General Psychology

Selected Readings

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PSYCHOLOGY

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PREFACE

Professors teaching courses in introductory psychology, especially those with large classes, all are faced with the real problem of attempting to acquaint their students with the original sources in the literature of psychology. These sources, found in journal articles, monographs, and books, are difficult to assign to large groups of students because of the pressure this would create on most library facilities.

Here in one volume are original sources that allow the student to capture both the content and the more subtle flavor of an author's point of view which aids in vitalizing and enriching the student's total understanding.

In each of eleven areas, basic to any introductory course, introductions have been provided, each with an overview of the readings to follow. These overviews should prove helpful to the student in that they provide, in capsule form, the intent of the author of each reading and show how the selection relates to the student's course work. Problems the student may encounter in the articles are anticipated in the overview.

The prominent theories are summarized clearly, tersely, yet thoroughly, in the words of their originators. See, for example, the selections by Maslow, Skinner, Allport, Freud, Gibson, and Tolman.

Other selections describe some of the "break-through" experiments, recent studies that have furthered psychological knowledge. As examples of this type of selection, see the works of Olds, Orville Smith, Gibson and Walk, and Hess and Polt.

Nor is the factor of controversy in modern psychology overlooked. Articles are presented which have generated heated discussions in recent years. See, for example, the selection by Milgram.

The student will find that controversy is still the "name of the game" in psychology, that there are, as yet, no final answers to some of the seemingly basic problems in the field. Diametrically opposed positions are presented in a number of areas, indicating to the students that there are no absolute and ultimate truths. The selections have been chosen, however, with the students in mind. We have attempted in all cases to keep the technical level within the scope of the student new to the field of psychology.

We wish to acknowledge our gratitude to the authors who have allowed us to publish their works, without whose cooperation the publication of this volume, of course, would have been impossible. We also wish to thank our many friends and colleagues who have aided us in selecting articles which are not only instructional but have also been found to be of high interest

value to students. Among those aiding us in the selection process were: Dr. Barry Oshry of Boston University, Dr. Charles Karis of Northeastern University, Dr. Alvin Winder of the University of Massachusetts and Dr. Allen Kaynor of Springfield College.

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CONTENTS

Chapter I

INTRODUCTION TO PSYCHOLOGY

Psychology is defined as the study of the behavior of organisms. Behavior can be observed and is therefore a proper datum for scientific investigation. To the extent that this study involves the statement of scientific laws, psychology is a science, and to the extent that these laws concern the behavior of living organisms, psychology is one of the life sciences. The task of the psychologist as a scientist is to determine the causes of behavior, which sometimes refers to the activity of the muscles and glands and sometimes to the results of such activity, i.e., the things that the individual has done to change his world.

In earlier times, psychologists did not see their task in the same light. The very name "psychology" comes from the Greek words *psyche* (the mind) and *logos* (study of). The ancient Athenian philosopher Plato coined this term to refer to that branch of philosophy that concerns the study of the mind.

Psychology followed the lead of some other branches of philosophy when it joined the ranks of the sciences. A milestone in this development was the establishment of the first formal laboratory of psychology at the University of Leipzig in the 1870's by Wilhelm Wundt. Wundt, a German intellectual, trained in philosophy and physiology, utilized his educational background to do research that would clarify the understanding of the nature of man and human consciousness. His diligence and stubbornness with regard to his work enabled him to examine his investigation beyond the methods and problems of physiology. Wundt adopted the method of *introspection,* which is the careful examination and description of one's own conscious state in various experimental settings.

There are remarkable comparisons and contrasts between Wundt and William James, his American contemporary. James was also trained in philosophy and physiology. In 1875 James set up an informal psychology laboratory at Harvard University. He did not accept Wundt's view of consciousness as a static matter, and instead regarded consciousness as a continuous stream. Most of us have read something by Virginia Woolf or James Joyce, or have heard an English teacher talk about the "stream of consciousness" school of writing. To James the mind was creative and spontaneous; it was as likely to cause events as it was to be influenced by them. James believed that the mind, far from being the blank slate on which the hand of experience wrote its daily lessons, selected those aspects of experience with which it would work.

In sharp contrast to Wundt, James—instead of establishing a school of psychology—left this field for philosophy. He left his mark, however, by virtue of his influence on a trio of American psychologists—John Dewey, James R. Angell, and Harvey Carr. The great research problem for psychology, as these "functionalists" saw it, was not the structure of a static, unchanging mind, but rather the mental activity of a highly evolved organism. They regarded mental activity as being both mental and physical and dismissed our common sense distinction between mind and body as valueless.

AN OVERVIEW OF THE READINGS FOR THIS SECTION

Against this background of physiology and philosophy, with their sometimes picayune haggling, John B. Watson burst upon the scene. Taking stage center with his 1913 paper he set psychology on the course which it has followed to the present day. In the selection reprinted here, he points out that, no matter what psychologists say they study—be it the structure or content of the mind or the nature of mental activity—the facts that they actually observe and record are examples of overt behavior. Since this is the case, Watson argues, why not recognize it and treat psychology as an objective science? Behavior, he said, is the data of psychology.

While Watson was criticising the psychology of his era, three young German scholars were studying the weakness of Wundt's introspective method. They opposed the practice of dissecting the mind into its elementary components. These men were Max Wertheimer, Kurt Koffka, and Wolfgang Köhler. Köhler and his associates founded *Gestalt* (configuration) psychology. They have forced widespread changes in the psychology of perception. Perhaps the most potent weapon of the Gestaltists was the "crucial" experiment, a demonstration involving a drawing that, when presented to the reader of a Gestalt text, immediately impresses him with the force of the theoretical idea modeled by the drawing. This will be seen in the short passage from Köhler's *Dynamics in Psychology*.

Returning to the mainstream of objective psychology, we come to a most significant figure, perhaps second only to Watson himself. This man is Clark L. Hull, of Yale University, who pioneered in the construction of formal, logical theory in psychology. Hull's influence has held the forefront of modern research as is evidenced in the amount of experimentation and theorizing which his system has generated. In his presentation here, Hull takes the position that the objective analysis of adaptive behavior must supply the basic principles for all the social sciences.

Certainly equally influential is another contemporary behaviorist, B. F. Skinner of Harvard University. He is responsible for the introduction of a fundamental classification of behavior—the division into operant and respondent varieties. The former refers to what others have called "instrumental" or "voluntary" behavior, while the latter covers reflex actions. Although both can be *conditioned* (i.e., brought under the control of environmental stimuli), Skinner argues that their conditioning is subject to different principles. He has specialized in the conditioning of operant behavior. In the selection reprinted here, Skinner mentions some of the explanations of behavior that appeal to the man in the street, criticizes them all, and asserts that objective research on behavior is needed to obtain valid explanations.

In addition to his concern with perception and conditioning, the modern psychologist studies motivation, which refers to the conditions that account for the things we do and the ways in which we choose to do them. Clinical psychology and its parallel field in medicine—psychiatry—deal with the motivation of abnormal behavior. Much of the theory in clinical psychology has been formulated by the wealth of ideas on psychoanalysis generated by the great Viennese psychiatrist, Sigmund Freud.

Non-psychologists have sometimes expressed either doubts or fears that human behavior can be brought under the control of environmental conditions. Although not conceding that there is absolute freedom of the will, the prominent historian of psychology, Edwin G. Boring, allays these fears. He points out that we can strive for personal freedom in politics and economics while assuming, as scientists, that behavior is predictable.

What is psychology? Is it a field of knowledge, a natural science, or a profession? Since psychologists have widely varied interests, it is a scholarly discipline to some of them, a science to others, and a profession to still more. The American Psychological Association's pamphlet, *A Career in Psychology*, is partially reprinted here. It describes the occupational activities of psychologists, indicating how many A.P.A. members are engaged in each. *(If, after reading this selection, you desire to gain more information on a career in psychology, write to the American Psychological Association, Inc., 1333 16th Street N.W., Washington 6, D.C. for the complete pamphlet.)*

1. PSYCHOLOGY AS THE BEHAVIORIST VIEWS IT*

JOHN B. WATSON

1. Human psychology has failed to make good its claim as a natural science. Due to a mistaken notion that its fields of fact are conscious phenomena and that introspection is the only direct method of ascertaining these facts, it has enmeshed itself in a series of speculative questions which, while fundamental to its present tenets, are not open to experimental treatment. In the pursuit of answers to these questions, it has become further and further divorced from contact with problems which vitally concern human interest.

2. Psychology, as the behaviorist views it, is a purely objective, experimental branch of natural science which needs introspection as little as do the sciences of chemistry and physics. It is granted that the behavior of animals can be investigated without appeal to consciousness. Heretofore the viewpoint has been that such data have value only in so far as they can be interpreted by analogy in terms of consciousness. The position is taken here that the behavior of man and the behavior of animals must be considered on the same plane; as being equally essential to a general understanding of behavior. It can dispense with consciousness in a psychological sense. The separate observation of "states of consciousness" is, on this assumption, no more a part of the task of the psychologist than of the physicist. We might call this the return to a non-reflective and naive use of consciousness. In this sense consciousness may be said to be the instrument or tool with which all scientists work. Whether or not the tool is properly used at present by scientists is a problem for philosophy and not for psychology.

3. From the viewpoint here suggested the facts on the behavior of amoebae have value in and for themselves without reference to the behavior of man. In biology studies on race differentiation and inheritance in amoebae form a separate division of study which must be evaluated in terms of the laws found there. The conclusions so reached may not hold in any other form. Regardless of the possible lack of generality, such studies must be made if evolution as a whole is ever to be regulated and controlled. Similarly the laws of behavior in amoebae, the range of responses, and the determination of effective stimuli, of habit formation, persistency of habits, interference and reinforcement of habits, must be determined and evaluated in and for themselves, regardless of their generality, or of their bearing upon such laws in other forms, if the phenomena of behavior are ever to be brought within the sphere of scientific control.

4. This suggested elimination of states of consciousness as proper objects of investigation in themselves will remove the barrier from psychology which exists between it and the other sciences. The findings of psychology become the functional correlates of structure and lend themselves to explanation in physicochemical terms.

5. Psychology as behavior will, after all, have to neglect but few of the really essential problems with which psychology as an introspective science now concerns itself. In all probability even this residue of problems may be phrased in such a way that refined methods in behavior (which certainly must come) will lead to their solution.

* From Watson, J. B., Psychology as the Behaviorist Views It. *Psychological Review*, 1913, *20*, pp. 176-177.

2. ORGANIZED WHOLES IN PERCEPTION*

WOLFGANG KÖHLER

Our present knowledge of human perception leaves no doubt as to the general form of any theory which is to do justice to such knowledge: a theory of perception must be a *field theory*. By this we mean that the neural functions and processes with which the perceptual facts are associated in each case are located in a continuous medium; and that the events in one part of this medium influence the events in other regions in a way that depends directly on the properties of both in their relation to each other. This is the conception with which all physicists work. The field theory of perception applies this simple scheme to the brain correlates of perceptual facts. In earlier theories of perception such direct mutual influences were but occasionally admitted, and then with so much hesitation that the field principle could scarcely be recognized in those rare theoretical concessions.[1] It was one of the main occupations of Gestalt psychologists to point to one observation after another which proved that the field concept had to be put in the very center of the theory of perception. In the present situation of psychology the great importance of perception lies precisely in this fact, that in perception the acceptance of field concepts has long since become necessary, and that as a consequence it is now becoming a hard task indeed to defend any different views in other parts of psychology.

On the other hand the psychological field theory, it seems to me, is not yet in a satisfactory condition. It still has grave defects in its application both to perception and to other parts of psychology. Its principal short-comings are a certain vagueness and a lack of well-established dynamic principles according to which events in given fields are supposed to be interrelated.[2] Nor can we be surprised by this situation so long as we make no definite assumptions about the medium to which the theory is to be applied, no concrete hypotheses about the nature of the interrelated facts, and none about the actual forces which cause their interrelations. It is the purpose of this chapter to introduce such concrete assumptions.

As a first step in this direction I propose to single out a number of simple observations which will serve to center our program upon one question.

According to von Frey, a touch impression changes its location if at some distance a second such impression is simultaneously given. Since the second stimulus, too, appears shifted toward the first their distance may be strongly decreased. The size of this effect depends upon the intensity of the stimuli.[3]

In vision a similar effect was observed and measured by Scholz.[4] In this case, however, the shortening of the visual distance between the stimuli becomes maximal not when they

* From *Dynamics in Psychology* by Wolfgang Köhler. Permission by Liveright, Publishers, New York, New York.

[1] The description of the field principle which I here give is itself still too conservative; it sounds too "atomistic." But it suffices for our present purposes.

[2] Professor K. Lewin has recently made great efforts to develop the field theory beyond its first primitive stage. He has tried to achieve this by an analysis of its principal concepts. In the present attempt all stress is being laid on concreteness of our material assumptions about the field. It will be most interesting to see what relation will be found to hold between Lewin's final results and our own.

[3] M. von Frey, Zeitschr. f. Biol. *56* (1911) and Psychol. Forsch. *3* (1923).

[4] W. Scholz, Psychol. Forsch. *5* (1924).

are simultaneously given, but when the second follows shortly after the appearance of the first.[5] From the physiological point of view, corresponding processes are of course partly simultaneous; but they are not simultaneously in the same state of their development. This condition seems to favor the apparent attraction. Naturally the second stimulus undergoes the greater displacement.[6]

In the field of hearing, the same phenomenon is at least as striking.[7] Two short noises which have about the same qualitative characteristics appear much too near each other when they are given in rapid succession.

An observation which obviously belongs to the same general class of facts has been well known ever since the first stereoscopes were constructed. The processes of our two eyes are intimately interrelated. The stimulation of a point on one retina gives a visual point which is seen in a particular direction; when stimulating the other eye we can easily find a visual point that is localized in the same direction. "Corresponding points" in this sense have roughly homologous geometrical positions in the two eyes. If in a given position of the eyes two points are stimulated which have precisely corresponding locations, they will be seen as one point. This fusion, however, extends beyond the case of accurate correspondence. As though they attracted each other, two points or lines will fuse in the visual field even though they are projected on slightly "parallactic," i.e., not altogether corresponding, parts of the two retinae. This seems to be a special case of a more general rule. Independently of each other, Spiegel in Germany and Werner in this country made observations according to which, with a greater parallax, the two objects remain separated, but appear *too near* each other. This mutual attraction increases as the parallax decreases; and eventually it results in actual fusion long before the parallax becomes zero.[8]

The apparent attraction which is observed under conditions of *successive* stimulation seems to be related to certain further facts. When given in rapid succession and at some distance from each other two visual stimuli tend to appear as one visual object that moves from the region of the first stimulus toward that of the second. This "stroboscopic" effect is the fundamental fact in all moving pictures. It has played an important rôle in the first development of Gestalt theory.[9] Actual unity, in which any suspicion of the presence of two separate objects is lost, presupposes certain favorable conditions; but even if these are not given, there remains a phenomenon of movement which passes through the area between the stimulated regions. Although this fact is not identical with the apparent attraction which one visual object exerts on another, the stroboscopic effect and the attraction are closely related phenomena. Both depend on the time interval between the first and the second stimulation; and under the same temporal conditions as lead to optimal movement the attraction reaches its maximal amount. In other words, the path of the optimal movement is shorter than is the phenomenal distance between the stimuli for any greater or smaller time interval.

The stroboscopic movement exhibits a further characteristic which lends increased interest to these observations. In one of his papers Professor Wertheimer[10] describes an experiment on stroboscopic movement in which this effect is shown to depend upon the particular characteristics of the stimuli in question. If short exposure of an object is closely followed by the exposure of two objects of the same kind and at equal distances from the first, a movement toward both will often be seen. If,

[5] E. S. Marks (Journ. of General Psychol. *8* [1933]) describes very neat experiments in which attraction is demonstrated when visual stimuli are *simultaneously* given. (*Cf.* also W. Köhler in *Psychologies of 1930*, ed. by C. Murchison, p. 152 f.)

[6] Scholz found that very short objective distances appeared lengthened rather than shortened. If touch impressions were successively given, their distance was shortened (Scholz, pp. 259 ff.); if, however, the objective distance was very short the successively given impressions appeared again too far apart. This held also of successive sounds whose objective distance was small —at least if the time interval was not too short.

[7] W. Scholz, *loc. cit.*, p. 247. P. Kester, Psychol. Forsch. *8* (1926).

[8] H. G. Spiegel, Psychol. Forsch. *21* (1937); H. Werner, Psychol. Monogr. *218* (1937).

[9] M. Wertheimer, Zeitschr. f. Psychol. *61* (1912).

[10] M. Wertheimer, Psychol. Forsch. *4* (1923), pp. 314 f. For a more particular analysis and special conditions *cf.* P. von Schiller, Psychol. Forsch. *17* (1933), pp. 188 ff.

however, the first object and one object of the subsequent pair are alike as to color, size, and shape, while the other member of this pair differs strongly from those two, the movement will preferably pass through the area between the equal objects.

At this point we are reminded of a basic fact in the perceptual organization of *stationary* objects, which has once before been mentioned. Suppose that a number of objects are shown at equal distances from each other. In spite of this regular distribution specific groups will be formed if some of the objects have a property in common and differ thereby from the others. In the following example, for instance, which is a variation of one of Wertheimer's figures,[11] we see one pattern of dots as vertical lines, the other pattern as horizontal lines. (*Cf.* Figs. 1 and 2.)

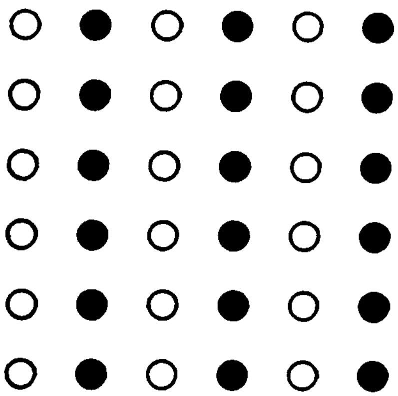

FIGURE 1

Like dots unite in both figures so that groups are formed which appear in one case as vertical and in the other as horizontal lines. Thus in these stationary patterns the same principle of likeness operates as was just found to influence the direction of stroboscopic movements.

From all these facts we shall now draw our first theoretical conclusions. In the first place it is not the self or any mental processes which bring about those apparent attractions in several sensory departments, the stroboscopic movement with its peculiarities, and the grouping of objects with its dependence on the factor of similarity.[12] It is true that changes of mental attitude *may* influence these phenomena just as they may exert a certain influence on other facts of organization. Normally, however, even a passive observer will find that

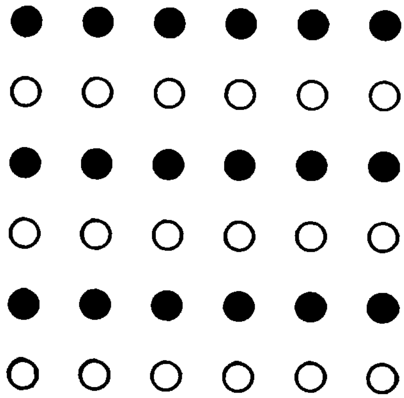

FIGURE 2

those distances are too short, that the stroboscopic movement prefers the path between like objects, and that specific groups tend to include similar objects rather than heterogeneous material. Therefore we are here dealing with facts of *sensory* organization.

In the second place, I repeat, the observer is unaware of the way in which the presence of a second object displaces a first, and vice versa. He does not experience in what manner two successively given stimuli co-operate in producing a stroboscopic movement; nor does he see why likeness of these stimuli is a favorable condition for its occurrence. Again, he may recognize that likeness among several objects favors their appearance as one group; but he cannot tell us for what reason likeness has this particular effect.

To the extent, therefore, to which these ob-

[11] M. Wertheimer, Psychol. Forsch. *4* (1923), p. 309.

[12] Recently I. Krechevsky has argued that without any particular need no specific grouping will occur in the visual field of a rat. He also supports this view by most interesting experiments. *Cf.* I. Krechevsky, Journ. of Exper. Psychol. *22* (1938). It may be, however, that in these experiments the objective conditions for specific grouping were not present in such a degree as to suffice for spontaneous grouping in the case of the rat.

servations bear witness to an interaction which cannot as such be observed within the phenomenal realm, they cannot be understood in purely psychological terms. According to our general program we shall therefore assume that the interaction occurs among the brain correlates of the perceptual facts in question.

Let us first consider the case of apparent attraction, for instance, in the field of touch. Two points on the forearm of a subject, perhaps 10 cm. apart, are simultaneously stimulated, and their distance appears much smaller than corresponds to their localization when they are singly given. We have good reasons to assume that the brain correlates of these stimuli are located in the posterior central gyrus. If the stimuli are separated by a considerable distance on the skin of the arm, their correlates will also have separate locations in the posterior central gyrus. The fact, however, that both stimuli appear as displaced toward each other can be due only to an influence which the neural counterpart of the first exerts on that of the second, and vice versa. It must be this influence which alters the localization of the points in phenomenal space.

Under these circumstances we shall have to ask ourselves in what manner the brain correlate of one stimulus can have any effect on the brain correlate of a second stimulus, if the locus of the former is different from that of the latter. The same question will arise if apparent attraction is considered not in the field of touch but in vision and in hearing. Whatever may be the more particular conditions on which the displacements depend in these cases, there are such displacements, and they involve the same problem.

We shall be better prepared for an answer if the nature of the problem is first more fully realized. It will be obvious that the stroboscopic movement and the grouping in visual space require an explanation in terms of interaction just as do the facts of apparent attraction. Both in the stroboscopic movement and in perceptual grouping, however, the concrete characteristics of the stimuli are found to play a selective rôle. Interaction depends in these cases on the relation which obtains between the properties of the interacting processes. Our question will therefore assume this form: How can the neural correlates of separate and distant stimuli influence each other in a way that depends upon the relation between their particular characteristics? I see no more than one way in which such facts can be explained. A process α cannot determine what happens to a distant process β (and vice versa) unless the presence of α is somehow represented at the locus of β (and vice versa). Moreover, this influence cannot be specific unless the representation of one process at the locus of the other is equally specific; in other words, unless not merely the presence of a process in general but also its concrete properties are to a degree represented in the surrounding tissue.

3. A NATURALISTIC SOCIAL SCIENCE*

CLARK L. HULL

ORGANISMIC NEED, ACTIVITY, AND SURVIVAL

Since the publication by Charles Darwin of the *Origin of Species* it has been necessary to think of organisms against a background of organic evolution and to consider both organismic structure and function in terms of *survival*. Survival, of course, applies equally to the individual organism and to the species.

Physiological studies have shown that survival requires special circumstances in considerable variety; these include optimal conditions of air, water, food, temperature, intactness of bodily tissue, and so forth; for species survival among the higher vertebrates there is required at least the occasional presence and specialized reciprocal behavior of a mate.

On the other hand, when any of the commodities or conditions necessary for individual or species survival are lacking, or when they deviate materially from the optimum, a state of *primary need* is said to exist. In a large proportion of such situations the need will be reduced or eliminated only through the action on the environment of a particular sequence of movements made by the organism. For example, the environment will, as a rule, yield a commodity (such as food) which will mediate the abolition of a state of need (such as hunger) only when the movement sequence corresponds rather exactly to the momentary state of the environment; i.e., when the movement sequence is closely synchronized with the several phases of the environmental reactions. If it is to be successful, the behavior of a hungry cat in pursuit of a mouse must vary from instant to instant, depending upon the movements of the mouse. Similarly if the mouse is to escape the cat, its movements must vary from instant to instant, depending upon the movements of the cat.

Moreover, in a given external environment situation the behavior must often differ radically from one occasion to another, depending on the need which chances to be dominant at the time; e.g., whether it be of food, water, or a mate. In a similar manner the behavior must frequently differ widely from one environmental situation to another, even when the need is exactly the same in each environment; a hungry man lost in a forest must execute a very different sequence of movements to relieve his need from what would be necessary if he were in his home.

It follows from the above considerations that *an organism will hardly survive unless the state of organismic need and the state of the environment in its relation to the organism are somehow jointly and simultaneously brought to bear upon the movement-producing mechanism of the organism.*

THE ORGANIC BASIS OF ADAPTIVE BEHAVIOR

All normal higher organisms possess a great assortment of muscles, usually with bony accessories. These motor organs are ordinarily adequate to mediate the reduction of most needs, provided their contractions occur in the right amount, combination, and sequence. The momentary status of most portions of the environment with respect to the organism is mediated to the organism by an immense number of specialized receptors which respond to a considerable variety of energies such as light waves (vision), sound waves (hearing), gases (smell), chemical solutions (taste), mechanical impacts (touch), and so on. The state of the organism itself (the internal environment) is mediated by another highly specialized series of receptors. It is probable that the various conditions of need also fall into this latter category; i.e., in one way or another needs activate more or less characteristic receptor organs much as do external environmental forces.

Neural impulses set in motion by the action of these receptors pass along separate nerve fibers to the central ganglia of the nervous system, notably the brain. The brain, which acts as a kind of automatic switchboard, together with the remainder of the central nervous system, routes and distributes the impulses to individual muscles and glands in rather precisely graded amounts and sequences. When the neural impulse reaches an effector organ (muscle or gland) the organ ordinarily becomes active, the amount of activity usually varying with the magnitude of the impulse. The movements thus brought about usually result in the elimination of the need, though often only after numerous unsuccessful trials. But organismic activity is by no means always successful; not infrequently death occurs before an adequate action sequence has been evoked.

It is the primary task of a molar science of behavior to isolate the basic laws or rules according to which various combinations of stimulation, arising from the state of need on the one hand and the state of the environment on the other, bring about the kind of behavior characteristic of different organisms. A closely