose; similarly, we may know his predilections in a multitude of affairs and be familiar with his general tastes and desires.

But it may be questioned whether in the existence or

acquisition of such knowledge the essential attitude of the psychologist is at all embodied, for it rests primarily upon the determination of relations between two objective series, that of the stimulus and that of the reaction; and leaves in doubt the place of the intermediate system of mental activities from which the psychologist takes his departure. Now there are two distinct points of view from which mind or experience may be conceived; the one regards the qualitative, the other the relational aspect. The first of these standpoints is sometimes called the subjective, the second the objective point of regard.

Under the first conception immediate, irreducible experience is intended, the fact, namely, that existence has at each moment a unique qualitative character which constitutes it a moment in the concrete history of an individual subject. In its raw immediacy one thus knows yellow, noise, cold and pain; one feels satiety, longing and dislike. With this character a second subject cannot be brought face to face, nor can it be shared with him. The experience of another simply is not, and cannot become, my experience; no adequacy of constructive interpretation, no sense of sympathetic intimacy, no accordance in social reaction will annul this fact. My mind is not obscured from the view of other minds, when I conceive mind in this way, because of the complexity of its workings or the deviousness of its course, but because—to continue the figure—it is not at all a visible object. It is hidden because it is inaccessible. To know another mind, in this sense of the word, is to be that other; that is to say, it is to deny the fact of otherness and to bring the event in question within the category of immediate experience. Whatever the status of this qualitative aspect of existence in reference to any specific problem, and whether it concerns the psychologist's work or not, the uniqueness and exclusiveness of subjective immediacy in each individual experience is a fact to be recognized, not a theory to be discussed.

From the second standpoint mind is treated in terms of its relations to the objective world. Whatever the qualitative aspect of any experience it springs from certain stimuli and results in specific reactions. It is in these physical and social

connections that the observer is interested. His point of departure is in a system of reality lying beyond the experience of the moment and his return is to that larger world again. The mind, in this case, is but the point where a stimulus has effect and a reaction is originated. To know it means to be acquainted with the characteristic response which is made by it to any situation. When this response is conceived in terms of the physical reactions necessary to the maintenance of life and of the social adaptations of which our fellow-men can take account, it is not essential that the qualitative nature of the experience as it exists for the subject should be taken into account. In the reckoning which the observer makes the mental system may be ignored, for it is the characteristic reactions to which it leads in their objective and social forms alone in which he is interested. So long as his knowledge of the sequential connections between typical stimuli and the responses which the individual makes to them is secured the immediate quality of experience which mediates between the two series is negligible.

Such knowledge may even be more exact and complete when the observer is a bystander than when he is himself the subject of the experience. The occupancy of the locus of experience in no way ensures an acquaintance with the real character of the mind in this sense of the term. One's estimate of his own capacities may be farther astray than that of the impartial onlooker, and his reaction in any given case may surprise him as really as his acquaintance. It is indeed the latter to whom we look for a sound judgment in regard to such a matter, for he is undisturbed by that emotional excitement which is inseparable from personal experience and unoccupied with attention to the purely subjective aspect of the situation from which the experient can never wholly free himself.

If we regard the mind from this objective standpoint it is obviously neither inaccessible nor hidden. One's character is recognized as widely as acquaintance extends. To one person it is known less fully than to another; to one this series of reactions is more familiar than that, and thus individual estimates of character vary; but to all alike the data for such knowledge

are accessible, the subject himself having simply the position of one observer among an indifferent many.

But this way of dealing with reactions is obviously defective, whether it be considered practically or theoretically, since knowledge of the situation involved is incomplete in regard to stimulus and reaction alike. For the stimulus is not the object as it exists for the onlooking individual or is objectively defined; it is the object as presented in the experience of the subject himself. The reaction, similarly, is not the gross physical movement or socially discernible adaptation; it is the whole attitude of the self aroused by the situation which is thus presented. A full description of the stimulus in physical terms is indeed conceivable, but this cannot rest upon any analysis of the constitution of the external object alone; it must include the organic reaction which this stimulus provokes and thus be finally stated in physiological terms. The reaction, likewise, if its full description in physical terms is attempted, must be conceived as the whole complex readjustment, peripheral and central, which the physiological stimulus has evoked. That such a multiplicity of elements of physical change exists, occurring in the body at large and constituting a physiological analogue to both the complex mental situation which is presented and to the reaction in consciousness which it occasions, is a methodological assumption and not a field of data accessible throughout its range and utilizable by the observer in making up his account. This holds true also in regard to practical affairs, for the onlooker is constantly driven to recognize the insufficiency of his knowledge of the real stimulus to which response is made, and the incompleteness of his acquaintance with the reaction itself.

Thus even when the observer's interest lies wholly outside the limits of individual experience the subject's report of any situation is indispensable to the completion of his data. If he had possession of all the facts regarding either the physiological effects of the stimulus or the final readjustment within the body which it arouses he might be able to predict the reaction upon the physical or social environment, but such knowledge is inaccessible and the only alternative is to find how the situation

presented itself to the subject in question and what his real and complete response to it was, whether such response resulted in the immediate production of changes observable by the on-looker or not.

The psychologist's standpoint cannot be identified with either of the points of view above described. Each individual experience possesses a subjective quality which is at once unsharable and indescribable. It bears also certain relations to both antecedents and consequents in the external world which it is practically important that the subject and his fellow-men alike should understand. But the psychologist is occupied neither in demonstrating the qualitative uniqueness of each individual experience nor in tracing its practical consequences in the form of movements. His standpoint is subjective but not qualitative; it is relational but not objective. The first of the two points of view above described is subjective and qualitative, the second is relational and objective, while that of the psychologist is subjective and relational. His study is of facts which cannot be objectively discerned, though their existence may under certain conditions be inferred from objective data, but the facts thus revealed through intuition he treats in terms of their relations, in whatever direction these relations lead him.

In general the plexus of connections in which any individual experience stands may be treated in terms of a three-fold grouping. The first of these is the relation of antecedence, in which the experience is studied in connection with its conditions, whether these lie within the course of previous experience or derive from the external world in the form of so-called stimuli. The second is the relation of reciprocity, including the material study of the constituents of each individual experience and the formal study of resemblances and correlations among the phases of such experience. The third and last is the relation of consequence, in which the influence of the event upon both the course of subsequent experience and the forms of expression by which mental activity is characterized are studied.

The second of these three groups is, by definition, restricted

to the immediate phenomena of subjective experience. It conforms most closely to the conceptions and methods of the earlier introspective psychology. In contemporary science the observation of it is systematically controlled and extended statistically. In comparison with the traditional conception of mental constitution its scheme has consequently undergone both complication and reconstruction; but in general data and products this part of psychology remains essentially unmodified. It is an analysis of the psychic system itself to determine its constituents and the forms of their combination in the various orders of synthesis by which mind is characterized. Concerning this part of the psychologist's work, therefore, disagreement is not likely to arise.

It is in the first and third of the foregoing sections, in which the two-fold correlation of consciousness with its physical environment is treated, that the danger exists of obscuring if not obliterating the fundamental conception which both defines the subject-matter and determines the limits of psychology. In these fields of study, quite as much as in connection with that central system of facts to which normal introspection has been directed from the beginning, consciousness with whatever that term implies must remain the final point of reference if psychology is to have any independent existence. Otherwise its province will simply be parted between physiology which invades its field from the side of the stimulus and biology which encroaches from that of the reaction. For psychology these correlations of consciousness are necessarily secondary and contingent. To assume either correlative as a dominant conception, that is, to define the province of investigation in terms of the stimulus-field or of the reaction-system, carries one beyond the circle of psychic phenomena into the world of physical materials and their changes, and to combine the two as is the tendency in much contemporary writing makes of psychology a pseudo-science created merely by taking slices from two independent sciences and combining them. The maintenance of psychology rests upon a clear definition of its aim as a science and a perception that the system of consciousness presents a substantial and unitary subject-matter which

cannot be dissipated in a confused treatment of individual topics in physics, anatomy, physiology, biology and anthropology.

If, however, just this solution of continuity is to be avoided the centrality of consciousness must never be lost sight of. This thesis has two points of application; the first touches the substantial existence of the mental system as the primary field of psychology, and the second concerns its primacy as an interpretative criterion in the treatment of its physical correlations. In the first place, then, the objective point of view is not homologous with the standpoint of psychology. Practical interest seeks only adaptation, whether it deal with things or men. It is concerned not with the mechanism of any change in itself but with its products or effects, and when it has to deal with minds it treats them in accordance with this general aim, classifying all reactions in terms of their relations to stimuli which constitute their nearest antecedents in the discernible series of changes which the objective world presents.

If now we can say that a given stimulus inevitably arouses the mental reaction in question and from such a mental reaction these physical consequences and no others proceed, the middle term which is thus repeated may be dropped from the series and the first and last terms connected directly. Towards this general conclusion all the conceptions above described tend. The field of actual transformations is reduced to the two physical systems and their contact is marked only by a theoretical division. But in the system of reality mind is not a mere point where stimulus and reaction meet, as these various modifications imply when carried to their logical conclusion. It is psychologically an interposed system in which the stimulus-field terminates and the reaction-system has its origin; and it is the existence of this mediating system which constitutes both the ground and limitation of the science. This interposition, as already indicated, implies no interruption of continuity; it is not a metaphysical solution but a methodological subdivision of reality which it involves.

Consciousness, in other words, does not possess an independent field which can be contrasted with that of stimulus

and reaction loci. It not only has a physical correlation in the physiological system of activities but may even be described as the flooding of these two fields with ideal values and direction. Nevertheless it both constitutes in itself a definite and complex system of phenomena and affords the only means by which an approach can be made to the problem of stating in its fulness the nature of either stimulus or reaction. This system, therefore, instead of receding to the vanishing-point becomes for psychology the central field of exploration within which repeated and extended analysis, by indirect as well as by direct means, reveals an endlessly increasing complexity and integration.

The second application of this thesis is in the psychologist's treatment of the physical changes with which consciousness is correlated whether as antecedent or consequent. It may be stated by saying that the conception of consciousness and its implications affords the determining reference which both defines the field to which the psychologist limits his activity and supplies the qualitative criterion which guides his work. The systematic reference of consciousness, as already indicated, is to the stimulus-field on the one hand and to the reaction-system on the other, and it has no third and independent theater of activity. But in the psychological treatment of these two groups of phenomena consciousness must remain a determining conception. The stimulus enters within the circle of consideration only when it ceases to be regarded in terms of physical change and is treated as the antecedent of a specific qualitative consciousness. The reaction, likewise, becomes subject-matter for psychology only when it is no longer conceived as a movement or material reconstruction but is construed as the embodiment of a particular mental attitude.

In both of these cases the situation, as psychologically conceived, is made to turn upon the presence of consciousnesses as its cardinal point. The stimulus is that which provokes mental activity, the response that which expresses it. Thus it assumes as its foundation the existence of affective sensibility and conative tendencies, of hedonic values and preferential reaction in the organism which thus responds to stimulation. To con-

sider irritability in the physiological meaning of the term alone, or reaction as organosis in the general sense of an adaptation which is not based upon consciousness is to relinquish this constitutive assumption and to make the implication of consciousness an incident in a larger system. But for the psychologist the elimination of consciousness in this way is simply pouring out the baby with the bath, and in all valid extension of his science or its underlying assumptions it will be found on closer inspection that this conception still functions.

The psychologist does indeed study the whole system of specific stimuli, whether physical or physiological, which acts upon the senses, as well as the characteristic reactions which the organism makes to them; but these are never, as a matter of fact, construed by him in thoroughgoing mechanical terms. It is the reactions of living creatures in which he is interested and the stimuli he considers are those only to which such organisms are irritable. Every force may logically be called a stimulus or reagent and every substance upon which it impinges may be said to present a reaction in the rearrangement of its physical relations which follows the collision. But no one advocates a modification in our conception of mental science which will make it coextensive with this whole field. Such an extension appears only in the metaphysical universalization of concepts, with which psychology as a special science has nothing to do.

Even within the field of organic life itself a division obtains between activities which are conceived to fall within the limits of psychological phenomena and those which are excluded from consideration. The former are not restricted to reactions dependent upon the coördination of many individual muscle groups, which can be construed only as reflecting the unity of the organism as a whole, but include also certain adaptive responses mediated by single organs and directed to the readjustment of the relations of that organ individually. Reflex action may be taken to represent this group. This conception, however, is not extended to the whole range of changes occurring within the organism. Absorption, osmosis and the chemical syntheses of nutrition are excluded from the

circle of phenomena which psychology treats. If the question be raised why these forms of reaction, together with such activities as capillary attraction and the selection and rearrangement of materials in the growing crystal, are thus excluded from consideration the distribution will be seen to turn upon the fact that in the case of these physical and metabolic reconstructions it has been found possible to treat the phenomena in purely mechanical terms as movements and combinations depending upon physical forces alone.

In its most extended form psychological treatment is thus still restricted to the sentient world. It is consciousness, in its most elementary forms indeed, but still consciousness, which determines where the line shall be drawn and not mere readjustment in the relations which characterize the system of physical materials. If any of the forms of change enumerated above, osmosis, absorption, etc., are included by any particular scientist it will be found that for him these processes are either steeped in consciousness at the moment of their occurrence, as for example, the activity of the organic cell at large has been conceived, or they are regarded as permanent forms of reaction the development of which has been mediated by consciousness in the past.

The system of habits represents this problem generically. The psychological student finds it necessary to contrast habitual reaction with the selective activity of consciousness. The formation of habit is marked by the progressive decline in directive attention. In its more established types it has already passed beyond the field of choice and control, while its theoretical limit is a complete dissociation from conscious activity, a condition which is at least approximated in the so-called vital functions, digestion, circulation and the like. The automatisms of habit therefore present in the highest degree the phenomena whose treatment these psychological extensions have been designed to serve. They are highly specialized adaptations in which the response to stimulation is direct and simple, depending upon no interposed activity of consciousness. As organic reactions they have teleological significance but they are independent of a psychical correlate.

If the field of psychology is to be redefined in terms of biological adaptation instead of mental process habit-automatisms seem to constitute at once the immediate occasion and sufficient justification for the change.

Nevertheless habit, which is tenaciously retained within the sphere of psychological discussion, maintains its place simply in virtue of the necessary relation to the selective and organizing activities of consciousness which is predicated of it. Though any given reaction of this type be now dissociated from consciousness and bring about by purely mechanical processes a teleological readjustment to changes in the external world it still logically falls to the psychologist to discuss it if it be thus construed as a product of consciousness, namely as a permanent reaction-type developed through the selective and organizing reactions of an antecedent mental activity. In this construction of habit, in which contemporary psychology at large agrees, the centrality of consciousness is maintained, for the habit-form is viewed in the light of psychic values and direction.

The application of this conception in the progressive extension of the field of psychological data is by no means restricted to the immediate reactions of the organism. It determines that growing system of investigations into culture and social history which depends upon the interpretation of permanent products of human activity, such as the monuments of literary and plastic art, or the industrial inventions and general material transformations which have been brought about in the service of mankind. These are legitimate fields of psychological inquiry because—and only because—of the implications of consciousness by which their treatment is everywhere suffused.

Wherever this underlying principle is applied the psychological point of view is assumed and the phenomenon becomes a datum for the science. It must therefore be said, I believe, that those investigations in which organic stimulation and reaction have been studied by other than physico-chemical methods involve the implication of consciousness, whether carried on by physiologists and biologists or by psy-

chologists themselves, and must in consequence be classed as psychological inquiries in the strict sense of the term. In some cases doubtless the application of this principle is due to confusion, but in others the scientist is under no illusion as to the nature of his work. Psychological science was first laid under obligation to physiology in this field, and that the debt is great as well as obvious a mere list of its contributors sufficiently indicates. More recently the tide has turned in the direction of biology whose students now hold the same general relation to experimental psychology which physiology possessed a generation ago. It may be assumed that an equal enrichment of the science is to be expected from this side also, and one which will react to the advancement of biology and its conceptions as physiological psychology has influenced the study of physiology. But in this general extension of knowledge it would be the very irony of fate if psychology were to lose sight of those distinctive conceptions upon which her existence as a science rests through a failure to apprehend the fact that all this constitutes primarily an enrichment of her own system of data, and that without such a fundamental reference to the forms and values of consciousness it can have no logical existence.