

## THE PROVINCE OF FUNCTIONAL PSYCHOLOGY[1]

Professor James Rowland Angell (1907)

Classics in the History of Psychology

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## THE PROVINCE OF FUNCTIONAL PSYCHOLOGY[1]

Professor James Rowland Angell (1907)

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Functional psychology is at the present moment little more than a point of view, a program, an ambition. It gains its vitality primarily perhaps as a protest against the exclusive excellence of another starting point for the study of the mind, and it enjoys for the time being at least the peculiar vigor which commonly attaches to Protestantism of any sort in its early stages before it has become respectable and orthodox. The time seems ripe to attempt a somewhat more precise characterization of the field of functional psychology than has as yet been offered. What we seek is not the arid and merely verbal definition which to many of us is so justly anathema, but rather an informing appreciation of the motives and ideals which animate the psychologist who pursues this path. His status in the eye of the psychological public is unnecessarily precarious. The conceptions of his purposes prevalent in non-functional circles range from positive and dogmatic misapprehension, through frank mystification and suspicion up to moderate comprehension. Nor is this fact an expression of anything peculiarly abstruse and recondite in his intentions. It is due in part to his own ill-defined plans, in part to his failure to explain lucidly exactly what he is about. Moreover, he is fairly numerous and it is not certain that in all important particulars he and his confrères are at one in their beliefs. The considerations which are [p. 62] herewith offered suffer inevitably from this personal limitation. No psychological council of Trent has as yet pronounced upon the true faith. But in spite of probable failure it seems worth while to hazard an attempt at delineating the scope of functionalist principles. I formally renounce any intention to strike out new plans ; I am engaged in what is meant as a dispassionate summary of actual conditions.

Whatever else it may be, functional psychology is nothing wholly new. In certain of its phases it is plainly discernible in the psychology of Aristotle and in its more modern garb it has been increasingly in evidence since Spencer wrote his *Psychology* and Darwin his *Origin of Species*. Indeed, as we shall soon see, its crucial problems are inevitably incidental to any serious attempt at understanding mental life. All that is peculiar to its present circumstances is a higher degree of self-consciousness than it possessed before, a more articulate and persistent purpose to organize its vague intentions into tangible methods and principles.

A survey of contemporary psychological writing indicates, as was intimated in the preceding paragraph, that the task of functional psychology is interpreted in several different ways. Moreover, it seems to be possible to advocate one or more of these conceptions while cherishing abhorrence for the others. I distinguish three principal forms of the functional problem with sundry subordinate variants. It will contribute to the clarification of the general situation to dwell upon these for a moment, after which I propose to maintain that they are substantially but modifications of a single problem.

I .

There is to be mentioned first the notion which derives most immediately from contrast with the ideals and purposes of structural psychology so-called.[2] This involves the identification of functional psychology with the effort to discern and portray the [p. 63] typical operations of consciousness under actual life conditions, as over against the attempt to analyze and describe its elementary and complex contents. The structural psychology of sensation, e.g., undertakes to

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determine the number and character of the various unanalyzable sensory materials, such as the varieties of color, tone, taste, etc. The functional psychology of sensation would on the other hand find its appropriate sphere of interest in the determination of the character of the various sense activities as differing in their modus operandi from one another and from other mental processes such as judging, conceiving, willing and the like.

In this its older and more pervasive form functional psychology has until very recent times had no independent existence. No more has structural psychology for that matter. It is only lately that any motive for the differentiation of the two has existed and structural psychology - granting its claims and pretensions of which more anon - is the first, be it said, to isolate itself. But in so far as functional psychology is synonymous with descriptions and theories of mental action as distinct from the materials of mental constitution, so far it is everywhere conspicuous in psychological literature from the earliest times down.

Its fundamental intellectual prepossessions are often revealed by the classifications of mental process adopted from time to time. Witness the Aristotelian bipartite division of intellect and will and the modern tripartite division of mental activities. What are cognition, feeling and will but three basally distinct modes of mental action? To be sure this classification has often carried with it the assertion, or at least the implication, that these fundamental attributes of mental life were based upon the presence in the mind of corresponding and ultimately distinct mental elements. But so far as concerns our momentary interest this fact is irrelevant. The impressive consideration is that the notion of definite and distinct forms of mental action is clearly in evidence and even the much-abused faculty psychology is on this point perfectly sane and perfectly lucid. The mention of this classic target for psychological vituperation recalls the fact that when the critics of functionalism wish to be [p. 64] particularly unpleasant, they refer to it as a bastard offspring of the faculty psychology masquerading in biological plumage.

It must be obvious to any one familiar with psychological usage in the present year of grace that in the intent of the distinction herewith described certain of our familiar psychological categories are primarily structural - such for instance as affection and image - whereas others immediately suggest more explicit functional relationships - for example, attention and reasoning. As a matter of fact it seems clear that so long as we adhere to these meanings of the terms structural and functional every mental event can be treated from either point of view, from the standpoint of describing its detectable contents and from the standpoint of characteristic mental activity differentiable from other forms of mental process. In the practice of our familiar psychological writers both undertakings are somewhat indiscriminately combined.

The more extreme and ingenuous conceptions of structural psychology seem to have grown out of an unchastened indulgence in what we may call the 'states of consciousness' doctrine. I take it that this is in reality the contemporary version of Locke's 'idea.' If you adopt as your material for psychological analysis the isolated 'moment of consciousness,' it is very easy to become so absorbed in determining its constitution as to be rendered somewhat oblivious to its artificial character. The most essential quarrel which the functionalist has with structuralism in its thoroughgoing and consistent form arises from this fact and touches the feasibility and worth of the effort to get at mental process as it is under the conditions of actual experience rather than as it appears to a merely postmortem analysis. It is of course true that for introspective purposes we must in a sense always work with vicarious representatives of the particular mental processes which we set out to observe. But it makes a great difference even on such terms whether one is directing attention primarily to the discovery of the way in which such a mental process operates, and what the conditions are under which it appears, or whether one is engaged simply in teasing apart the fibres of its tissues. The latter occupation is useful and for certain purposes essential, but it often stops short of [p. 65] that which is as a life phenomenon that most essential, i.e., the modus operandi of the phenomenon.

As a matter of fact many modern investigations of an experimental kind largely dispense with the usual direct form of introspection and concern themselves in a distinctly functionalistic spirit with a determination of what work is accomplished and what the conditions are under which it is achieved. Many experiments in memory and association, for instance, are avowedly of this character.

The functionalist is committed vom Grunde auf to the avoidance of that special form of the psychologist's fallacy which consists in attributing to mental states without due warrant, as part of

their overt constitution in the moment of experience, characteristics which subsequent reflective analysis leads us to suppose they must have possessed. When this precaution is not scrupulously observed we obtain a sort of *pâte de foie gras* psychology in which the mental conditions portrayed contain more than they ever naturally would or could hold.

It should be added that when the distinction is made between psychic structure and psychic function, the anomalous position of structure as a category of mind is often quite forgotten. In mental life the sole appropriateness of the term structure hinges on the fact that any moment of consciousness can be regarded as a complex capable of analysis, and the terms into which our analyses resolve such complexes are the analogues - and obviously very meager and defective ones at that - of the structures of anatomy and morphology.

The fact that mental contents are evanescent and fleeting marks them off in an important way from the relatively permanent elements of anatomy. No matter how much we may talk of the preservation of psychical dispositions, nor how many metaphors we may summon to characterize the storage of ideas in some hypothetical deposit chamber of memory, the obstinate fact remains that when we are not experiencing a sensation or an idea it is, strictly speaking, non-existent. Moreover, when we manage by one or another device to secure that which we designate that same sensation or the same idea, we not only have no guarantee that our second edition is really a replica of [p. 66] the first, we have a good bit of presumptive evidence that from the content point of view the original never is and never can be literally duplicated.

Functions, on the other hand, persist as well in mental as in physical life. We may never have twice exactly the same idea viewed from the side of sensuous structure and composition. But there seems nothing whatever to prevent our having as often as we will contents of consciousness which mean the same thing. They function in one and the same practical way, however discrepant their momentary texture. The situation is rudely analogous to the biological case where very different structures may under different conditions be called on to perform identical functions ; and the matter naturally harks back for its earliest analogy to the instance of protoplasm where functions seem very tentatively and imperfectly differentiated. Not only then are general functions like memory persistent, but special functions such as the memory of particular events are persistent and largely independent of the specific conscious contents called upon from time to time to subserve the functions.

When the structural psychologists define their field as that of mental process, they really preëempt under a fictitious name the field of function, so that I should be disposed to allege fearlessly and with a clear conscience that a large part of the doctrine of psychologists of nominally structural proclivities is in point of fact precisely what I mean by one essential part of functional psychology, i.e., an account of psychical operations. Certain of the official exponents of structuralism explicitly lay claim to this as their field and do so with a flourish of scientific rectitude. There is therefore after all a small but nutritious core of agreement in the structure-function apple of discord. For this reason, as well as because I consider extremely useful the analysis of mental life into its elementary forms, I regard much of the actual work of my structuralist friends with highest respect and confidence. I feel, however, that when they use the term structural as opposed to the term functional to designate their scientific creed they often come perilously near to using the enemy's colors.

Substantially identical with this first conception of functional [p. 67] psychology, but phrasing itself somewhat differently, is the view which regards the functional problem as concerned with discovering how and why conscious processes are what they are, instead of dwelling as the structuralist is supposed to do upon the problem of determining the irreducible elements of consciousness and their characteristic modes of combination. I have elsewhere defended the view that however it may be in other sciences dealing with life phenomena, in psychology at least the answer to the question 'what' implicates the answer to the questions 'how' and 'why.' [3]

Stated briefly the ground on which this position rests is as follows: In so far as you attempt to analyze any particular state of consciousness you find that the mental elements presented to your notice are dependent upon the particular exigencies and conditions which call them forth. Not only does the affective coloring of such a psychical moment depend upon one's temporary condition, mood and aims, but the very sensations themselves are determined in their qualitative texture by the totality of circumstances subjective and objective within which they arise. You cannot get a fixed and definite color sensation for example, without keeping perfectly constant the external and internal

conditions in which it appears. The particular sense quality is in short functionally determined by the necessities of the existing situation which it emerges to meet. If you inquire then deeply enough what particular sensation you have in a given case, you always find it necessary to take account of the manner in which, and the reasons why, it was experienced at all. You may of course, if you will, abstract from these considerations, but in so far as you do so, your analysis and description is manifestly partial and incomplete. Moreover, even when you do so abstract and attempt to describe certain isolable sense qualities, your descriptions are of necessity couched in terms not of the experienced quality itself, but in terms of the conditions which produced it, in terms of some other quality with which it is compared, or in terms of some more overt act to which the sense stimulation led. That is to say, the very [p. 68] description itself is functionalistic and must be so. The truth of this assertion can be illustrated and tested by appeal to any situation in which one is trying to reduce sensory complexes, e.g., colors or sounds, to their rudimentary components.

II .

A broader outlook and one more frequently characteristic of contemporary writers meets us in the next conception of the task of functional psychology. This conception is in part a reflex of the prevailing interest in the larger formulae of biology and particularly the evolutionary hypotheses within whose majestic sweep is nowadays included the history of the whole stellar universe; in part it echoes the same philosophical call to new life which has been heard as pragmatism, as humanism, even as functionalism itself. I should not wish to commit either party by asserting that functional psychology and pragmatism are ultimately one. Indeed, as a psychologist I should hesitate to bring down on myself the avalanche of metaphysical invective which has been loosened by pragmatic writers. To be sure pragmatism has slain its thousands, but I should cherish scepticism as to whether functional psychology would the more speedily slay its tens of thousands by announcing an offensive and defensive alliance with pragmatism. In any case I only hold that the two movements spring from similar logical motivation and rely for their vitality and propagation upon forces closely germane to one another.

The functional psychologist then in his modern attire is interested not alone in the operations of mental process considered merely of and by and for itself, but also and more vigorously in mental activity as part of a larger stream of biological forces which are daily and hourly at work before our eyes and which are constitutive of the most important and most absorbing part of our world. The psychologist of this stripe is wont to take his cue from the basal conception of the evolutionary movement, i.e., that for the most part organic structures and functions possess their present characteristics by virtue of the efficiency with which they fit into the extant conditions of life broadly designated the environment. With this conception in mind he [p. 69] proceeds to attempt some understanding of the manner in which the psychical contributes to the furtherance of the sum total of organic activities, not alone the psychical in its entirety, but especially the psychical in its particularities - mind as judging, mind as feeling, etc.

This is the point of view which instantly brings the psychologist cheek by jowl with the general biologist. It is the presupposition of every philosophy save that of outright ontological materialism that mind plays the stellar rôle in all the environmental adaptations of animals which possess it. But this persuasion has generally occupied the position of an innocuous truism or at best a jejune postulate, rather than that of a problem requiring, or permitting, serious scientific treatment. At all events, this was formerly true.

This older and more complacent attitude toward the matter is, however, being rapidly displaced by a conviction of the need for light on the exact character of the accommodatory service represented by the various great modes of conscious expression. Such an effort if successful would not only broaden the foundations for biological appreciation of the intimate nature of accommodatory process, it would also immensely enhance the psychologist's interest in the exact portrayal of conscious life. It is of course the latter consideration which lends importance to the matter from our point of view. Moreover, not a few practical consequences of value may be expected to flow from this attempt, if it achieves even a measurable degree of success. Pedagogy and mental hygiene both await the quickening and guiding counsel which can only come from a psychology of this stripe. For their purposes a strictly structural psychology is as sterile in theory as teachers and psychiatrists have found it in practice.

As a concrete example of the transfer of attention from the more general phases of consciousness

as accommodatory activity to the particularistic features of the case may be mentioned the rejuvenation of interest in the quasi-biological field which we designate animal psychology. This movement is surely among the most pregnant with which we meet in our own generation. Its problems are in no sense of the merely [p. 70] theoretical and speculative kind, although, like all scientific endeavor, it possesses an intellectual and methodological background on which such problems loom large. But the frontier upon which it is pushing forward its explorations is a region of definite, concrete fact, tangled and confused and often most difficult of access, but nevertheless a region of fact, accessible like all other facts to persistent and intelligent interrogation.

That many of the most fruitful researches in this field have been achievements of men nominally biologists rather than psychologists in no wise affects the merits of the case. A similar situation exists in the experimental psychology of sensation where not a little of the best work has been accomplished by scientists not primarily known as psychologists.

It seems hardly too much to say that the empirical conceptions of the consciousness of the lower animals have undergone a radical alteration in the past few years by virtue of the studies in comparative psychology. The splendid investigations of the mechanism of instinct, of the facts and methods of animal orientation, of the scope and character of the several sense processes, of the capabilities of education and the range of selective accommodatory capacities in the animal kingdom, these and dozens of other similar problems have received for the first time drastic scientific examination, experimental in character wherever possible, observational elsewhere, but observational in the spirit of conservative non-anthropomorphism as earlier observations almost never were. In most cases they have to be sure but shown the way to further and more precise knowledge, yet there can be but little question that the trail which they have blazed has success at its farther end.

One may speak almost as hopefully of human genetic psychology which has carried on so profitably in our own country. As so often in psychology, the great desideratum here, is the completion of adequate methods which will insure really stable scientific results. But already our general psychological theory has been vitalized and broadened by the results of the genetic methods thus far elaborated. These studies constantly emphasize for us the necessity of getting the longitudinal rather than the transverse view of life phenomena [p. 71] and they keep immediately in our field of vision the basic significance of growth in mental process. Nowhere is the difference more flagrant between a functional psychology and the more literal minded type of structural psychology. One has only to compare with the better contemporary studies some of the pioneer work in this field, conceived in the more static and structuralistic manner, as Preyer's for example was, to feel at once the difference and the immensely greater significance both for theory and for practice which issues from the functional and longitudinal descriptions.

The assertions which we have permitted ourselves about genetic psychology are equally applicable to pathological psychology. The technique of scientific investigation is in the nature of the case often different in this field of work from that characteristic of the other ranges of psychological research. But the attitude of the investigator is distinctly functionalistic. His aim is one of a thoroughly vital and generally practical kind leading him to emphasize precisely those considerations which our analysis of the main aspects of functional psychology disclose as the goal of its peculiar ambitions.

It is no purpose of mine to submerge by sheer tour de force the individuality of these various scientific interests just mentioned in the regnant personality of a functional psychology. But I am firmly convinced that the spirit which gives them birth is the spirit which in the realms of general psychological theory bears the name functionalism. I believe, therefore, that their ultimate fate is certain, still I have no wish to accelerate their translation against their will, nor to inflict upon them a label which they may find odious.

It should be said, however, in passing, that even on the side of general theory and methodological conceptions, recent developments have been fruitful and significant. One at least of these deserves mention.

We find nowadays both psychologists and biologists who treat consciousness as substantially synonymous with adaptive reactions to novel situations. In the writings of earlier authorities it is often implied that accommodatory activities may be purely physiological and non-psychical in character. >From [p. 72] this view-point the mental type of accommodatory act supervenes on

certain occasions and at certain stages in organic development, but it is no indispensable feature of the accommodatory process. [4]

It seems a trifle strange when one considers how long the fundamental conception involved in this theory has been familiar and accepted psychological doctrine that its full implication should have been so reluctantly recognized.[5] If one takes the position now held by all psychologists of repute, so far as I am aware, that consciousness is constantly at work building up habits out of coordinations imperfectly under control ; and that as speedily as control is gained the mental direction tends to subside and give way to a condition approximating physiological automatism, it is only a step to carry the inference forward that consciousness immanently considered is per se accommodation to the novel. Whether conscious processes have been the precursors of our present instinctive equipment depends on facts of heredity upon which a layman may hardly speak. But many of our leaders answer strongly in the affirmative, and such an answer evidently harmonizes with the general view now under discussion.

To be sure the further assertion that no real organic accommodation to the novel ever occurs, save in the form that involves consciousness, requires for its foundation a wide range of observation and a penetrating analysis of the various criteria of mentality. But this is certainly a common belief among biologists to-day. Selective variation of response to stimulation is the ordinary external sign indicative of conscious action. Stated otherwise, consciousness discloses the form taken on by primary accommodatory process.

[p. 73] It is not unnatural perhaps that the frequent disposition of the functional psychologist to sigh after the flesh-pots of biology should kindle the fire of those consecrated to the cause of a pure psychology and philosophy freed from the contaminating influence of natural science. As a matter of fact, alarms have been repeatedly sounded and the faithful called to subdue mutiny. But the purpose of the functional psychologist has never been, so far as I am aware, to scuttle the psychological craft for the benefit of biology. Quite the contrary. Psychology is still for a time at least to steer her own untroubled course. She is at most borrowing a well-tested compass which biology is willing to lend and she hopes by its aid to make her ports more speedily and more surely. If in use it prove treacherous and unreliable, it will of course go overboard.

This broad biological ideal of functional psychology of which we have been speaking may be phrased with a slight shift of emphasis by connecting it with the problem of discovering the fundamental utilities of consciousness. If mental process is of real value to its possessor in the life and world which we know, it must perforce be by virtue of something which it does that otherwise is not accomplished. Now life and world are complex and it seems altogether improbable that consciousness should express its utility in one and only one way. As a matter of fact, every surface indication points in the other direction. It may be possible merely as a matter of expression to speak of mind as in general contributing to organic adjustment to environment. But the actual contributions will take place in many ways and by multitudinous varieties of conscious process. The functionalist's problem then is to determine if possible the great types of these processes in so far as the utilities which they present lend themselves to classification.

The search after the various utilitarian aspects of mental process is at once suggestive and disappointing. It is on the one hand illuminating by virtue of the strong relief into which it throws the fundamental resemblances of processes often unduly severed in psychological analysis. Memory and imagination, for example, are often treated in a way designed to emphasize their divergences almost to the exclusion of their functional [p. 74] similarities. They are of course functionally but variants on a single and basal type of control. An austere structuralism in particular is inevitably disposed to magnify differences and in consequence under its hands mental life tends to fall apart ; and when put together again it generally seems to have lost something of its verve and vivacity. It appears stiff and rigid and corpse-like. It lacks the vital spark. Functionalism tends just as inevitably to bring mental phenomena together, to show them focalized in actual vital service. The professional psychologist, calloused by long apprenticeship, may not feel this distinction to be scientifically important. But to the young student the functionalistic stress upon community of service is of immense value in clarifying the intricacies of mental organization. On the other hand the search of which we were speaking is disappointing perhaps in the paucity of the basic modes in which these conscious utilities are realized.

Ultimately all the utilities are possibly reducible to selective accommodation. In the execution of the

accommodatory activity the instincts represent the racially hereditary utilities, many of which are under the extant conditions of life extremely anomalous in their value. The sensory-algedonic-motor phenomena represent the immediate short circuit unreflective forms of selective response. Whereas the ideational-algedonic-motor series at its several levels represents the long circuit response under the influence of the mediating effects of previous experience. This experience serves either to inhibit the propulsive power intrinsic to the stimulus, or to reinforce this power by adding to it its own dynamic tendencies. This last variety of action is the peculiarly human form of mediated control. On its lowest stages, genetically speaking, it merges with the purely immediate algedonic type of response. All the other familiar psychological processes are subordinate to one or more of these groups. Conception, judgment, reasoning, emotion, desire, aversion, volition, etc., simply designate special varieties in which these generic forms appear.

In facing the problem of classifying functions we may well turn for a moment to the experience of biologists for suggestions. It is to be remarked at once that the significance of function as [p. 75] a basis for biological classification varies greatly in different parts of the biological field. Among the more complex animal organisms, for example, function, as compared with structure, affords a relatively precarious basis of classification, since very divergent structures may subserve identical functions. Moreover, the functions merely as such often fail to indicate with the definiteness characteristic of the anatomical structure the genetic relations involved in the maturing of a form. But in the study of the lower orders of life such as the bacteria, where structural variations are so largely to seek, the functional chemico-physiological reactions are of the utmost significance for classificatory purposes. In the botanical field generally there has of late been an increasing disposition to employ functional similarity and difference for the illumination of plant relationships. Indeed, this transition from a purely taxonomic and morphological point of view to a physiological and functional point of view is the striking feature of recent progress in botanical theory.

The ultimate value of a psychological classification based on functions, if interpreted in the light of these considerations, would apparently hinge on one's conception of the analogy between consciousness and undifferentiated protoplasm. In the measure in which consciousness is immanently unstable and variable, one might anticipate that a functional classification would be more significant and penetrating than one based upon any supposedly structural foundation. But the analogy on which this inference rests is perhaps too insecure to permit a serious conclusion to be drawn from it. In any event it is to be said that functions as such seem to be the most stable characters in the biological field. They extend in a practically unbroken front from the lowest to the highest levels of life - allowing for a possible protest in certain quarters against including consciousness in this list. That they are not everywhere so useful as structures for classificatory purposes reflects on the aims of classification, not on the fundamental and relatively fixed character of functions.

A survey of current usage discloses two general types of functional categories. Of these, the one is in spirit and purpose dominantly physiological. It groups all the forms of life func- [p. 76] tions, whether animal or vegetable in manifestation, under the four headings of assimilation, reproduction, motion and sensibility. In such a schema assimilation is made to include digestion, circulation, respiration, secretion, and excretion, while motion in the sense here intended applies primarily to those forms of movement which enable the organism to migrate from place to place and thus accommodate itself to the exigencies of local conditions.

Another group of categories which concerns a deeper and more general level of biological interpretations is given by such terms as selection, adaptation, variation, accommodation, heredity, etc. These are categories of a primarily functional sort for they apply in a large sense to modes of behavior. Indeed, behavior may be said to be itself the most inclusive of these categories. But as compared with the members of the first group they have to do with the general trend of organic development and not with the specific physiological processes which may be concerned in any special case. This does not mean that a specific physiological setting cannot sometime be given these problems ; but it does mean that at present the gaps in our knowledge of these matters are generally too large to be spanned with certainty.

Now it would appear that such general categories as selection and accommodation have a perfectly appropriate application to mental process. Indeed, as we have already remarked, not a few of our modern scientists regard the psychical as precisely synonymous with the selective - accommodatory activity as this appears in the life history of the individual ; and we have, moreover already pointed

out certain limitations and certain merits of these categories when applied to the classification of mental phenomena. We have found them serving to magnify a certain community of organic service in the most various forms of psychical activity, but we have also found them rather too vague and general to afford a desirable scientific detail.

If on the other hand, we examine the familiar physiological functions with reference to their possible relations to mental functions, we are at once struck by certain similarities and certain disparities between the two. There are some mental [p. 77] operations which have repeatedly been designated as assimilative. So familiar is this characterization and so commonly accepted that we may without undue hesitation assume its appropriateness and relevancy. Under the physiological aspects of assimilation are commonly ranged such processes as respiration, circulation, secretion, excretion etc. How far these processes find analogies in mental action is not altogether clear. Many of our psychologists are fond of describing 'the stream of consciousness' and in so far as the metaphor is justifiable one may naturally think of the physiological circulation as its counterpart. But there are perhaps as many differences as there are resemblances between the two. Certainly the cyclical character of the circulation of the blood finds no precise analogue in the flow of psychical phenomena. Similarly the periodicity of respiration may suggest the fluctuation of attention, the storing of mental dispositions may be connected with secretion, the casting off of mental irrelevancies may be likened to excretion, etc. But these relations are so largely metaphorical in character that one can hardly assign them a larger consequence than springs from such amusement as they may afford.

It would perhaps be difficult to disprove the theory that reproduction can be regarded as a mental category quite as truly as a physiological category, not only in the sense in which one mind can be conceived as the parent of other minds, but also in the familiar sense in which the mind is thought of as recreating its own ideas from time to time.

Yet granting all this, it may safely be said that however numerous the analogies connecting the mental functions with the physiological functions may be, we are not at present in a position to take advantage of them in any very serious way. Motion is by common consent applicable to the physiological alone and sensibility is in the intent of the classification appropriate to the psychical alone. The basal categories utilized by physiologists seem therefore to render us but little assistance. This view is vigorously maintained by many modern writers, but generally on a priori grounds.

If we examine the historically conspicuous classifications of mental process made by psychologists, we discover, as was [p.78] pointed out in an earlier paragraph, that they are frequently suggestive of definitely functional conceptions. The Aristotelian divisions, the so-called Kantian divisions, the divisions into higher and lower powers characteristic of the faculty psychologists (and many others not commonly ranked as such), and Brentano's and Stout's classifications, to mention no more, are all decidedly based on dynamic and functionalistic considerations. On the other hand, not a few of our contemporary authorities, notably Wundt, classify their material under the more statical and mechanical categories - 'elements and compounds.'

Professor Warren has recently suggested an interesting classification in which he proposes as the fundamental functional categories the following five: Sensibility, which gives us the sensory continuum ; modification, which connotes our ability to become aware of intensive modifications in the continuum ; differentiation, which covers our capacity to experience qualitative differences ; association, which does not require interpretation, and discrimination, which refers to our ability to perform definite acts of rational apprehension and to articulate purposes.[6] These functions taken together will, he alleges, account for all forms of consciousness and they are not derivatives from phenomena of the material world which he regards as outside the pale. I do not propose at this time to offer any detailed criticism of Professor Warren's valuable paper. Indeed, until his views are more fully elaborated, extended criticism would be premature.

One distinction, however, to which he calls incidental attention as a biological distinction, is formulated in an admirable statement with which I fully agree. It presents a sort of functional analysis which seems to me at once pregnant and sound. He speaks of the three-fold division of cognition, affection and conative process as intrinsically biological in character and corresponding broadly to the differences among the external, the systemic and the kinaesthetic senses ; the first reporting to us the outer world, the second our own general organic tone and the third supplying

experiences of our motor activity by means of which voluntary control is developed.

[p. 79] Particularly significant is his remark that the 'functional functions of consciousness and the kinds of experience' are something quite distinct from one another. It is because he believes that the 'rise of any particular experience and its make-up as a datum of consciousness can be fully described in terms of certain mental functions' that he feels it possible to elaborate an independent natural science of psychology free from neurological, physiological and biological considerations. It is not clear that this conclusion flows from Professor Warren's premises any more exclusively than from the premises of the so-called structuralist's point of view. Nor is there any strictly logical impracticality in carrying out the program of such a pure psychology. But it is fair to emphasize the extremely pale, attenuated and abstract character of such a science as compared with one which should report upon conscious processes as they are really found amid the heat and battle of the actual mind-body life. It may be a pure science, but it is surely purity bought at a great price - i.e., truth to life.

All pure science must abstract in a measure from the actual circumstances of life, but in the so-called exact sciences the abstraction is always away from the irrelevant and disturbing. The type of abstraction which Professor Warren champions, in common with many other distinguished scholars, is one which appeals to me as an abstracting away from the more significant, with the consequent fixation of attention upon the relatively less important.

It is a commonplace of logic that classification is intrinsically teleological and that the merits of any special classification, assuming that it does not distort or misrepresent the facts, is to be tested by the success with which it meets the necessities for which it was devised. If one desires to emphasize the taxonomic and morphological features of mentality, no doubt some such division as Wundt employs, using the rubrics elements and compounds, is preferable. If one wishes primarily to emphasize qualitative similarities and dissimilarities, the Kantian principle of irreducibility is judicious ; and if one wishes to bring out the dynamic character of consciousness, such a principle as Brentano's, based on the mode in which conscious- [p. 80] ness refers to its object, is effective. If functional psychology really possesses several distinct zones of interest, it is quite conceivable that different classifications may be necessary to fulfil most satisfactorily the demands in these several fields. In any case we must forego further discussion of the matter at this point and return to offer our description of the third of the main subdivisions of the functional problem.

### III.

The third conception which I distinguish is often in practice merged with the second, but it involves stress upon a problem logically prior perhaps to the problem raised there and so warrants separate mention. Functional psychology, it is often alleged, is in reality a form of psychophysics. To be sure, its aims and ideals are not explicitly quantitative in the manner characteristic of that science as commonly understood. But it finds its major interest in determining the relations to one another of the physical and mental portions of the organism.

It is undoubtedly true that many of those who write under functional prepossessions are wont to introduce frequent references to the physiological processes which accompany or condition mental life. Moreover, certain followers of this faith are prone to declare forthwith that psychology is simply a branch of biology and that we are in consequence entitled, if not indeed obliged, to make use where possible of biological materials. But without committing ourselves to so extreme a position as this, a mere glance at one familiar region of psychological procedure will disclose the leanings of psychology in this direction.

The psychology of volition affords an excellent illustration of the necessity with which descriptions of mental process eventuate in physiological or biological considerations. If one take the conventional analysis of a voluntary act drawn from some one or other of the experiences of adult life, the descriptions offered generally portray ideational activities of an anticipatory and deliberative character which serve to initiate immediately or remotely certain relevant expressive movements. Without the execution of the movements the ideational performances would be as futile as the tinkling cymbals of Scrip- [p. 81] ture. To be sure, many of our psychologists protest themselves wholly unable to suggest why or how such muscular movements are brought to pass. But the fact of their occurrence or of their fundamental import for any theory of mental life in which consciousness is other than an epiphenomenon, is not questioned.

Moreover, if one considers the usual accounts of the ontogenesis of human volitional acts one is again confronted with intrinsically physiological data in which reflexes, automatic and instinctive acts are much in evidence. Whatever the possibilities, then, of an expurgated edition of the psychology of volition from which should be blotted out all reference to contaminating physiological factors, the actual practice of our representative psychologists is quite otherwise, and upon their showing volition cannot be understood either as regards its origin or its outcome without constant and overt reference to these factors. It would be a labor of supererogation to go on and make clear the same doctrine as it applies to the psychology of the more recondite of the cognitive processes ; so intimate is the relation between cognition and volition in modern psychological theory that we may well stand excused from carrying out in detail the obvious inferences from the situation we have just described.

Now if someone could but devise a method for handling the mind-body relationships which would not when published immediately create cyclonic disturbances in the philosophical atmosphere, it seems improbable that this disposition of the functional psychologist to inject physiology into his cosmos would cause comment and much less criticism. But even parallelism, that most insipid, pale and passionless of all the inventions begotten by the mind of man to accomplish this end, has largely failed of its pacific purpose. It is no wonder, therefore, that the more rugged creeds with positive programs to offer and a stock of red corpuscles to invest in their propagation should also have failed of universal favor.

This disposition to go over into the physiological for certain portions of psychological doctrine is represented in an interesting way by the frequent tendency of structural psychologists to find explanation in psychology substantially equivalent to [p. 82] physiological explanation.[7] Professor Tichener's recent work on Quantitative Psychology represents this position very frankly. It is cited here with no intent to comment disparagingly upon the consistency of the structuralist position, but simply to indicate the wide-spread feeling of necessity at certain stages of psychological development for resort to physiological considerations.

Such a functional psychology as I have been presenting would be entirely reconcilable with Miss Calkins' 'psychology of selves' (so ably set forth by her in her presidential address last year) were it not for her extreme scientific conservatism in refusing to allow the self to have a body, save as a kind of conventional biological ornament. The real psychological self, as I understand her, is pure disembodied spirit - an admirable thing of good religious and philosophic ancestry, but surely not the thing with which we actually get through this vale of tears and not a thing before which psychology is under any obligation to kowtow.[8]

It is not clear that the functional psychologist because of his [p. 83] disposition to magnify the significance in practice of the mind-body relationships is thereby committed to any special theory of the character of these relationships, save as was said a moment since, that negatively he must seemingly of necessity set his face against any epiphenomenalist view. He might conceivably be an interactionist, or a parallelist or even an advocate of some wholly outworn creed. As a matter of fact certain of our most ardent functionalists not only cherish highly definite articles of faith as regards this issue, they would even go so far as to test functional orthodoxy by the acceptance of these tenets. This is to them the most momentous part of their functionalism, their holy of holies. It would display needless temerity to attempt within the limitations of this occasion a formulation of doctrine wholly acceptable to all concerned. But I shall venture a brief reference to such doctrine in the effort to bring out certain of its essentials.

The position to which I refer regards the mind-body relation as capable of treatment in psychology as a methodological distinction rather than a metaphysically existential one. Certain of its expounders arrive at their view by means of an analysis of the genetic conditions under which the mind-body differentiation first makes itself felt in the experience of the individual.[9] This procedure clearly involves a direct frontal attack on the problem.

Others attain the position by flank movement, emphasizing to begin with the insoluble contradictions with which one is met when the distinction is treated as resting on existential differences in the primordial elements of the cosmos.[10] Both methods of approach lead to the same goal, however, i.e., the conviction that the distinction has no existence on the genetically lower and more naive stages of experience. It only comes to light on a relatively reflective level and it must then be treated

[p. 84] as instrumental if one would avoid paralogsms, antinomies and a host of other metaphysical nightmares. Moreover, in dealing with psychological problems this view entitles one to reject as at least temporarily irrelevant the question whether mind causes changes in neural action and conversely. The previous question is raised by defenders of this type of doctrine if one insists on having such a query answered. They invite you to trace the lineage of your idea of causality, insisting that such a searching of one's intellectual reins will always disclose the inappropriateness of the inquiry as formulated above. They urge further that the profitable and significant thing is to seek for a more exact appreciation of the precise conditions under which consciousness is in evidence and the conditions under which it retires in favor of the more exclusively physiological. Such knowledge so far as it can be obtained is on a level with all scientific and practical information. It states the circumstances under which certain sorts of results will appear.

One's view of this functionalistic metaphysics is almost inevitably colored by current philosophical discussion as to the essential nature of consciousness. David Hume has been accused of destroying the reality of mind chiefly because he exorcised from it relationships of various kinds. If it be urged, as has so often been done, that Hume was guilty of pouring out the baby with the bath, the modern philosopher makes good the disaster not only by pouring in again both baby and bath, but by maintaining that baby and bath, mind and relations, are substantially one.[11] Nor is this unity secured after the manner [p. 85] prescribed by the good Bishop Berkeley. At all events the metaphysicians to whom I refer are not fond of being called idealists. But the psychological functionalist who emphasizes the instrumental nature of the mind-body distinction and the metaphysician who regards mind as a relation are following roads which are at least parallel to one another if not actually convergent.

Whether or not one sympathizes with the views of that wing of the functionalist party to which our attention has just been directed it certainly seems a trifle unfair to cast up the mind-body difficulty in the teeth of the functionalist as such when on logical grounds he is no more guilty than any of his psychological neighbors. No courageous psychology of volition is possible which does not squarely face the mind-body problem, and in point of fact every important description of mental life contains doctrine of one kind or another upon this matter. A literally pure psychology of volition would be a sort of hanging-garden of Babylon, marvelous but inaccessible to psychologists of terrestrial habit. The functionalist is a greater sinner than others only in so far as he finds necessary and profitable a more constant insistence upon the translation of mental process into physiological process and conversely.

#### IV.

If we now bring together the several conceptions of which mention has been made it will be easy to show them converging upon a common point. We have to consider ( 1 ) functionalism conceived as the psychology of mental operations in contrast to the psychology of mental elements ; or, expressed otherwise, the psychology of the how and why of consciousness as distinguished from the psychology of the what of consciousness. We have ( 2 ) the functionalism which deals with the problem of mind conceived as primarily engaged in mediating between the environment and the needs of the organism. This is the psychology of the fundamental utilities of consciousness ; ( 3 ) and [p. 86] lastly we have functionalism described as psychophysical psychology, that is the psychology which constantly recognizes and insists upon the essential significance of the mind-body relationship for any just and comprehensive appreciation of mental life itself.

The second and third delineations of functional psychology are rather obviously correlated with each other. No description of the actual circumstances attending the participation of mind in the accommodatory activities of the organism could be other than a mere empty schematism without making reference to the manner in which mental processes eventuate in motor phenomena of the physiological organism. The overt accommodatory act is, I take it, always sooner or later a muscular movement. But this fact being admitted, there is nothing for it, if one will describe accommodatory processes, but to recognize the mind-body relations and in some way give expression to their practical significance. It is only in this regard, as was indicated a few lines above, that the functionalist departs a trifle in his practice and a trifle more in his theory from the rank and file of his colleagues.

The effort to follow the lead of the natural sciences and delimit somewhat rigorously - albeit artificially - a field of inquiry, in this case consciousness conceived as an independent realm, has led

in psychology to a deal of excellent work and to the uncovering of much hidden truth. So far as this procedure has resulted in a focusing of scientific attention and endeavor on a relatively narrow range of problems the result has more than justified the means. And the functionalist by no means holds that the limit of profitable research has been reached along these lines. But he is disposed to urge in season and out that we must not forget the arbitrary and self-imposed nature of the boundaries within which we toil when we try to eschew all explicit reference to the physical and physiological. To overlook this fact is to substitute a psychology under injunction for a psychology under free jurisdiction. He also urges with vigor and enthusiasm that a new illumination of this preëempted field can be gained by envisaging it more broadly, looking at it as it appears when taken in perspective with its neighboring territory.

[p. 87] And if it be objected that such an inquiry however interesting and advantageous is at least not psychology, he can only reply ; psychology is what we make it, and if the correct understanding of mental phenomena involves our delving in regions which are not at first glance properly mental, what recks it, provided only that we are nowhere guilty of untrustworthy and unverifiable procedure, and that we return loaded with the booty for which we set out, and by means of which we can the better solve our problem?

In its more basal philosophy this last conception is of course intimately allied to those appraisals of mind which emphasize its dominantly social characteristics, its rise out of social circumstances and the pervasively social nature of its constitutive principles. In our previous intimations of this standpoint we have not distinguished sharply between the physical and the social aspect of environment. The adaptive activities of mind are very largely of the distinctly social type. But this does not in any way jeopardize the genuineness of the connection upon which we have been insisting between the psychophysical aspects of a functional psychology and its environmental adaptive aspects.

It remains then to point out in what manner the conception of functionalism as concerned with the basal operations of mind is to be correlated with the other two conceptions just under discussion. The simplest view to take of the relations involved would apparently be such as would regard the first as an essential propaedeutic to the other two. Certainly if we are intent upon discerning the exact manner in which mental process contributes to accommodatory efficiency, it is natural to begin our undertaking by determining what are the primordial forms of expression peculiar to mind. However plausible in theory this conception of the intrinsic logical relations of these several forms of functional psychology, in practice it is extremely difficult wholly to sever them from one another.

Again like the biological accommodatory view the psychophysical view of functional psychology involves as a rational presupposition some acquaintance with mental processes as these appear to reflective consciousness. The intelligent corre- [p. 88] lation in a practical way of physiological and mental operations evidently involves a preliminary knowledge of the conspicuous differentiations both on the side of conscious function and on the side of physiological function.

In view of the considerations of the last few paragraphs it does not seem fanciful nor forced to urge that these various theories of the problem of functional psychology really converge upon one another, however divergent may be the introductory investigations peculiar to each of the several ideals. Possibly the conception that the fundamental problem of the functionalist is one of determining just how mind participates in accommodatory reactions, is more nearly inclusive than either of the others, and so may be chosen to stand for the group. But if this vicarious duty is assigned to it, it must be on clear terms of remembrance that the other phases of the problem are equally real and equally necessary. Indeed the three things hang together as integral parts of a common program.

The functionalist's most intimate persuasion leads him to regard consciousness as primarily and intrinsically a control phenomenon. Just as behavior may be regarded as the most distinctly basic category of general biology in its functional phase so control would perhaps serve as the most fundamental category in functional psychology, the special forms and differentiations of consciousness simply constituting particular phases of the general process of control. At this point the omnipresent captious critic will perhaps arise to urge that the knowledge process is no more truly to be explained in terms of control than is control to be explained in terms of knowledge. Unquestionably there is from the point of view of the critic a measure of truth in this contention. The mechanism of control undoubtedly depends on the cognitive processes, to say nothing of other

factors. But if one assumes the vitalistic point of view for one's more final interpretations, if one regards the furtherance of life in breadth and depth and permanence as an end in itself, and if one derives his scale of values from a contemplation of the several contributions toward this end represented by the great types of vital phenomena, with their apex in the moral, scientific and aesthetic realms, one must certainly find control a category more [p. 89] fundamental than the others offered by psychology. Moreover, it may be urged against the critic's attitude that even knowledge itself is built up under the control mechanism represented by selective attention and apperception. The basic character of control seems therefore hardly open to challenge.

One incidental merit of the functionalist program deserves a passing mention. This is the one method of approach to the problem with which I am acquainted that offers a reasonable and cogent account of the rise of reflective consciousness and its significance as manifested in the various philosophical disciplines. From the vantage point of the functionalist position logic and ethics, for instance, are no longer mere disconnected items in the world of mind. They take their place with all the inevitableness of organic organization in the general system of control, which requires for the expression of its immanent meaning as psychic a theoretical vindication of its own inner principles, its modes of procedure and their results.[12] From any other point of view, so far as I am aware, the several divisions of philosophical inquiry sustain to one another relations which are almost purely external and accidental. To the functionalist on the other hand they are and must be in the nature of the case consanguineous and vitally connected. It is at the point, for example, where the good, the beautiful and the true have bearing on the efficacy of accommodatory activity that the issues of the normative philosophical sciences become relevant. If good action has no significance for the enriching and enlarging of life, the contention I urge is futile, and similarly as regards beauty and truth. But it is not at present usually maintained that such is the fact.

These and other similar tendencies of functionalism may serve to reassure those who fear that in lending itself to biological influences psychology may lose contact with philosophy [p. 90] and so sacrifice the poise and balance and sanity of outlook which philosophy undertakes to furnish. The particular brand of philosophy which is predestined to functionalist favor cannot of course be confidently predicted in advance. But anything approaching a complete and permanent divorce of psychology from philosophy is surely improbable so long as one cultivates the functionalist faith. Philosophy cannot dictate scientific method here any more than elsewhere, nor foreordain the special facts to be discovered. But as an interpreter of the psychologist's achievements she will always stand higher in the functionalist's favor than in that of his colleagues of other persuasions, for she is a more integral and significant part of his scheme of the cosmos. She may even outgrow under his tutelage that 'valiant inconclusiveness' of which the last of her long line of lay critics has just accused her.

A sketch of the kind we have offered is unhappily likely to leave on the mind an impression of functional psychology as a name for a group of genial but vaguer ambitions and good intentions. This, however, is a fault which must be charged to the artist and to the limitations of time and space under which he is here working. There is nothing vaguer in the program of the functionalist when he goes to his work than there is in the purposes of the psychologist wearing any other livery. He goes to his laboratory, for example, with just the same resolute interest to discover new facts and new relationships, with just the same determination to verify and confirm his previous observations, as does his colleague who calls himself perhaps a structuralist. But he looks out upon the surroundings of his science with a possibly greater sensitiveness to its continuity with other ranges of human interest and with certainly a more articulate purpose to see the mind which he analyzes as it actually is when engaged in the discharge of its vital functions. If his method tempts him now and then to sacrifice something of petty exactitude, he is under no obligation to yield, and in any case he has for his compensation the power which comes from breadth and sweep of outlook.

So far as he may be expected to develop methods peculiar to himself - so far, indeed, as in genetic and comparative psy- [p. 91] chology, for example, he has already developed such - they will not necessarily be iconoclastic and revolutionary, nor such as flout the methods already devised and established on a slightly different foundation. They will be distinctly complementary to all that is solid in these. Nor is it in any way essential that the term functionalism should cling to this new-old movement. It seems at present a convenient term, but there is nothing sacrosanct about it, and the moment it takes unto itself the pretense of scientific finality its doom will be sealed. It means to-day a broad and flexible and organic point of view in psychology. The moment it becomes dogmatic and narrow its spirit will have passed and undoubtedly some worthier successor will fill its place.

## Footnotes

[1] Delivered in substantially the present form as the President's Annual Address before the American Psychological Association at its fifteenth annual meeting held at Columbia University, New York City, December 27, 28 and 29, 1906.

[2] The most lucid exposition of the structuralist position still remains, so far as I know, Titchener's paper, 'The Postulates of a Structural Psychology,' *Philosophical Review*, 1898 [VII.], p. 499. Cf. also the critical-controversial papers of Caldwell, *PSYCHOLOGICAL REVIEW*, 1899, p. 187, and Titchener, *Philosophical Review*, 1899 [VIII.], p. 290.

[3] 'The Relations of Structural and Functional Psychology to Philosophy,' *Philosophical Review*, 1903 [XII.], p. 203 ff.

[4] At this point there is obviously a possible ambiguity in the use of the term accommodatory. Any physiologically adequate process may be described as accommodatory. Respiration, for example, might be so designated. Clearly one needs a special term to designate accommodation to the novel, for this is the field of conscious activity. Of course if the contention be granted for which the view now under consideration stands, this could be called conscious accommodation and it would be understood forthwith that such accommodation was to the novel.

[5] Cf. MacDougal's striking papers in *Mind*, 1898, entitled 'Contribution toward an Improvement in Psychological Method.'

[6] 'The Fundamental Functions of Consciousness,' *Psychological Bulletin*, 1906, p. 217.

[7] Cf. Münsterberg's striking pronouncement to this effect in his paper entitled 'Psychological Atomism,' *PSYCHOLOGICAL REVIEW*, 1900, p. 1. The same doctrine is incorporated in his 'Grundzüge der Psychologie' and we await with interest the completion of that task in order to discover the characteristic features of a psychology consistently built on these foundations.

[8] Miss Calkins' views on this matter, which are shared by many of our leading psychologists, have been lucidly expounded on several papers [particularly 'Der doppelte Standpunkt in der Psychologie,' and a 'Reconciliation between Structural and Functional Psychology,' *PSYCHOLOGICAL REVIEW*, 1906, p. 61], to say nothing of their embodiment in her widely quoted Introduction to Psychology. She has done yeoman service in emphasizing the fundamental significance of the 'self' consciousness for all psychological doctrine and I am in entire sympathy with her insistence on this fact. But she seems to me unduly to circumscribe the legitimate scope of this 'self.' Possibly I misinterpret her meaning, but the following sentences together with the procedure in her Introduction to Psychology seem to justify me. "By self as fundamental fact of psychology is not meant . . . the psychological organism, . . . the objection is, very briefly, that the doctrine belongs not to psychology at all, but to biology," *PSYCHOLOGICAL REVIEW*, 1906, p. 66. After which reference is made to Professor Baldwin's *Development and Evolution* as a non-psychological treatise. Such a settlement of the issue is easy and logically consistent. But does it not leave us with a gulf set between the self as mind and the self as body, for the crossing of which we are forthwith obliged to expend much needless energy, as the gulf is of our own inventing?

[9] The most striking attempt of this kind with which I am acquainted is Professor Baldwin's paper entitled 'Mind and Body from the Genetic Point of View,' *PSYCHOLOGICAL REVIEW*, 1903, p. 225.

[10] Cf. on this general issue Bawden, 'Functional View of the Relation Between the Psychical and the Physical,' *Philosophical Review*, 1902, [XI.], p. 474, and 'Methodological Implications of the Mind-body Controversy,' *Psychological Bulletin*, 1906, p. 321.

[11] To the simple-minded psychologist this saying, in which many authors indulge, that consciousness is merely a relation seems a trifle dark. The psychologist has no natural prejudice against relation, but in this special case he is as a rule given too little information concerning the terms between which this relation subsists. Possibly his vision has been darkened by a perverse logic, but relations imply termini in his usual modes of thought and before assenting too unreservedly to the 'relation' philosophy of consciousness, he urges a fuller illumination as to the

character and status of these supporting end terms.

The following well-known papers will introduce the uninitiated, if any such there be, into the thick of the battle. A complete bibliography would probably monopolize this issue of the REVIEW. James, 'Does Consciousness Exist?' *Journal of Philosophy, Psychology and Scientific Methods*, I., p. 477. Woodbridge, 'Nature of Consciousness,' in the same *Journal*, II., p. 119. Also Garman, 'Memorial Volume,' p. 137. Perry, 'Conceptions and Misconceptions of Consciousness,' *PSYCHOLOGICAL REVIEW*, 1904, XI., p. 282. Bush, 'An Empirical Definition of Consciousness,' *Journal of Philosophy, Psychology and Scientific Methods*, II., p. 561. Stratton, 'Differences Between Mental and Physical,' *Psychological Bulletin*, 1906, p. I. 'Character of Consciousness,' *Ibid.*, p. 117.

[12] An interesting example of the possible developments in this direction is afforded by Professor G. H. Mead's paper entitled 'Suggestions toward a Theory of the Philosophical Disciplines,' *Philosophical Review*, 1900, IX., p. I. My own paper referred to elsewhere on 'Psychology and Philosophy,' *Philosophical Review*, 1903, XII., p. 243, contains further illustrative material. Professor Baldwin's recent volume on genetic logic ['Thought and Things,' etc., N.Y., 1906] is a striking case of functional psychology evolving into logic.

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