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SOCIAL PSYCHOLOGY

A TEXT BOOK FOR

STUDENTS OF ECONOMICS AND OF SOCIAL SCIENCES

BY

ROBERT H. THOULESS, PH.D., M.A.

LECTURER IN PSYCHOLOGY IN THE UNIVERSITY OF GLASGOW
LATE FELLOW OF CORPUS CHRISTI COLLEGE, CAMBRIDGE
AUTHOR OF "AN INTRODUCTION TO THE PSYCHOLOGY OF RELIGION"

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PREFACE.

THE present work is an attempt to cover the syllabus of the Psychology sub-section of Sociology in the B.Sc. (Economics) Examination of London University. This syllabus deals largely with general psychology, and to a lesser extent with the specialised branches of the subject properly described as "social psychology" or "economic psychology." The book therefore ranges widely over the whole field of psychology, developing in greater detail those parts which seem to have the most important bearing on practical problems. The author has made no attempt himself to make those applications, a task for which he has no qualifications, but he has tried to present in a brief and understandable form the psychological facts themselves.

It is hoped that this work may be found to be of value to a wider circle of readers than those who are preparing for the above examination. The practical applications of psychological theory are manifold, and hardly a day passes in which there is not a leading article in one of our prominent newspapers in which human instincts are mentioned, or an impressive pronouncement about human nature made by one of our statesmen. Unfortunately much of this psychology is manufactured *ad hoc*, and does not commend itself to the psychologist who treats his subject as an exact science. He is encouraged, however, by the implicit recognition of the fact that psychological theory does lie

at the root of social problems. If then psychology is to be used to solve such problems, it seems better that the psychology taken should be the one founded on the widest possible basis of observation and experiment. This is what academic psychology is, and it is for this reason that the academic psychologist feels that his subject has some bearing on the work of solving practical problems, social and economic.

My thanks are particularly due to Mr. F. C. Bartlett for his very great kindness in reading the greater part of the typescript of this book and for many criticisms. I am also grateful to Dr. J. T. MacCurdy for reading through the preliminary chapters on Instinct, to Dr. Olive Wheeler for similar help with the chapter on the psychology of Aesthetics, and to Prof. H. Clay and Prof. T. H. Pear, from both of whom I have received valuable encouragement and criticism. I am indebted to my wife and to Miss I. Burnett for the correction of the typescript and the proofs.

Lastly I wish to take this opportunity of recording my appreciation of the courtesy and helpfulness of the General Editor of the University Tutorial Press (Dr. W. Briggs) and of the Managing Editor (Mr. R. W. Hutchinson).

R. H. THOULESS.

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CHAPTER I.

The Science of Psychology.

1. What is Psychology?—Probably the best way to approach a working definition of the science of psychology is to contrast its methods and interests with those of the other sciences.

The immediate data of all sciences are phenomena—events occurring in the external world experienced by an observer. The phenomena studied in psychology are often the same as those studied in the physical sciences but with a different interest. In the physical sciences the emphasis is on the external events, while in psychological science it is on the observing subject. For example, a line of investigation for psychology was opened by the discovery that different astronomical observers recorded the transit of a star across the thread of a telescope at different times. Astronomical science was interested in the actual physical time of the transit, and these differences were mere errors of observation which it was necessary to eliminate. Psychological science was interested in the differences themselves; and, in the well-known reaction-time experiment of psychological laboratories, this observation is repeated simply in order to record the subject's differing times of reaction. While a considerable field of empirical psychology may be described as a study of physical phenomena with the emphasis on the observer and not exclusively on the physical event, this study leads us further, to observations and experiments of a kind in which no particular physical event is in question at all.

A more adequate idea of psychology is reached if we describe it as the study of *mental content*. It is necessary, therefore, to enquire more closely into what is meant by the term *mental*.

2. The Subject Matter of Psychology.—Certain events happening to our bodies are accompanied by an awareness of them. Thus the contact of a solid body with the skin produces a *sensation* of touch. This sensation may be called a *mental event* concomitant with the physical event of the contact (the *stimulus*). Other mental events either have no perceptible physical concomitant or have as their physical concomitant a general bodily condition. A *feeling*, for example, is accompanied by a diffused bodily condition—changes in the blood supply, in the breathing, and in the viscera. A thought may be accompanied by no bodily change that we can perceive. It is probable, indeed, that every thought is accompanied by some change in the nerve fibres of the brain, but since these changes cannot, at present, be observed they cannot be made the objects of scientific study. Mental events are the subject matter of psychology.

Evidence of various kinds, however, makes it necessary to widen our conception of mental events to include content of which we are unaware as well as that of which we are aware. These are *sub-conscious* or *unconscious mental events*. The evidence for the existence of mental content which is not conscious will be dealt with later. In a general way we may say that the sequence of conscious mental events and of the behaviour governed by them is not adequately explained without assuming that they are parts in a causal chain some of the links of which are not in consciousness.

To take a very simple and hackneyed example, when a hypnotised subject is told that he will perform some action

a definite time after he comes out of the trance, and he does so (although between the coming out of the trance and the performance of the act he had no knowledge of the fact that he had received such a suggestion) it would contradict our ordinary notion of causation to say that the suggestion had vanished from his mind and reappeared from nowhere when the time for the action came.

In order to avoid this difficulty, we say that the suggestion persisted as a mental fact in the mind of the person receiving it, but that it was *sub-conscious*. Trains of thought as complicated as those in the conscious mind seem to go on without the mind as a whole being aware of them. To such trains Dr. Morton Prince has given the name of *co-consciousness*.[1] Further complication in the terminology of not-conscious mental processes has been introduced by the psychoanalytic use of the terms *pre-conscious* and *unconscious*.[2] Pre-conscious mental events are those of which the person possessing them is not actually aware, although he could become so if they caught his attention—there is no psychic barrier to his awareness of them. Freud uses the term *unconscious* for mental processes and dispositions which are peculiarly difficult to get into consciousness since their entry into consciousness or their recognition by the mind as a whole seems to be opposed by an active process, not under voluntary control, which he calls *repression*.

It is useless to attempt an exact correlation of these different terminologies by relegating some not-conscious mental processes to *sub-consciousness*, others to *co-consciousness*, and so on, nor is it possible exactly to equate any of these terms. They have been used by different writers in order to explain widely different classes of facts, so they are not comparable terms. Roughly (but not exactly) one may say that *co-conscious* and *pre-conscious* are the same. The

term *sub-conscious* has been used to include the range of facts covered by these terms and has also included sense-impressions too faint to give rise to conscious sensation. Probably it is in this latter sense that it may be most conveniently used now.

Professor Broad has suggested the term *inaccessible* instead of Freud's *unconscious*[163]. The latter term is now probably so firmly established that it is too late to change it. It may, however, be objected to on two grounds. In the first place, the criterion of the contents of Freud's " unconscious " is not mere absence from consciousness but a peculiar difficulty of getting them into consciousness (for the content of the pre-conscious is also not conscious). Secondly, we are not aware of mental dispositions* themselves but of the experiences arising from them, so neither consciousness nor not-consciousness can properly be predicated of a mental disposition. Of an emotional disposition subjected to repression we ought to say, as Freud generally does, that it " belongs to the system of the Unconscious " not that it is unconscious. It would seem better if we could follow Professor Broad's suggestion and say that it is " inaccessible."

3. The Methods of Psychology.—The essential character of the kind of psychology presented here is that it is

* By the word " disposition," we mean an enduring structure of the mind which is postulated to account for uniformities in experience or behaviour. A sentiment of hatred for a particular person, for example, is a disposition. It means that we shall feel certain emotions in certain situations of that person ; joy in his misfortune, repugnance in his presence, etc., and that we shall carry out behaviour calculated to injure him (or, at least, that we shall feel an impulse to do so). We do not feel the disposition as such ; we feel the various emotions and impulses which spring from it. An *instinct* is also a disposition ; and what we mean by a person's *character* is the sum of all his dispositions

scientific—its conclusions are drawn inductively from experience and not from any metaphysical or *a priori* considerations. This experience is of two kinds—that drawn from *observation* and from *experiment*. When the data used in a science are presented to us under natural conditions we are using the method of *observation*; when we ourselves control the conditions we are using the method of *experiment*. If, for example, we wish to discover something about dreams, we may either record dreams as they come to us under the ordinary conditions of our life (as was done by Freud and Rivers[4]) or we can deliberately alter our conditions of sleeping by having applied to us bodily stimuli (of touching or tickling) while we are asleep (as has been done by A. Maury[5] and other investigators). In the first case we are using *observation*, in the second *experiment*.

It is important to remember that there are these two methods of obtaining data in scientific psychology, for there is danger in the use of the term *experimental psychology* as a name for laboratory psychology as if it were a separate department of study with a different theory from that of general psychology. The behaviour and thoughts which we study in the laboratory are products of the activity of the same mind as that which solves the problems of practical life. It is better to avoid this appearance of a divorce between experimental and observational psychology by using the term *empirical psychology* to include the general theory drawn from both of these sources, in distinction from any system of psychology which is built on the insecure foundation of *a priori* reasoning.

The psychologist can examine his own mind by the method of self-examination which is known as introspection. Moreover, when he is studying a normal adult person, although he is shut off from immediate examination of his subject's conscious processes, he can obtain some

report of them by questioning his subject. When, however, he is studying animals, and to a less extent when he he is studying children and lunatics, he is unable to use material derived from introspection ; he is then limited to a study of his subject's behaviour. Even when studying himself, his knowledge of the springs of his own conduct will be considerably modified by an impartial study of his own behaviour supplementing his introspective account of his motives. The two methods of introspection and the study of behaviour are essential to psychology. Much of the psychology of past times has lost its value for us because it was purely introspective, and some modern psychology (behaviourism) similarly loses much of its possible value by going to the opposite extreme of refusing to admit introspective evidence at all. The fruitful methods of modern psychology have been those in which knowledge of the mind obtained by introspection has been combined with all the knowledge that could be obtained by a study of human and animal behaviour.

It must not be forgotten by the student of empirical psychology that this is a science which cannot be mastered either by mere laboratory work or by the reading of textbooks. He must make a close and constant study of himself and of other persons by the help of the point of view (and sometimes of the technical methods) supplied by his psychological knowledge. The true psychologist will be found in the market-places, the law courts and the churches —wherever, in fact, human life with its varied emotions is to be found. He cannot afford to be a mere scholar or laboratory research worker. He must live a rich and complex life, while always preserving in his varied experiences the attitude of scientific observation. The maintenance of the correct balance between the demands of life and the partial detachment implied by scientific observation is, of

course, a matter of great difficulty, but the psychological point of view can come in no other way than by the surmounting of this difficulty. If the balance tilts too far on the side of detachment one's psychology becomes impoverished, schematic and unreal; it it tilts too far on the side of life and away from observation one ceases to be a psychologist at all.

4. The Relation of Psychology to other Sciences.—It is difficult to attain an exact definition of psychology which shall include all the matters studied in fact by psychologists, for there is no sharp line between these matters and those studied under other disciplines, as, for example, physiology. It is easy to make a definition of what, in our opinion, the objects of psychological study should be, and to refuse to recognise as psychological any investigation which oversteps this boundary. But such an arbitrary proscription of certain fields of study from psychologists does not help the advance of science, nor does it enrich the psychologist's understanding of his own subject. We must remember that the distinctions between physiology and psychology, and between normal and abnormal psychology, are essentially distinctions of convenience in investigation, and that the interrelationships of these subjects are more profound than the differences between them.

Whenever we find an artificial methodology used to restrict psychological investigation* or to make psychology a tidy subject at the cost of impoverishing it, this attack must be resisted as essentially opposed to the spirit of scientific progress.

We may say, for example, that the work on the *con-*

* As when a critic of Mr. Whately Smith's recent work on the psycho-galvanic reflex attacked his use of the galvanometer on the ground, not that it did not give true and useful results, but that it savoured too much of Bechterew's "objective psychology."

ditioned reflex started by Bechterew and Pawlow is physiology rather than psychology, but it has as a matter of fact been carried forward very largely by psychologists (the " behaviourists " of America), not by physiologists alone. To refuse to recognise as psychological such studies of the organism acting as a whole (because, let us say, they do not fit in with a definition of psychology as the " science of consciousness ") is, in effect, to condemn them to neglect. It is, moreover, to condemn psychology as a whole to impoverishment, for these studies have important bearings even on problems of consciousness.

It is true that many of the facts which are dealt with in a book on psychology would also be found in a book on physiology or on biology. While the " conditioned reflex," for example, is studied in physiology, " instincts " are part of the material of the science of biology. But the end for which they are studied in these sciences is different from that for which they are studied in psychology. The practical aim of psychological study is to understand human thought and behaviour. So far as it helps us in this end, we must draw material from other sciences. Psychology also has material peculiar to itself in the study of the contents of thought. But it is not this part of its material alone which entitles it to a position as a separate science. Even if all its actual data were, let us say, the same as those of physiology, it would remain a science as distinct from physiology as physiology is distinct from histology. We should still want to know why men behaved as they did, even if the answer could be given entirely in terms of nerve-currents and internal secretions. This would still be a different branch of study from that of growth and circulation, and would be " psychology " (although a very different psychology from any we know now).

In attempting to make too strict a boundary line between

normal and abnormal psychology there is a danger corresponding to that of dividing psychology too strictly from physiology. Our understanding of such forces as *suggestion* and *mental conflict* has come almost entirely from the light thrown on the workings of the ordinary mind by the study of minds suffering from various kinds of disorder. We may readily admit that the point of view reached by an exclusive study of mental disease is not an ideal one from which to study normal psychology, and that the modern vogue of certain kinds of psycho-pathological theory may easily lead superficial students to a distorted view of human nature. But this danger must not be allowed to drive us to the opposite extreme (based on the exploded but still popular theory that the diseased mind is totally different in kind from the healthy one) of ignoring the facts of psychopathology altogether. We should not find out much about the mode of working of a motor if we adopted it as a canon in our investigation that we must draw no conclusions from what happened when its working began to go wrong. We may be able to produce an appearance of neatness and order in our science by restricting its scope, but we shall attain no deep understanding of human nature by a psychology which is splendidly aloof from viscera and lunatic asylums.

5. A Definition of Psychology.—The use of a definition of a scientific subject is to indicate in a general way what are the phenomena in which that science is interested, not to fence it off from cognate subjects. It is because definitions are so often used for the latter purpose that one hesitates to bring forward a definition of psychology. Let us, however, remember that a definition is a good servant but a bad master, and try to sum up the foregoing discussion in a brief definition which will give us no warrant to condemn as "not psychology" any matter that appears to fall outside it.

A satisfactory definition is the following : *Psychology is the positive science of mental processes and dispositions.* By calling it a science, we indicate that its concern is the systematisation of facts gathered by the methods of observation and experiment. It is a positive science (as opposed to a normative study like ethics) because its concern is with facts as they are, not as they should be. Mental processes and dispositions indicate broadly the phenomena studied in psychology. Mental processes must include, as well as conscious processes, the postulated processes which, although they do not appear to consciousness, have as their end-product behaviour or conscious processes. Dispositions include such mental patterns as instincts or sentiments which also must be postulated to account for the uniformities of behaviour and thought.

6. The Subdivisions of Psychology.—We may subdivide the science of psychology in many different ways. The classification which we shall here adopt is based on one put forward by Professor McDougall[6]. We may distinguish :—

(*a*) *Normal adult psychology*, in which the object of study is the normal human adult, and our materials are his introspections and our observations of his behaviour.

(*b*) *Child psychology*, a study in which introspection is more unreliable, so that we must depend mainly on observation of children's behaviour.

(*c*) *Animal psychology*, in which our only source of information is the study of behaviour. This source has been tapped by the method of experiment in the laboratory, largely by the use of the " conditioned reflex."[7] Probably of even greater importance are field observations of animals' behaviour under natural conditions, such as Mr. Howard's observations of the territorial habits of birds,[8] and Mr. Julian Huxley's of their courtship.[9] Reports have also been made from Germany of Airedale dogs trained to com-

municate in words.[10] The interpretation of these results is still doubtful, but if the animals were actually expressing their own thoughts in words (an unlikely but not impossible explanation), it would mean that future animal psychology would also be able to make use of introspection.

(*d*) *Social psychology*, an ill-defined but important study lying between normal adult psychology on the one hand and sociology on the other. Its object is to provide a science of man in his social relationships, by studying the elements in normal adult psychology which affect the formation of social groups and the interactions between individuals in such groups.

(*e*) *Abnormal psychology* (or *psychopathology*), a science in which the object of investigation is the diseased mind—the mind of a person suffering from a *psychosis* (insanity) or a *psychoneurosis* (a class of disorders mentally caused in which the disturbance is less profound and generally more amenable to treatment than that of a psychosis).

(*f*) *Individual psychology*, an important branch of investigation in which normal adult minds are studied, but in their individual differences, not (as in normal adult psychology) in the general laws of what they all have in common. A good idea of the range and achievements of individual psychology can be obtained from Dr. Cyril Burt's presidential address to the psychology section of the British Association in 1923.

(*g*) *Parapsychology*, or the investigation of such " occult " phenomena as spirit messages, materialisations, the movement of heavy bodies by unknown agencies, etc.[167] It is clear that these phenomena (if they occur) are studied by objective methods and therefore, from a methodological point of view, their investigation is allied to the physical sciences rather than to psychology. One is, however, justified in speaking of this as one of the psychological

family (a distant relative and on bad terms with general psychology).

It is possible also to divide psychology into *pure* and *applied*, further subdividing applied psychology into *industrial psychology*, *educational psychology*, *psychotherapy*, etc. Such a division is, however, somewhat misleading, for the crude facts from which psychological theory is the refined product are drawn very largely from the field of applied psychology. A psychological theory too pure to come in contact with the dust of the factory or the problems of the mental specialist's consulting room is condemned to sterility. A sharp division between pure and applied psychology also suggests that for practical purposes a different psychology is needed from the general body of psychological theory, that, for example, the psychology of industrial psychology is different from that of the university class room. This is not the case. The industrial psychologist may be primarily moved by the desire to discover something of industrial usefulness, but this neither prevents him from continually adding to general psychological theory, nor does it absolve him from the necessity for having as the background of his work the general theory drawn from the study of the human mind in other fields than his own. Similarly, of course, the general advance of pure psychological theory is continually increasing its power of rendering practically useful service in different fields, and nothing could be more fatal to this advance than an ignoring by pure psychologists of the discoveries of applied psychology. The method of advance both in practice and theory is by co-operation between pure and applied psychology.

7. The Scope of the Present Work.—The object of this book is to give such a presentation of modern psychology as may serve as a background to the social sciences.

This object determines the selection of the facts presented and the varying emphasis on them. For students of the social sciences, the psychology of conduct is of far greater importance than the psychology of knowledge. We must, therefore, give close and careful study to the instincts, to the emotions, and to the sentiments, while devoting less attention to the problems of cognition (which are of greater interest to the student of epistemology and metaphysics). The facts, moreover, of structure and function in the nervous system have not, for our purpose, the fundamental importance they would have if our object were simply the understanding of the phenomena of mind. Yet we cannot afford to neglect these facts altogether. Since the time of William James, it has become increasingly clear that we cannot hope to understand the emotions—the prime movers of human conduct—without studying the visceral changes which always accompany them; nor can we understand "character" without knowing something of the physiological basis (in the balance of the secretions of the endocrine organs) of that element in it which is called "temperament." It is not possible, however, in a book of this size to do more than indicate the physiological background of these parts of psychology. For a detailed treatment of this subject the student must refer to a physiological textbook, of which two of particular value to the elementary student of psychology are mentioned in the list of books at the end of the present volume.[11] [12]

While it is certainly true that the psychology of the instincts must form the foundation of any psychology of the social sciences, it is necessary here also, to avoid narrowness of outlook. An inadequate account of human conduct is given if we present it merely as the product of conflicting instinctive impulses. The function of selection amongst warring impulses, which we ordinarily call "the will," is

also a vital object of study for our purpose. Since we find, in fact, that the decisions of the will are very generally the outcome of processes of controlled thinking, either in words or images, it is necessary also to study the psychology of thought, which must include perception, imagery, and meaning.

A certain number of questions of a non-empirical nature which are often discussed in text-books of psychology will not be dealt with at all here. An example of such a question is the problem of the nature of the self or the reality of the soul. The problem is of the nature of the *continuant* in which mental processes *inhere* (to borrow a convenient terminology from Dr. W. E. Johnson[169]). This continuant may be something of a non-material nature (*i.e.* a soul), as is stated by the animists, or it may simply be the material organism itself, as is believed by the psychological materialists. This is not a problem in empirical psychology, for no observable psychological fact would be different if different answers to this question were true. The problems of the freedom of the will and of the relation of body to mind are similar questions. They belong properly to philosophy, and it is no more necessary to discuss them in an elementary text-book on psychology than it would be necessary to discuss the idealist and realist conceptions of matter in an elementary text-book on physics. At the same time, it should be noted that a proper knowledge of empirical psychology provides the only standpoint from which such questions can possibly be profitably discussed at all.

CHAPTER II.

The Innate Pattern Reactions.

8. Pattern Reactions.—When we study the behaviour of men, or more strikingly when we study the behaviour of lower animals, we notice that a number of systems of consecutive actions are carried out in a more or less invariable manner. Examples are to be found in the actions of a chick drinking, a man shaving, or in the blinking of the eyes when an object is brought rapidly towards them. A general name for these more or less uniform actions is *pattern reactions.*

Some pattern reactions are individual possessions acquired during an individual's life, such as habits (*e.g.* shaving); others are common to all members of the same species, such as instinctive and reflex modes of behaviour (*e.g.* the instinctive action of the chick drinking and the reflex act of blinking). To account for such complex pattern-reactions as habitual and instinctive behaviour, we postulate permanent psycho-physical dispositions.* Of these dispositions, some are acquired by the lasting effects of the individual's previous behaviour or by the action on him of the influences he receives from his environment; others are innate, belonging to all members of the same

* It must be remembered that the dispositions cannot themselves be observed. All that we can observe is behaviour, and the fact that there are certain patterns of behaviour which are very nearly the same in different individuals of the same species. The existence of dispositions is the hypothesis we form to account for these observed uniformities.

species. It will be convenient to consider first those pattern reactions which have an innate disposition as their basis. These are of three kinds : tropisms, reflexes, and instincts.

9. Tropism.—The tropism is the simplest form of adaptive (or useful) behaviour, distinguished from other kinds of behaviour by the fact that it is rigidly determined by the action on the organism of physical or chemical stimuli. Such reactions are to be found in plants, and the tropism has also been suggested as the movement mechanism of simple animal organisms. Positive heliotropism is found, for example, in plants which grow towards the sun. Similarly, protozoa are found which swim towards and others which swim away from a light to which they are exposed. These may be called positively and negatively phototropic respectively.

These differences are explained in the theory of tropisms by supposing that light on the locomotor organs on one side of a positively phototropic protozoon makes these contract less strongly than those on the opposite side.[13] The animal is thus directed towards the light and, when it faces it, continues to swim in that direction because the light, shining equally on both sides of the animal, has no further tendency to change its direction. Some mechanists hope one day to be able to explain the complex instincts of the higher animals (such as the maternal and sex love of human beings) as chains of tropisms, thus making of them machine-like responses to physico-chemical stimuli.[14]

It should be noted, however, that careful observers have been by no means satisfied that the tropism is a principle adequate to explain all the conduct even of the simplest organism. Professor H. S. Jennings[15] gives accounts of observations of individual animalculae moving under the influence of warmth or of light. These seem to show that

the simple tropistic formula given above appeared to earlier observers to be adequate only because they observed the end result of the stimulus (swimming to or from it) and neglected the steps by which it was attained. For example, the protozoon *Oxytricha fallax*, which swims from hot or cold water to water of a moderate temperature, shows no such simple turning movement as is assumed by the tropistic theory. If the movements of individuals are carefully examined, it is seen that, when the temperature of the water in which they are swimming rises (or falls), they make rapid movements, reversing their direction of progress, backing, and turning to the right. They are thus rapidly scattered, and collect in the part of the water of moderate temperature because when they reach this part they cease to give the reaction and therefore continue to swim forwards. Their behaviour suggested to Jennings what he calls a simple " trial and error " reaction.

The same observer has also reported varying responses of a very simple organism to the same stimulus, thus showing that the physiological condition of the organism plays a part in determining the response, and that the resultant behaviour is not merely a mechanically determined product of the stimulus. When, for example, water mixed with carmine particles is allowed to reach the disc of *Stentor*, this animalcule shows the following reactions: (1) it begins by not reacting at all, (2) it turns over several times into a new position, (3) then it momentarily reverses the ciliary current, (4) next it contracts strongly and repeatedly, (5) it contracts for a longer time, and, (6) becoming detached from its base it swims away[35]. Since the stimulus remains the same throughout these reactions, it is clear that what changes is the physiological condition of the Stentor. Prof. Jennings has also described complicated chains of behaviour in *Amoeba*, including the pursuit, capture, and ingestion of

one Amoeba by another, the escape of the captured Amoeba, its recapture and final escape[15]. These seem impossible to explain by any formula of mechanically determined response to stimuli, and seem rather to be a primitive and embryonic kind of intelligent action.

✓ **10. Reflex Action.**—The reflex is also a simple innate pattern reaction in which a movement of a serviceable kind is carried out. It differs from the tropism in the fact that it is not an immediate response of an organism or a part of an organism to a physico-chemical stimulation, but is one in which conduction of an impulse along nerve fibres plays a part. Examples are to be found in such reactions as blinking the eyes when an object approaches them, sneezing when there is irritation of the inner membrane of the nose, the dog's scratching when he is stimulated anywhere over a saddle-shaped area on his back, or the dilatation and closing of the iris of the eyes in dim and bright light respectively.

It will be noticed that these are all responses of a part of the organism to a stimulation produced by something in its environment, and that the response is serviceable to the organism. Blinking protects the eyes from a noxious contact, sneezing and the dog's scratching are methods of removing the object making the contact, while the changes in diameter of the iris keep fairly constant the amount of light admitted to the retina under different conditions of external illumination. Some of these reactions come normally into consciousness and are to a large extent under conscious control (*e.g.* the sneeze), while others cannot be made the objects of introspective observation and cannot be controlled (*e.g.* the adaptations of the diameter of the iris).

"Reflexes" are defined by Sir Charles Sherrington as follows: "reactions, in which there follows on an initiating reaction an end-effect reached through the mediation of a

conductor, a nerve itself incapable either of the end-effect or, under natural conditions, of the inception of the reaction." [16]

Physiologically, reflex action requires at least three separable structures—an organ for the reception of the stimulus (the *receptor*), a conducting nervous path leading to the organ at which the reaction takes place (the *conductor*), and the organ, muscle, or gland which reacts (the *effector*). A single reflex taken apart from all other reflexes is called a *simple reflex*, and the three structures (receptor, conductor, and effector) activated in the simple reflex are called the *reflex arc*.

The fact that many reflex actions are not only present to consciousness but are under conscious control shows that the physiological structure of these reflexes is not so simple as the above scheme suggests, but that the reflex arc must have also an alternative path to the brain. That this is not the main conducting path of the nervous impulse of the reflex is shown by the fact that the reflex response may persist after transection of the nerve fibres passing to the brain from the spinal cord. For example, a spinal dog (*i.e.* a dog on whom this operation has been performed), displays the scratch reflex when stimulation is applied to a certain area of his back. This reflex response is more automatic and invariable in character than would be the response obtained by the same stimulation from a normal dog.

Professor Sherrington points out that the simple reflex is a somewhat artificial abstraction, for no reflex arc functions as an independent mechanism. The nervous system works as a whole. The integration of various reflex mechanisms into the complex machinery of the whole nervous system below the cerebral cortex is the subject of the volume to which reference has already been made : *The Integrative Action of the Nervous System*[16].

A step in this integration which has attained importance in general psychological theory is the formation of what have been called by Loeb chain-reflexes (Ketten-reflexe).[17] These are regular successions of reflexes which result from the fact that the performance of the first reflex action brings about the stimulus for the second, and so on. Thus the visual stimulus of a fly causes the darting out of the frog's tongue, if successful this produces the contact with the inside of the mouth which is a stimulus producing a reflex closing, followed by swallowing. So the responses, darting out of tongue, closing of mouth, swallowing, are a chain of reflexes connected together by the fact that the performance of each brings about the stimulus which leads to the next. The conception of chain-reflexes is of interest in psychological theory because attempts have been made to reduce the more complex chains of action which make up instinctive behaviour to the formula of the " chain-reflex."

It may be doubted whether this reduction is of real value. It is related to a tendency, curiously attractive to some writers, to reduce complex volitional responses to the formula of the reflex arc. We may say, if we like, that when a man is observed to strike another from whom he has received an insult, a reflex arc has functioned in which the sound of the words embodying the insult was an auditory stimulus, and the contraction and extension of arm muscles was the response. We have, however, done nothing to explain the action, and have succeeded in confusing the perfectly simple conception of the reflex arc. When we have reached a level of integration at which the cerebral cortex plays a part, we appear to be dealing with phenomena for which conceptions drawn from a study of the automatic simple responses of reflex action are inadequate.

11. The Conception of Instinct.—An instinct, like a reflex, is an innate reaction pattern. It differs from the reflex in

its greater complexity of organisation. While a reflex reaction is a response of a group of muscles to a stimulus, an instinctive reaction is a response (which may involve the whole of the organism) to a situation.

We may take as an example of an instinctive reaction the behaviour of the larva of the Capricorn beetle (*i.e.* Cerambyx) described by Fabre[18]. This grub spends the larval and pupal period of its existence in the interior of an oak tree, feeding on the wood of the oak, and, incidentally, cutting a passage in the interior of the tree with its powerful jaws. It appears to possess neither sight nor hearing, and is picturesquely described by Fabre as "a fragment of intestine with a mouth." Yet when the time comes for it to become a pupa, before changing into the fully developed beetle, it carries out a complicated series of actions to secure the safety of the pupa, and the safe access of the developed beetle to the outside air.

It begins by opening a passage to the bark of the tree, leaving only a thin barrier of bark or none at all (for the mandibles of the beetles will not be powerful enough to overcome a thick obstacle). It then retires deeper into the wood (securing the pupa against danger from wood-peckers), and makes a chamber, rasping wood from the sides so as to line it with a kind of down (for the pupa is delicate). It builds a three-fold door, part of which is a layer of calcium carbonate, thick enough to resist the attacks of outside enemies, but not thick enough to be an obstacle to the developed beetle. It then becomes a pupa with its head directed towards the entrance to the chamber, for the developed beetle, being too stiff to turn in the chamber, would be hopelessly imprisoned if the pupa were formed lying in the other direction.

We have here an example (one of many which could be taken from the same source) of a complicated course of

action securing an end with a precision which we might at first sight be tempted to attribute to foresight and thought. Yet it is carried out by a creature which is clearly devoid of the mental equipment necessary for either, and under conditions where neither would be of any value (for the Capricorn grub has not seen a pupa or a developed beetle, and it has had no opportunity of being taught the operations by one of its own kind). It is an instinctive course of activities whose origin is an innate disposition in the grub. To such a disposition we give in comparative psychology the name of *instinct*.

Certain characters are common to all such instinctive courses of action. These are as follows :

(1) Their adaptive character (without necessary foresight of the end to be attained).

(2) The smallness of the extent to which they can be modified to meet with novel factors in the situation.

(3) Their universality amongst members of the same species.

(4) The remarkable degree of perfection of their first performance (a process of learning may be almost or completely absent).

(5) (At least in man and the higher animals) instinctive behaviour is accompanied by emotion which wells up with particular strength when the activity of the instinct is impeded.

12. Adaptive Character of Instinctive Behaviour.—The complexity of many instinctive courses of action is the first thing which strikes an observer. The procedure of the Cerambyx grub is one which, if it were an intelligent course of behaviour, would strike us as one showing a high degree of foresight and anticipation of future dangers and difficulties threatening the pupa and beetle. Yet there is clearly no such conscious anticipation ; the behaviour of the grub is

the product of an inborn disposition as blind in its operation (from the point of view of a central consciousness) as is the growth of our own bodily organs. It is clear that it is necessary to give up the view (deeply implanted in popular thinking) that the precise adaptation of a course of action to an end is a mark of intelligence.* Indeed, provided the end to be attained is the satisfactory dealing with a situation normally met with in the life of an individual of that species, such precise adaptation is the mark of instinctive rather than intelligent action.

13. Relative Invariability of Instinctive Behaviour.—The second character of instinctive action—its relative invariability—is shown when the situation to be dealt with is different from that normally met with in the development of the individual concerned. The animal which can deal so wonderfully effectively with a normal situation may be helpless if the situation is altered even slightly from the normal.

If a bee-hive is moved a short distance, the returning bees are said to collect and die on the old position of the hive, instead of making the slight modification in their customary mode of returning to the hive necessary for them to enter the door in its new position. Fabre showed that when a line of the Pine Processionary caterpillars was broken and the two ends joined together so as to form a ring, they followed each other round the top of a flower pot for seven days without food before the ring broke up and they returned to the nest[18]. The solitary wasp was observed by

* I have left to the next chapter, the task of attaching a precise meaning to the word "intelligent." For the present, I am using the word as it is used in popular speech, for the kind of action we regard as characteristic of our own kind, in which the principal part is played by a conscious foresight of the end to be attained, and by a thought-out plan of the best means to attain it.

the Peckhams always to build its nest, and then to seek and sting a caterpillar and drag it to the nest[19]. If it had stung its prey a long way from the nest, it would take hours dragging it to the nest and might be forced to abandon the victim altogether instead of adopting the easier alternative of building its nest near the caterpillar.

Different interpreters of animal behaviour have not agreed as to the amount of rigidity which must be attributed to instinctive behaviour. The question is of fundamental importance for the application of the conception of instinct to human life and behaviour. For, if instinct is essentially unadaptable to new circumstances, the conception of instinct will have little value in elucidating the problems of human behaviour, the predominant feature of which is plastic adaptation to new conditions. If, on the other hand, this plasticity is inherent in all instinctive behaviour, although embryonic in form in primitive organisms, we may regard human intelligence as no new thing replacing instinct, but simply as a development to a very high power of this primitive rudimentary plasticity. This plasticity has increased because in the course of evolution the environment of man has become complex, and is now such that habitual and rigid responses would be of no value.

The difference between the conception of invariable instincts put forward by Fabre[21] and immortalised by Bergson,[20] and that suggested by the researches of the Peckhams[19] has become classical. Both studied solitary wasps of the genus *Ammophile*, who sting caterpillars and carry the paralysed prey to their nests, laying eggs upon it, so that it may serve as food to the grubs when they are hatched. Fabre observed the *A. hirsuta* of Europe while the Peckhams studied the *A. urnaria* of North America. Fabre believed that these insects showed absolute accuracy in their behaviour in respect to their prey (stinging the caterpillar precisely through its ganglia so that it was neither capable of movement nor dead when the grubs were ready to eat it), and complete absence of individual variation.

While no one is inclined to doubt the value of Fabre's observations, or the high degree of perfection and rigidity in the instinctive behaviour of insects, the discovery of absolutely perfect and absolutely rigid instincts without even a germinal intelligence in such creatures, would be surprising to one who approaches the problem from an evolutionary point of view. It would, moreover, make such observations of no value to the student of human psychology in which intelligent behaviour with its imperfections and flexibility is the most striking feature. If there were in insect behaviour any trace of individual modification, we should be on the track of intelligence; and we might hope, by tracing this track up through the animal kingdom, to gain fuller understanding of the high degree of individual modification which is the intelligence of man. The later researches of the Peckhams do show such flexibility and imperfections in the habits of the solitary wasps they studied. The conclusions of this research may be best told in their own words:

"The all-important lesson," they write, "that Fabre draws from his study of the Ammophiles, is that they are inspired by automatically perfect instincts which can never have varied to any appreciable extent from the beginning of time. He argues that deviation from the general rule would mean extinction. The conclusions that we draw from the study of this genus differ in the most striking manner from those of Fabre. The one pre-eminent, unmistakeable and ever present fact is variability. Variability in every particular,—in the shape of the nest and the manner of digging it, in the condition of the nest (whether closed or open) when left temporarily, in the method of stinging the prey, in the degree of malaxation, in the manner of carrying the victim, in the way of closing the nest, and last, and most important of all, in the condition produced in the victims of the stinging . . ." Some of these, they noted, die and decay, while others are kicking actively when the grubs are ready to eat them, but the grubs seem to get on as well in both conditions as if the caterpillar were alive and merely paralysed.[19]

14. Universality amongst Members of the same Species.—This universality, and the almost complete absence of a process of learning in the acquirement of an instinctive reaction, are the two main grounds on which is based the view that instincts are innate or inherited reaction patterns, and are not acquired during the life-time of the individual

possessing them. It is clear that uniform behaviour of different individuals of the same species is evidence of its innate origin only if, when other possible causes of uniformity are eliminated, the uniformity still appears. Learning and imitation might produce amongst animals and men uniformities which at first sight seemed to be due to a hereditary tendency.

Attempts have been made to explain instincts on these lines, but both observation and experiment show that learning and imitation are not adequate to account for all the uniformities of animal reactions. The behaviour of the Cerambyx grub, which we have already taken as a typical example of instinctive behaviour cannot, for example, be accounted for in this way. Examples might be multiplied of animals similarly carrying out adaptive courses of action with no previous experience of the conditions for which they are adapted, and no opportunity of learning from others of their own kind.

The same question has been attacked by the method of experiment. The instinctive reactions characteristic of its species are found to develop in an animal even if it has been separated from its kind from the time of its birth, so that learning and imitation have been impossible. There may, however, be variations in the details of its performance showing that these details are not innate but are imitated or learned from its parents.

Instructive in this connection are the experiments of Scott on the development of song in Baltimore orioles[22] and of Breed on the development of pecking in chicks[23]. Scott isolated young Baltimore orioles before they had heard any of their own kind sing. Their early incomplete attempts at song were like those of the wild bird. Finally they became good and voluble singers. Their adult song, however, was totally unlike that of the wild orioles except for

the occasional use of the rattle. He obtained similar results in experiments on other birds. Thus, while both the tendency to sing and the details of the song are found to be almost invariable amongst birds of the same species, these experiments show that the first only of these characters is innate while the other owes its uniformity to the uniformity of social influence. In contrast with these results, the pecking reaction in chicks seems to show practically no dependence on learning. Breed made curves showing the rate of improvement in accuracy of the pecking reaction in two chicks, one of whom was isolated while the other was able to watch old birds pecking. No significant difference was found between the two curves.

Owing to the development in the human race of language and complex social organisations, it is particularly dangerous to infer that uniform modes of behaviour are truly innate. Much of the loose popular thinking about " the herd instinct " which is current at the present time is misleading because no consideration is taken of the fact that uniformities in custom and social organisation may be due to imitation and not to innate uniform tendencies of the human mind. Even where such uniformities are widespread, the possibility of their spreading by transmissions of culture must be carefully considered before it is supposed certain that they are direct expressions of instincts. Probably most widespread uniformities of human behaviour are due to the interaction of these two factors. There is, undoubtedly, handing on of modes of behaviour by such influences as the direct teaching of one generation by another, the persistence of social institutions, and culture transmission from one land to another. There are also, however, innate resemblances in the instinctive equipment of the men of succeeding generations and of different countries which make the practices transmitted acceptable to men of a new generation or race. Moreover, it is reasonable to suppose that there is an instinctive factor in the tendency to accept new modes of behaviour from older generations or from strange races.

15. Relative Perfection of First Performance.—This also is a character in which an instinctive reaction differs from

the kinds of behaviour most characteristic of human life. The man who has learned to swim by prolonged and laborious effort feels a pang of envy when he sees the duckling swimming without difficulty on its first entry into the water. The complicated behaviour of the Cerambyx grub is carried out without any previous experience to guide it.

Yet here again, we must avoid falsification of our comparative psychology by exaggeration of a striking characteristic. The instinctive reaction is not always perfect on its first appearance; many cases have been observed in which an improvement in the reaction takes place in later performances. The general rule appears to be that an instinctive reaction on its first appearance is sufficiently perfect to be serviceable. It is clear that this degree of perfection is biologically necessary. The young bird on first leaving its nest does not fly so well as it will in a few days, but it flies well enough to save itself from falling to the ground. If it did not, every young bird hatched in a nest high up from the ground would be killed on its first flight and its flying instinct would have no survival value.

It remains to be decided whether the improvement in an instinctive reaction is due to improvement by practice or to the progressive maturing of the mechanism of muscle and nerve by which the action is carried out.

A further series of observations by Breed[24] on the pecking reaction in chicks, gives an answer to this question. He observed the number of pecking reactions carried to a correct conclusion (ending in the swallowing of the morsel), out of fifty attempts. He compared on successive days the average results in a group of chicks who had been allowed to start pecking on the second day after leaving the shell, with others which had been delayed to the fourth, fifth, and sixth days. It was found that the initial accuracy was low in all

cases (from 8 per cent. to 18 per cent. correct reactions), and there was no significant difference between the initial accuracy of the chicks which began to peck on the second day and those which were delayed until later. The rate of improvement was in all cases rapid at first, but the improvement was noticeably more rapid in those chicks which had been delayed. The chicks delayed to the fourth day, for example, were as accurate on the sixth day as those which had already been pecking for four days. Those which began to peck on the sixth day were, on the following day, pecking as accurately as those which had not been delayed.

The conclusion one draws from these experiments is that the imperfection of the initial performance of the pecking reaction is independent of the degree of maturing of the bodily mechanism used, and that the subsequent improvement is therefore due to practice. The increased rate of this improvement in the birds which acquired the reaction later was, however, due to the more mature condition of the mechanisms used.

16. Emotional Accompaniment of Instinctive Behaviour. —Amongst ourselves, it is clear that a situation tending to produce instinctive behaviour also tends to call out emotion. Thus we feel fear in a situation of danger, anger in a situation calling out pugnacious behaviour, and so on. There is not complete agreement on the relationship between this emotion and the instinctive behaviour. Some writers state that instinctive behaviour is always accompanied by emotion, while others consider that emotion is an accompaniment only of the obstruction of instinctive behaviour. Professor McDougall[25,26] adopts the former of these views and assigns a single emotion to every instinct. It will be necessary later to discuss more fully this proposed basis of classification, and to enquire more closely into the

nature of emotion.* For the present, we will be content to observe that in human beings there is a close connection between instinctive behaviour and emotional experience.

While we have, of course, no direct introspective evidence that the animals have the same emotional experience when they are carrying out instinctive behaviour, the behaviour of the higher animals can leave little doubt in our minds that they, at least, experience emotions like our own. So we do not feel William James has indulged in an unwarrantable flight of fancy when he asks: "What voluptuous thrill may not shake a fly, when she at last discovers that one particular leaf, or carrion, or bit of dung, that out of all the world can stimulate her ovipositor to its discharge?"[27]

Behaviour of apparently a very emotional character amongst birds has been vividly described by Mr. Julian Huxley.[9] Of these descriptions we may select the following account of the behaviour of the Louisiana Heron, while the pairs are on their territory before building their nest.

They sit still for hours at a time with the head of the hen generally resting on the cock's flank, but occasionally this passivity gives place to wild excitement. "Upon some unascertainable cause the two birds raise their necks and wings, and, with loud cries, intertwine their necks. The long necks are so flexible that they can and do make a complete single turn round each other—a real true-lover's knot! This once accomplished, each bird then—most wonderful of all—runs its beak quickly and amorously through the just raised aigrettes of the other, again and again, nibbling and clappering them from base to tip. Of this I can only say that it seemed to bring such a pitch of emotion that I could have wished to be a Heron that I might experience it." Of a similar ceremony between grebes, he writes: "The whole performance impresses the watcher not only with its strength, but as being apparently of very little direct (though possibly much indirect) biological advantage, the action being self-exhausting, not stimulating to further sexual relations, and carried out, it would seem, for its own sake."

*pp. 93 and 94.

We must ask what is the function of this emotional accompaniment to instinctive activity. In what way has an innate tendency to carry out a course of action, accompanied by an emotion, a greater survival value than would have the same behaviour tendency with no emotional accompaniment. If it were conceived that an animal had an innate disposition in the presence of danger to run away as fast as its leg muscles could carry it, it might appear at first sight that it was adequately equipped against this danger, and that the further accompaniment of the emotion of fear (which, in fact, sometimes impedes the effective running away), was superfluous or dangerous.

The answer to this question is suggested by the observation that emotions loom into consciousness before the instinctive behaviour with which they are connected begins to be carried out and again when it is in any way impeded. During unimpeded instinctive activity, the emotional accompaniment is relatively small.

There is a difference of opinion amongst psychologists as to the extent of this fading of emotion during unimpeded instinctive activity. McDougall regards it as merely due to the fact that we are not self-consciously aware of our emotions when our minds are given to action,[26] but the weight of opinion would seem to be on the side of the view that the inverse relationship of emotional excitement and free instinctive behaviour is more fundamental than this. Rivers says, for example, in a discussion of the relationship between flight and fear : " There seems to be little doubt that fear becomes especially pronounced when there is interference with, or even the prospect of interference with, the process of fleeing, and the possibility cannot be excluded that the normal and unimpeded flight of animals from danger is not accompanied by the emotion of fear." [28] This view is also put forward by Dr. Drever[29] and by Mr.

Shand,[19] who says : " The arrest of an instinct is that which most frequently excites the emotion connected with it ; and, therefore, we usually feel the emotion before the instinctive behaviour takes place, rather than along with it."

If this view of the relationship of emotion to instinctive behaviour is accepted, the biological function of emotion becomes clear. It is at the arrest of an instinctive mode of behaviour that the emotion comes vividly into consciousness, and its tendency is found to be to provide a driving force towards an end which leads the organism to try varying behaviour to attain that end.

Anger precedes the behaviour of aggression—physical assault—and, if this behaviour succeeds in its object of injuring the person who roused the anger, the emotion tends to vanish. But, if it is found impossible to attain this end, anger persists, leading the angry person to adopt other methods—abusive language, defamatory remarks to other persons, etc.—still directed towards the end of paining or humiliating the person who is the object of the anger. Fear may drive us to run away and, while we are successfully keeping ahead of the danger, the emotion of fear becomes small. Then a brick wall impedes our progress, and the emotion again looms up, driving us to adopt other means for saving ourselves from danger—remaining still in concealment or responding with some acquired manipulative behaviour such as turning and firing a rifle. The effect of the emotion is to lead the person experiencing it to adopt varied means to attain an end, while a single invariable line of instinctive behaviour may prove on particular occasions inadequate to attain that end.

This view of the function of emotion is expressed by Mr. Shand, when dealing with the emotion of fear. " There is then," he writes, " in the system of fear an emotion—an

impulse*—which is not necessarily satisfied by the fulfilment of any one of the types of behaviour at its disposal. We feel it persist when neither flight, nor concealment, nor outcry, nor silence has availed us, with a force increased by our failure. It is this impulse that strives ever to fulfil its end of escape from danger, which learns, in man,† to vary its methods, and to set aside those which are unsuccessful."[30]

In the next chapter the view will be developed that this plasticity of response is what we mean by intelligence. Emotion, therefore, driving an animal to vary its choice of instinctive or acquired modes of behaviour in order to attain an end, may be said to have as its characteristic function the service of intelligence.

* I should prefer to restrict the word *impulse* to the felt tendency to one particular line of action.

† There is no reason for supposing that such variation in behaviour is peculiar to man, although certainly it is greater in him than in the other higher animals, and becomes negligibly small in primitive organisms.

NOTE TO PAGE 20.

The essence of modern criticisms of the chain-reflex explanation of complex courses of instinctive behaviour is that any particular action in such a course is not determined by the immediately preceding stimulation (as the chain-reflex theory requires) but by the end to be attained. An indefinitely large number of retinal images may call out the one response of flight, and an equally large number of predetermined reflex connections between the retina and the apparatus for flight is an improbable explanation of the response.[182] When, moreover, an instinctive activity is interfered with, the most varied particular actions go on, all of which are directed towards the one goal.

While these facts are fatal to the chain-reflex theory, they do not show that there is no physiological mechanism of instinctive activity. It is to the innate organisation of the physiological concomitants of emotion that we must look for the structural bases of complex courses of instinctive action (cf. p. 99 ff.)

CHAPTER III.

Modifications of Instinct.—I.

17. Instincts in Human Life.—It was at one time supposed that human and animal behaviour were essentially different in their natures, human conduct being solely directed by the higher faculty of "reason," while that of animals was directed by "instinct." Even now, any attempt to trace instincts underlying human behaviour is often regarded with suspicion. It must be admitted that unmodified innate pattern reactions are rare amongst human adults, and that it is improbable that the conception of instincts would have attained much definiteness if psychologists had studied only adult human beings.

The conception is drawn primarily from the study of animal and of child behaviour. The justification for applying this conception to adult human behaviour is of two kinds. First, when we study even the most complex and civilised human activities, our understanding of these is enormously simplified and deepened if we assume that they are highly modified products of the instincts we see in a more obvious and primitive form in the other animals. Secondly, the nearer a civilised man is to finding himself in a "biological situation"—a situation in which he would commonly have found himself in a wild condition—the more nearly does his conduct approximate to the unmodified instinctive behaviour of the lower animals. Such situations are to be found when he is fighting, running away from

danger, mating, or facing a shortage of food. In such situations, his conduct is nearer to the simple innate pattern reaction than at any other time.

Of greater interest for psychology, however, than these occasional manifestations of raw primitive instincts in man, are the instinctive foundations for complex non-primitive behaviour. A man sitting on a parliamentary committee, painting a picture, making an oration, giving a dinner-party, or filling in an income-tax form, is clearly not carrying out an unmodified instinctive form of behaviour. It is towards the understanding of such activities as these, however, that the psychology of the instincts claims to make its most important contributions. The characteristic feature of human life is the extent to which human instinctive behaviour tendencies have been modified, giving rise to the complex, varied and discriminative behaviour we call "intelligent."

There is no essential contrast between instinctive and intelligent behaviour. The contrast is between primitive simple instinctive behaviour and the highly complex behaviour which is the result of modification of instinct. When contrasted in loose thinking with instinct, the word "intelligence" is really being used as a general name for this tendency to modification. Such modification is found throughout animal life and not merely in human conduct. The primitive invariable instinct is merely a theoretical conception reached by abstraction from actual animal behaviour, ignoring its many individual variations. The solitary wasp, as we have seen, shows adaptations of its conduct to meet new situations with which its usual instinctive behaviour was inadequate to cope. These modifications, however, certainly attain their greatest complexity and their greatest importance in the life of man. The application of the psychology of instinct to developed human

behaviour is essentially an investigation of the ways in which primitive instinctive lines of behaviour become modified.

The instincts for which we must search as guides in our investigation of human conduct are not even approximately invariable reaction patterns; they are no more than tendencies in conduct corresponding to the less variable reaction patterns of more primitive organisms. The fact that they are tendencies does not, however, make their study the less important. They are tendencies of enormous strength, and their resistance to indefinitely large modification sets limits to the extent to which individual variation from the biological norm of conduct can be pursued without mental disaster.

18. Modes of Instinct Modification.—The purely instinctive action (innate, invariable, and perfectly adapted to a general situation) and the purely intelligent action (a product of no enduring disposition, but arising spontaneously to meet the complexities of the particular situation) are alike abstractions. We find actions approximating to the theoretical purely instinctive action in the lowest organisms, contrasted with a high degree of modifiability in human behaviour. The tendency to such modification is found, however, throughout life; and, in discussing the modes of instinct modification in man, we may trace out the steps of similar modification in the variability of animal behaviour. The passage from highly instinctive to highly intelligent behaviour will thus show itself as the development of no new method of adapting himself to his environment peculiar to man, but as the slow increase in variability of what were at first nearly invariable modes of reaction—an increase which takes place side by side with increased complexity of the organism.

It will be convenient first to give a list of the ways in

which modification of instinctive responses takes place, afterwards discussing each of these in more detail and showing how they develop in the animal kingdom and in the life of the human individual. Briefly, the modes of modification of instinct are as follows :—

(1) Spontaneous modifications of behaviour to attain the end of the instinct when the organism finds itself in a situation in which its most usual instinctive response is not adequate to attain that end.

(2) Modification by experience, when failure to attain the end sought for eliminates more or less completely those lines of conduct which resulted in failure.

(3) Modification by the intervention of the higher thought processes. This kind of modification takes place when the end of the instinct is foreseen, and controlled thinking (the deliberate use of images or words) determines the course of action to be pursued.

(4) Modification of instinctive behaviour by the objects of the instinctive reaction becoming specific or individual instead of general.

19. Spontaneous Modifications of Instinctive Behaviour. —The simplest organisms live under remarkably uniform conditions, so that, on the whole, uniform responses to situations are those which best serve for their survival. This would appear to be the biological ground for the comparative rigidity of their instincts. But even the simplest organisms are liable to meet with unusual situations, and the rigidity which serves them so well in a humdrum natural existence will be unserviceable or even dangerous as a mode of dealing with a novel element in the environment. Successful dealing with such unusual environmental demands can only follow from a modification of the rigidly ordinary instinctive behaviour. What, in fact, does happen to animals' instincts when they are faced by such problems ?

This is a vital question for the beginning of our study of intelligence.

The answer to this question can be obtained by observation and experiment. We find that what happens under such conditions depends both on the organism observed and on the extent of the disturbance made in its customary conditions. Sometimes the result of modifying the conditions under which an animal carries out an instinctive course of behaviour is failure of the animal to modify its conduct, with the result that its instinct ceases to be serviceable under the new conditions. Sometimes, however, the animal responds by a new course of behaviour, adapted to the new conditions, which is apparently as innate and as little dependent on a thought-out appreciation of the position as is its more usual behaviour.

We may first find an example of a failure to adapt conduct to a new situation in Fabre's much quoted observation of the result of interfering with the routine of a Sphex.[21] This wasp, before dragging her prey into the nest prepared for it, would always leave it just outside the nest while she went inside, returning an instant later and pulling the paralysed caterpillar in. When Fabre pulled the caterpillar some distance away from the hole, the wasp repeated this ritual, again leaving the caterpillar just outside, and again finding it pulled away when she came out. Most of the Sphex were willing to repeat this an indefinite number of times, never making the simple modification of behaviour necessary to pull the caterpillar straight into the hole.

But this great exponent of rigidity in instinctive behaviour noticed that even insects did not always fail to make useful modifications of conduct in face of new conditions. He found, for example that a certain Sphex refused to be duped by the drawing of her prey from the mouth of the hole when she was inside, but dealt with the situation very

effectively by pulling the caterpillar directly into the nest instead of repeating the ritual of a preliminary descent alone. The few insects which show such adaptability are, he says, "the revolutionaries," and he regarded them as exceptions.

But even the researches of Fabre himself lead us to the conclusion that adaptability is not so rare amongst insects that it can be ignored in giving an account of their instincts. He took two dozen nests of the bee *Osmia* from a quarry where they had been nesting for centuries in shells, and placed them in his study with some hollow stalks and hollow shells. When the bees came out in the spring nearly all selected the stalks to nest in as the better suited to their purpose. Indeed such variability of response to different situations must often be regarded as an innate part of the system of the instinct. Fabre observed, for example, that the blue-bottle fly laying its eggs on a dead linnet would choose its mouth as the best spot for depositing them.[18] If the mouth, however, was closed tightly, she would lay in the eye; if the head was enclosed in a paper bag, she laid in the bird's wounds; if the head was enclosed and the bird unwounded but plucked, she laid a few eggs only in the cavity of the axilla and the crease where the thigh joins the belly. Only if the head was covered and the bird unwounded and unplucked was she completely frustrated and no eggs were laid.

As we ascend the animal scale the modifiability of instinctive behaviour becomes greater. Two instances described by Captain Pike may be taken of spontaneous modification of instinctive behaviour in birds.[31] The moorhen usually builds its nest of grass and reed stems, but this observer noted that on a piece of water where these were absent, the birds constructed their home of wood, with just a small lining of grass. Some linnets also, deprived of

their usual nesting places, showed a simple and effective adaptation to their new conditions. These had nested for years in small canopies of fir branches which were placed on the ground to attract wild ducks. When these were done away with, they continued to nest on their old haunts, and since there were no small bushes there (such as the birds generally nest in) they took to the grass and built their nests a few inches above the ground.

The common feature of all the above examples is that they are instances of an instinctive response whose usual form is frustrated by some unusual element in the situation. Instead of showing a mechanical rigidity, and consequent failure to deal with the novel situation, the instinct shows itself capable of expression in an unusual mode of behaviour better adapted to the particular situation of the organism. Sometimes, indeed, a modification in instinctive behaviour is found when there is no novel element in the environment to call it out. Such is the familiar observation of the Peckhams of one specimen of *A. urnaria* who modified the behaviour of her species so far as to smooth the earth about her completed nest with a small pebble she had picked up as an instrument better adapted for this purpose than her feet.[19]

Such instances of instinct modification as these may be called *spontaneous instinct modifications*, in order to distinguish them from those modifications of behaviour which take place as a result of experience or of thought processes. There seems no reason for supposing that such modifications of behaviour as we have been describing need for their explanation either thought or the utilisation of past experience. They are manifestations of that plasticity of instinctive behaviour which is as innate and original an element in it as its approximately rigid pattern.

When the conditions of an organism are invariable, rigid

pattern reactions are all that it needs for effective dealing with its environment. As its environment becomes more liable to change, its innate pattern reactions must become more plastic. Finally we come to such environmental conditions as those of civilised human life, in which variations in demand on behaviour are so constant and complex that mechanical innate behaviour patterns would have no survival value, and plasticity of instinctive behaviour resulting in complex, discriminative, and graded responses becomes almost an invariable rule. The instincts survive only as a framework on which such variable and complex behaviour is built.

The attempt is sometimes made to ridicule the psychology founded on the conceptions of human instincts, by the argument that Reason or Intelligence must be themselves instincts. One may quarrel with the phraseology of this proposition, but the idea underlying it is one which the psychologist will not wish to dispute. If the argument of the above paragraphs is correct, it follows that that part of intelligence which we have called *spontaneous modification of instinct* is certainly innate. Some psychologists might hesitate to describe such spontaneous modifications as intelligent at all, but it seems clear that the tendency to modify instinctive behaviour in other ways must also be innate. If it were not, the young animal would be as educable as the human child. Even the tendency to instinct-modification by verbal thinking which is what has generally been meant by *Reason* (as a determinant of conduct) is innate in man. The equipment of words must, of course, be acquired, but the tendency to acquire and use them is equally certainly innate.

We will close this section by a description of an experiment by Fabre on the modifiability of behaviour of the burying beetle when the ordinary instinctive response of burying a carcase on the spot where it is found has been thwarted by placing it on a piece of ground in which the insect finds itself unable to dig[18].

Fabre placed the body of a mouse on a brick lightly covered with sand but with deep earth all round, so that the

mouse could not be buried on the spot where it was lying but could be buried anywhere near it, and he observed the behaviour of several burying beetles. His object was to discover whether the beetles would remove the carcase to a more suitable place when they discovered the unsuitability of its situation. Other observers had given accounts of the burying beetle's behaviour under similar circumstances which suggested such plasticity in the insect's conduct as would make it necessary to attribute to it intelligence of a high order. He found that a very long time (no less than two hours) was wasted in attempts to bury the mouse on the spot with much ineffectual, mutually opposed heaving of the body. Then some of the beetles left the body and made borings in different parts of the surrounding earth. Although all were in the deep earth, five of these trial borings were abandoned and the sixth was apparently selected. The beetles returned to the body of the mouse and it was heaved to the site of the sixth boring, and was there buried in the ordinary way six hours after the beginning of the experiment and four after the recognition of the impossibility of the first spot.

We must recognise two things in the course of conduct described by Fabre : adaptability of behaviour to the new situation, and a peculiar clumsiness in the adaptation. Faced with the same situation a party of men could not have done more than to shift the object to be buried to a better situation and to bury it there. They would not, however, have taken so long to make the change. Certainly they would not have spent two hours trying to dig through the brick. The whole process would have been shortened by a much more rapid learning from experience and by some of the overt actions of the beetles being replaced by thought processes. It is meaningless to ask whether the beetles' actions were intelligent. Adaptability of instinctive

response is intelligence. But such adaptability as the burying beetle shows is intelligence of a very low grade.

In this experiment, however, we have adaptation of a higher grade than in the cases we have previously been discussing, for the new conduct of the burying beetle is not merely a new response called out from its innate repertoire by a new situation. Instead, a line of action is abandoned because it fails to attain its end. In place of random attempts to bury the mouse, trials are made of suitable spots to bury it, and the body is transported to the new situation. There is, in fact, quite definite learning by experience. This is the next highest grade of plasticity of instinct.

20. Modification of Instincts by Experience.—The most important way in which instinctive behaviour takes new forms under the influence of experience is by the tendency of lines of conduct found to be successful in attaining the end of the instinct to be repeated, while there is a similar tendency for unsuccessful lines of conduct to be inhibited. This we may call " learning by trial and error."*

* I am using this term because " learning by experience " is an expression too general for this purpose. An action learned simply through the limb having been moved in the appropriate way a sufficient number of times might be said to be learned through experience, but this would be a case of simple habit formation. The term " trial and error behaviour " has been used of any random movements of which some are unsuccessful and others successful. Thus, Jennings speaks of " trial and error behaviour " in Protozoa when these make a reversing turn which is discontinued when they find themselves going away from the disturbing stimulus (cf. p. 17). This, however, seems to be an improper use of the term since there is no question of learning (for the turns are not stated to be made more quickly in successive times when the noxious stimulus comes from the same direction). I shall restrict the use of the term " trial and error " to those examples of behaviour in which unsuccessful movements tend to be eliminated and successful ones to appear more readily.

An example of instinct modification of this kind is to be found in Lloyd Morgan's observations on young chicks. These began by picking at all small objects, but in two days a young chick had learned to pick out pieces of yolk from pieces of white of egg. When the observer mixed pieces of orange peel with the egg these were at first picked up, but their unpleasant taste made the chicks quickly reject them, and they were not afterwards seized. Thus the behaviour of seizing and swallowing fragments good for eating was implanted, while similar seizing and swallowing of unpleasant fragments was inhibited.[114]

It has been stated that modification of conduct by the method of trial and error begins very low in the animal scale. Day and Bentley enclosed specimens of the infusorian *Paramecium* in a glass tube whose diameter was somewhat less than the creature's length[32]. This made it difficult for them to make their usual avoiding reaction,* and necessitated their doubling on themselves in order to reverse their course. It was found that within a very few minutes they had made the necessary modification by prolonging the lateral turn. Then, when the same Paramecia were again placed in the capillary tubes, they showed an improvement on their former learning of the necessary modification of the avoiding reaction, both by accomplishing the first turns more quickly and by reaching the maximum speed and facility of turning in a much shorter time. This result sounds as if the infusoria had modified their behaviour by their earlier experience, but this conclusion has been criticised on the ground that changes may have been produced in the shape of the animals' bodies, and that the improvement may have been due to the persistence of this change[33].

The best examples of trial and error learning are to be

* See p. 17.

found in the efforts of animals to manipulate puzzle-boxes and to thread mazes, as described by Mr. Hobhouse[34], Professor Watson[7], and other investigators of animal behaviour. The essential feature of all of these devices is that an animal has a set of movements to make or of operations to perform in order to obtain food. He may, for example, be enclosed in a box from which he sees food outside, but from which he can only escape by first raising a catch and then pulling back a bolt. Or he may be outside the box and the food inside. Or the food may be at the centre of a maze which he must successfully thread before he can eat. The usual stimulus to action is hunger.

At first, the animal makes a variety of more or less random movements, and before he has attained his object he has done many things as well as the few operations necessary. On successive attempts, however, these unnecessary movements become less frequent, until finally, after a sufficient number of attempts, they are completely (or almost) eliminated, and he does at once those things necessary to obtain food. He has learnt the puzzle-box or the maze, and we proceed to ask " How ? "

The most obvious answer, and the one which has generally been given to this question, is that actions followed by success tend to be repeated, while those followed by failure tend not to be repeated. The rule of such learning appears to be : *if the carrying out of an action is successful (in attaining the end aimed at) the subsequent repetition of that action is facilitated ; if unsuccessful, its repetition tends to be inhibited.* Since amongst human beings (and presumably amongst the animals) pleasure accompanies the successful performance of an act, and unpleasure results from failure, Thorndike[190] prefers to express the above law in a form which states that it is the pleasure of success and the unpleasure resulting from failure which facilitate and

inhibit courses of action respectively. This may be true, but the form of the law given above is one which makes the minimum of assumptions, for it leaves open the question of whether the facilitation and inhibition is a result of pleasure and unpleasure, or whether it is an effect of the mere failure and success apart from any feeling about them.

Professor Watson denies that there is any such law,* and attributes trial and error learning to the operation of the two factors of *frequency and recency*. By this he means that in any member of a series of trials the successful action or actions will have been performed previously more frequently and more recently than any alternative action, and will, therefore, be more likely to reappear than any other action. Finally, their much more frequent repetition will form them into a chain of habits, while the less often performed actions will tend to be eliminated until the successful actions only appear. There is, of course, no doubt that these principles are important in habit formation. An action frequently repeated is performed more easily each successive time, until finally it becomes habitual.

There seems to be, however, no sufficient ground for regarding this as the true explanation of " trial and error " learning. Professor Watson makes the assumption that, even apart from the effect of learning, the successful reaction appears more frequently than any other. This he proves by no appeal to actual experiments, but by

* The form of the law which Watson attacks is that which attributes the learning to the influence of the pleasure and unpleasure produced by success and failure respectively. His reason for the denial appears to be the curious one that it is contrary to the principles of " behaviourism " to admit that a state of mind should influence behaviour. This reason appears totally inadequate. The conditions of pleasure and unpleasure have physiological concomitants, and if we wish to talk in the language of behaviourism we can refer to these only. There appears to be no sufficient reason why a behaviourist should not believe that the general bodily condition, of which the conscious concomitant is pleasure, should tend to stamp in the action leading to it. This would be merely a case of a physiological state affecting an action.

the use of an example made up in his own head. Now the probability of the successful response appearing more frequently than any other depends upon the probability of an unsuccessful action being repeated during a single trial. For example, suppose an animal in a puzzle-box has a choice of three reactions, A, B, and C, of which C only will lead to his release, what is the probability that having once tried A and found it unsuccessful he will return to it again before the end of the attempt? Professor Watson's reasoning rests on the very improbable assumption that this chance is zero (that the animal will never repeat an unsuccessful action during a single attempt). If the odds in favour of a repetition were even, then the principle of frequency would tend to implant successful and unsuccessful actions equally strongly. If (as the principle of recency might lead one to suppose) the chances were in favour of the repetition of an unsuccessful action, then the principle of frequency would tend to implant unsuccessful actions more strongly than successful ones, and there would be a kind of negative learning.

Such theoretical discussions are, however, rendered superfluous by the fact that Mr. J. Peterson has performed actual experiments both with white rats learning a maze[36] and with human beings learning a "mental maze,"[37] and has shown that recency and frequency factors are certainly inadequate to account for the learning, since the effect of both of these factors may be negative and learning still goes on. The behaviourist explanation of trial and error learning, therefore, falls to the ground, and we are left with the alternative that the essential factor in this kind of learning is the tendency of the organism to repeat actions which have proved successful, and to avoid those which have proved unsuccessful.

CHAPTER IV.

Modifications of Instinct.—II.

21. Instinct Modification by Thought Processes.—Explicit trial and error behaviour of the kind described above is not, however, common in human conduct. When a man is faced by a problem in his environment which a lower animal would solve by the trial and error method, he will usually solve it by a method which involves the replacement of explicit behaviour of this kind by thought.

Let us suppose he is given a box with a locking device such as those on animal puzzle boxes and is told to open it. He will not begin by making random movements of different parts of the box and only open it correctly after unsuccessful movements have been progressively eliminated in successive trials. In an extreme case he will make no movements at all except the correct ones. He may begin by sitting still and looking at the box for two or three minutes and then proceed at once to make correctly the necessary movements to open it. From the point of view of an outside observer, these minutes of stillness appear to be a period of complete inactivity. But, if we question the subject of the experiment (if, in other words, we obtain his introspections), we find that this period has appeared to him to be one of great activity, although this activity has been of thought and not of explicit action.

We shall probably not be very far wrong in saying that he has carried out a method of trial and error but his trials have been in imagery instead of in actual action. He may have felt himself carrying out the different possible actions

(probably also making muscular twitches of the muscles involved), or he may with his " mind's eye " have seen himself doing them and seen their results. In other words, he may have made his trials in *kinaesthetic* or in *visual imagery*.* Or he may have thought the problem out partly or completely in words ; he may have said to himself : " If I lift the latch, before withdrawing the bolt, it will be in the way of the bolt, but if I pull out the bolt first I can lift the latch afterwards, . . . and so on." Whatever combination of these or of other thought processes he may have used, the essential feature of what happened during the period of inactivity was a trying out in his mind of different actions and an elimination of worthless ones, very similar to the trying out which takes place in the actual behaviour of the dog or other animal.†

Having distinguished " trial and error in imagination " as a method by which thought processes influence conduct, we may feel tempted to say that all influence of thought on conduct is of this kind. There seems to be no evidence that this is the case. Trial and error in imagination is one of the simplest ways in which thought replaces overt behaviour, but introspection will soon convince us that it is not the only one.‡

* p. 204 ff.

† Perhaps a more striking example of mental activity which is almost entirely mental trial and error is the thinking out of the next move in a game of chess. Here explicit trial and error is eliminated altogether by the rules of the game. One may notice the great strain that this rule imposes on persons who would naturally prefer to solve their environmental problems in the same way as the animals by actual experimental moves.

‡ It is only very few environmental problems that the method of " trial and error " is well adapted to solve. The use of puzzle boxes has probably thrown this kind of problem into more prominence than its practical importance justifies.

Let us suppose that I am faced by the following environmental problem : *I must catch a train at a station two miles from my room. It will be necessary to take a taxi unless I can reach the station in time by walking. The train leaves in* 35 *minutes.* My method of solving the problem is to divide the time taken by me to walk a mile into the total time at my disposal, and finding that this comes to more than the distance in miles, I decide to walk. Artificially, one could express this as if it were a case of trial and error in imagination, but, in fact, the mental process by which the problem is solved is simply $35/15 > 2$, carried in verbal imagery. Illustrative concrete images of myself in a taxi and walking hurriedly accompany the calculation but they are irrelevant to the solution of the problem. My actual mental content relevant to the solving of the problem may indeed be little more than an *imageless thought,**—an immediate awareness of the significance of the relationship between the time and the distance which becomes crystallised into the form $35/15 > 2$ when attention is focussed on to it.

The range of mental process which can modify human conduct is in fact so wide that it comprises all the psychology of cognition. By his imagery, a man is able to react to objects and situations distant from him in space and time. By verbal imagery he is able to react to concepts which have no correspondence with any actually perceivable thing. His reactions to a given situation may, for example, be determined by his emotional associations to the concept of " justice." By his knowledge of logical and mathematical relationships (which may be carried neither by images nor words but in the form of imageless thoughts), he can form connections between his images which lead to new mental attitudes of belief, disbelief, trust, etc., all of which affect his conduct. The behaviour of a

* cf. p. 209.

man in danger of death by burning may be largely determined by the confidence he feels in the logical adequacy of the ontological argument for the existence of God.

It is customary at the present day to minimise the influence of thought processes on conduct and to emphasise the influence of the instincts. This anti-intellectualism is probably only an exaggeration of the necessary reaction against a past exaggeration of thought processes which seemed to regard these as the prime movers of all action. Such writers as Bentham seem sometimes to think that human action is best understood if we analyse it down to motives which are the product of calculation, but it is doubtful whether any competent psychologist has ever really held a belief so opposed to the actual facts.

Indeed, the old-fashioned intellectualist philosopher who is abused by modern psychologists seems to be very largely a figure constructed from their own imaginations for the pleasure of throwing bricks at him. Actual citations of the intellectualist heresy they are refuting are rare in the writings of modern psychologists. Indeed it is significant that one who has shown sufficient care to make an actual citation quotes, not an old-time psychologist, but Lord Macaulay.[1]

We shall all agree to reject the view that human action is generally initiated and controlled by rational processes of thought. Recognition of the fact that the prime movers of human behaviour are impulses on the instinctive and automatic level results in a gain in our understanding of conduct too great for any modern psychologist to feel inclined to throw it away. Yet, except over a few involuntary reflexes, thought processes exercise so much influence on behaviour that it is not in fact possible to tell what a man will do in a given situation unless we know also what he is thinking about. We can tell in terms of the situation what instinctive impulses will be activated, but which of many conflicting impulses will be the one to find expression in action will depend largely on processes of thought which are, of course, unknown to the outside observer.

Kinds of conduct in which thought processes play a large

part in determining which conflicting impulse shall find expression are called " volitional " action. In terms of the faculty psychology, the function of using controlled thought processes to determine action was called the " will." When these thought processes were predominantly of a kind that could be given logical verbal form, they were supposed to be the product of the faculty of " reason." We will discuss later the grounds for preferring not to talk of the faculties of " will " or " reason," but of " volitional action."*

But our rejection of the misleading and unscientific ideas which have clustered round the words "will" and " reason " should not lead us into the anti-intellectualist error of minimising the influence of thought on conduct. The most essential difference between human behaviour and that of the highest animals is the much greater complexity of human reactions which results from the fact that man solves his environmental problems by controlled thinking,† and that his behaviour is a product of both his innate dispositions and his thought processes.‡

* p. 243.

† Of course, he often solves them wrongly. Particularly if he has the innate human disposition to think without the largely acquired ability to think correctly, he is likely in many situations to behave less effectively than he would if his unmodified primitive instincts found expression.

‡ It must not be forgotten that thought processes may also, to some extent, be the servants of the instincts. In the process called by Mr. Trotter " rationalisation," logical thought processes appear in consciousness as fictitious causes of action which has really been produced by some unrecognised affective bias.[88] But even here thought processes have an effect on conduct, though it is not of the kind supposed by the man himself. A specious reasoned justification of dishonest conduct undoubtedly proceeds from the dishonest person's affective necessity for reconciling his conduct with his Ego-ideal, but the rationalisation is by no means without influence on his conduct. It enables him to go on being dishonest by getting rid of

Observation of ourselves will convince us how rarely an instinctive impulse entering into consciousness is allowed to translate itself into action without transmutation by thought processes. When an object of danger appears, a man does not immediately respond by the behaviour of flight. He considers the situation ; from the point of view of an outside observer he spends a short time in inaction. Then he runs away from the object of danger, or towards it if it is an animal he hopes to succeed in frightening, or he carries out some manipulative activity such as kneeling down and cocking his rifle. Indeed, his habit of thinking before acting sometimes constitutes a danger to man from which an animal with a simpler psychological constitution would be free, by making him pause in face of a danger to which the only correct response is unhesitating instinctive action.

We can no longer regard as meaningful the question of whether a given action of an animal is the product of " reason " or " instinct," although this question is still discussed. The problem is how far thought processes have contributed to the observed modifications of animal instinctive behaviour, and unfortunately we can do little more than guess at the answer. It seems reasonably clear that no animals have anything that we could call " language." Their cries seem able to communicate to each other only the simplest things as : danger, anger, challenge, etc.

Concrete imagery, however, is probably an element in human thought more primitive than words. We can reasonably enquire whether an animal's observed conduct is such that the influence of concrete images must be postulated to

a conflict which, unless dealt with in that or some other way, would necessitate either the abandonment of his dishonesty or of his Ego-ideal. This is an indirect but none the less real modification of instinctive behaviour by thought processes

account for it.* If it had images which had no influence on its conduct (like the images of our day-dreaming) these would be for ever shut off from the possibility of our investigation.

The question of whether animal conduct is influenced by concrete imagery is complicated by the fact that it cannot be attacked directly. The observable fact in animal conduct is not whether it is determined by images but whether it can be determined by a non-present stimulus. If we mean by an image merely the mental fact underlying a response to a stimulus not actually present (and this was apparently what was often meant by early psychologists), then such conduct would necessarily point to the existence of images in the animal mind. But if we mean the introspectively observable images of Galton[38] or Professor Pear[39], then we know that such conduct takes place in our own lives without an image. If, for example, I propose to climb Helvellyn next week-end, it is not necessary that any introspectible image (visual or kinaesthetic) connected with that intention should come into my mind while I am carrying out the behaviour necessarily preliminary to this excursion (buying a railway ticket, etc.). The conditions under which an image does tend to come into consciousness are when I am deliberating about my intention, or when it is threatened with frustration, or when I am indulging in mere dreaming about it.

* This question is much confused by many writers who insist on asking : " Have animals ideas ? " An image or other thought element whose function in thought is the carrying of some other meaning than reference to the actual object of which it is a representation is what is generally meant by an *idea*. This is a much more difficult question to solve. First we must find out what evidence we have for concrete imagery at all. Then we might proceed to find out what complexity of meaning can be carried by an animal's image. It would be necessary to set the animal problems which could only be solved by the formation of a concept, and so on.

Now, we do observe animal behaviour which is determined by objects which have been past, but are not present, stimuli. The capacity for such behaviour varies enormously in different animals, being much greater in those animals with highly developed nervous systems.

It has, for example, been pointed out how different is the behaviour of a monkey and a hen towards a concealed object of food which they have been allowed to see before it was hidden[10]. If a monkey sees a tit-bit put into a piece of paper or a box, he will continue to make efforts to get at it. If his attention be diverted to something else before he has achieved his object, he may return later to his task with unabated ardour. The hen, on the other hand, when she sees grains of corn covered by a piece of paper makes only a few random scratches on the top of the paper, and soon ceases. She does not make the very simple movements of beak or feet necessary to push the paper from off the grains, and only in fact picks them up if they are accidentally uncovered.

The stimulus necessary to determine the reaction of a hen is *an optical impression actually present;* for a monkey it may be an optical impression once present but now past. We may be tempted to say that the monkey is moved by a visual image of the food he has seen concealed, but about this we cannot be certain until we can question the monkey. In any case, it is necessary to postulate the existence of mental representations of past experiences which do not develop into introspectible images (for human beings appear to be able to react to non-present situations without the existence in their minds of any introspectible image of those situations). These we shall call " image functions."

We must say, then, that the monkey has at least a visual image function of the food he so patiently unwraps. But, in saying this, we have asserted nothing about the conscious

content of the monkey's mind, only about his behaviour. Whether such an image function can develop into an introspectible image (*i.c.* one which can be observed by the monkey as we can observe our visual images) is a question we shall never decide until we can have the introspections of the monkey.*

A more detailed discussion of the nature of volitional action will be left to a later chapter.† We will here shortly discuss the extent of the possible control of impulsive actions by thought processes. Normal persons can control some simple reflexes (withdrawing the hand when pricked, and the regular action of the lungs), but not others (the contraction and dilation of the pupils, and the beating of the heart). Most of us can control the impulse to physical violence when we are angry, unless the impulse attains very unusual strength. The child has very much less control of his impulses, and the process of growing up is accompanied by a progressively greater control of his impulses by his higher thought processes.

Many systems of " mental culture " have as their aim the bringing of the instinctive responses more completely under the domination of the thought processes. There is little doubt that mental exercises can be used successfully for this purpose. Habitual control of impulses by reflection makes this control easier. Such habitual control is at the base of all forms of asceticism. The ascetic practises control in indifferent matters so that it may be easy for his thought processes to dominate his instinctive responses in important situations.

Reflection on the nature of the objects calling out instinctive responses can also be used to make the impulse to these responses weaker. The celibate who wishes to protect himself from the temptation of a beautiful face may force himself to see it as the mere covering of a skull. With a similar object, Marcus Aurelius exhorts

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* Professor Watson has an *a priori* solution of all problems of animal imagery[1]. Imagery is a process dependent on language. The animals have no language and therefore can have no imagery. It is not necessary to discuss this solution at length, for the first proposition, which denies the generic difference between concrete imagery and language, is certainly untrue. The function of imaginal thinking is distinct from and genetically prior to verbal thinking.

† Chapter XIV.

us to reflect: "For this bottle of Falernian, what it is but a little moisture squeezed out of the berry of a grape? And your purple is nothing but sheep's hair twisted together, and stained in the gore of a little shell-fish. And if we were to proceed to some other satisfactions of sense, we should find them but coarse in their causes and constitutions." [42]

The method of auto-suggestion recommended by M. Coué—the repetition of a formula—is stated also to provide a method of control of bodily functions ordinarily automatic.[43]

All of these methods and a multitude of others which could be instanced from the exercises of the Yogins, of the Buddhists, and of other ascetics, are alike in bringing new bodily and mental functions under the control of thought processes.[44] We do not know what are the limits of this increased possibility of control. The Yogins are asserted to be able to stop the beating of their hearts at will, and even to die. These are extensions of the ability which we all possess to stop our breathing at will, and to stop the activity of our voluntary muscles. They are not, therefore, *a priori* impossible. If we followed the methods of the Yogins we should presumably be able to extend very much the power of the thought processes to take control over bodily and mental processes now automatic or under unconscious control. We do not do so because there is no reason for supposing that such increased control is, for most of us, in any way desirable.*

Control of responses by thought is of importance only when such control is of value in our adaptation to our environment. It is important for our adaptation (to our social environment) that we should be able to control the crude primitive conduct of anger. It is of no adaptive value that we should be able to control the beatings of our heart. The tendency of evolution has been to make automatic those bodily and mental adjustments which cannot usefully be controlled and to extend the control of thought to those that can. There is no doubt that, in his complex environment, the extent to which man can control certain of his responses by thought is of the very highest value. If his psycho-physical organism were a machine as simple as some modern writers on psychology seem to suppose, it would be a machine of little value for the complex demands of his environment.

* Some writers who talk vaguely of "the supremacy of the Reason" seem to think that there is some inherent value in control by thought apart from its value as an adaptation to life.

22. Instinct Modification by its Objects becoming Specific.—The primitive instinct is a tendency to react in a certain way to all situations of a certain kind or to all objects of a certain class. Such primitive tendencies in human development very quickly undergo modification into tendencies to react to particular situations and objects only. This is one of the kinds of modification of instinctive behaviour which makes human conduct unpredictable in terms of environment and innate mental constitution only, and gives it some part of the character of what is ordinarily called intelligence.

It is obvious that this kind of modification takes place in the animal scale at a point of development much lower than that of the human being. Dogs, cats, and birds are clearly selective in their instinctive responses. Even bees behave differently towards members of their own and of other hives, responding by the behaviour of primitive comradeship towards other bees of their own hive, by pugnacity towards strangers attempting to enter their hives.

The sex instinct may be regarded as primitively general in its object—a craving for union with any member of the opposite sex of the same species. This develops (amongst men and other monogamous animals) into a mental disposition in which only one member* of the opposite sex is adequate to call out the behaviour and emotional responses of the instinct. We may use the convenient terminology of Mr. Shand[30] and say that a sentiment of love has developed by the sex-instinct becoming specific in its object.

This tendency of the instinct to become specific is, of course, innate in the constitution of the instinct itself,

* Or, more correctly, only one member is adequate at any one time. Whether or not this object remains the same throughout life probably depends on many conditions which it is not necessary for us to discuss.

although the selection of the actual object is partly due to merely accidental circumstances of environment and partly to conditions which can be voluntarily controlled. The tendency to form a sentiment of love is no less instinctive in its nature than the primitive generalised sexual craving.

It seems clear both to introspection and to a study of behaviour, that even in the normally developed sexual instinct there persists an element which has still the generalised primitive form. This element may even be dominant. This generalised element underlying the specific instinct, I propose to call *appetite*.

The psychic injury done by fornication is that by an artificial divorce between sexual appetite and the more developed elements in the sex-instinct, the appetitive element is stimulated alone and finally functions alone. The sex instinct thus assumes a regressive purely appetitive form. Moral or group sentiments may afterwards produce a reaction against the appetite which involves the whole sex-instinct in its condemnation. Fanatical moralists are in this way produced from those who by malpractices in the exercise of their instincts have raised the appetitive element from the subordinate position which it occupies if mental development has proceeded normally.

Serious misunderstanding in popular and even in scientific discussion of human instincts results from a neglect to consider the fact that instincts as ordinarily found are not of the nature of mere appetites but are specific in their objects, and that when we find non-specific instinctive impulses in human behaviour, this is a phenomenon of an abnormal and regressive kind.* The habit of talking of

* Surely the strangest of these is Professor McDougall's refusal to admit that tender emotion is an emotion belonging to the sex-instinct and his attribution to it of the emotion of " lust." Without doing violence to the ordinary meanings of the words, can we say that we feel " lust " for our wives, as distinct from the " tenderness " or " love " we feel for our children.—cf. p. 71.

instincts as if they were mere appetites makes the instincts appear too simple, too mechanical, and too primitive.

Many of the criticisms of the conceptions of Professor Freud assume that when Freud speaks of sex he means a disposition merely appetitive in form ; and much of the prejudice against his work* would disappear if it were understood that he is ordinarily speaking of the developed specific disposition of love and not simply of generalised sexual craving. We may take as an example of the kind of error that a neglect of the tendency of an instinct to become specific may land us into, a statement which has been often repeated in text-books of psychology of a mechanistic tendency. This is somewhat as follows :—" Anger is displayed when the exercise of any instinct is thwarted ; a young child or a dog, for example, shows anger if its movements are prevented by someone holding its feet." This is probably true of the very young child, but experiment will very soon convince us that it is not true as a general statement of an adult dog. His response will depend on the person holding him. He may, in fact, show any one of a wide range of responses—pleasure, amusement, boredom, cringing submission, annoyance, or rage. His instinctive responses are specific to particular persons, they are not general responses to a situation.

The very young child is different. Watson has shown that his aggressive response to restriction is comparatively non-specific. His instinctive response is at a lower level of development than that of the dog. The process of the development of the child's instinctive tendencies as he grows up will consist in these becoming specific—in his adopting one instinctive response towards one person and another towards another person.

The actual methods by which generalised responses become specific in their objects are of various kinds. Sometimes the particular objects which become effective in

* I refer, of course, to that part of the opposition to his work which does rise from misunderstanding and prejudice. The most fair-minded and sympathetic criticism leaves a very heavy case against a great part of his ingenious and brilliant speculation. Perhaps, also, the cause of the above-mentioned misunderstanding lies in the fact that Freud himself is not always clear about the distinction between the specific disposition of love and the generalised sexual craving.

calling out a response owe their preference merely to the fact that they happened to be the objects present when the instinct was first activated.* This is the case with those instincts which were instanced by William James as transitory instincts that were normally replaced by habits[27]. Examples are to be found in the following and avoiding reactions of chicks.

Young chicks of a few weeks old will generally be found to follow their mothers and to run from any other living creature. It might be supposed, at first sight, that the following instinct was innately specialised to the mother and the instinct of flight to other living things. But James showed that this was not the case. In the first few days of their lives the chicks showed a generalised instinctive response of running after any moving object. After this time they developed an equally generalised response of running from moving objects. The chicks of a few weeks old ran after the mother and away from other things, simply because the mother was the object presented to them when the generalised " following " instinct was operative. The instinct itself faded away, but the habit of following the mother remained. If some other object than the mother had been presented in these first few days, the chicks would have followed that ; so one meets with families of young chicks following even a man, if he happens to have been with them when the following instinct was active.

If no habit of following is formed during these first few days (as often happens with chicks reared in an incubator) it is not formed afterwards. Such instincts belong to the

* That this may be the factor determining the particular object to which the human sex-instinct becomes specific appears to have been the opinion of a certain worldly mother who told her young daughters, not to marry for money, but to " go where money is and love will follow."

class which James calls transitory : the instinct itself disappears and what remains in behaviour is only a habit formed on the basis of the instinct.*

What happens when a sentiment of love is founded on the sex instinct or of hatred on the instinct of pugnacity is of something the same nature as the above replacement of a simple instinctive response by a habit. It differs from it, however, in two ways. First, in the much greater complexity of both the instinct and the disposition founded on it ; and secondly, by the much smaller extent to which the instinct can be said to have disappeared.

When a man loves a woman, the sentiment for that particular woman has been founded on, and has to a certain extent replaced, his general sexual impulse towards "woman." In a certain sense, we might say that he has formed an emotional habit as the chick has formed a simple bodily habit. But it is certainly not true that the general attraction of woman apart from the particular object of his love has disappeared. It remains as the appetitive element in the instinct. But this appetitive element is certainly less strong than it was before the formation of a sentiment for a particular woman. Nor is the sentiment of love something functionally independent of the sex-instinct. His sentiment for the one woman plus a certain residual appetitive element is the form his sex-instinct now takes.

We have so far discussed the modification of instinct which takes place when the instinctive response is called out, not by any member of the class of objects which would call it out in its primitive condition, but only by selected

* Let it be noted that James said : "Some instincts are transitory." Present-day psychologists sometimes follow the easy path of refuting James's "Law of the Transitoriness of Instincts," by stating it in the form : "*All* instincts are transitory." William James said nothing so ridiculous.

members of this class. It is also necessary to notice that an instinctive response may become specific to an entirely new object, *i.e.* to one which does not belong to the class of objects to which the generalised response is made.

This may occur, for example, to the sex-instinct. In the normal mental development the responses of this instinct are called out by a selected member of the opposite sex. In the condition of fetishism, however, they are called out by an object primitively indifferent. The only objects adequate to produce the emotions of love may be, for example, a shoe,[3] hair, india-rubber,[16] or some other object. This is what is ordinarily known as a perversion of an instinct. The redirection of instincts to other than biological ends is, however, much wider than this, and comprises such things as *sublimation*, and some of the phenomena which have explained by the *principle of association*, and the *conditioned reflex*. These will be discussed in Chaps. VI. and XI. They have in common the feature that an instinct is no longer occupied with its primitive biological end, but has become redirected to other ends and its behaviour is called out by new objects.

23. Summary of last Three Chapters.—Our view of human behaviour as a whole, and particularly of its relationship to animal behaviour, depends fundamentally on our attitude towards the problems of instinct and its relation to intelligence. It is now generally recognised by psychologists that the old antithesis between instinct and intelligence can no longer be retained.[17] Yet these terms and the somewhat meaningless problems of whether given modes of behaviour are " instinctive " or " intelligent " still appear in many modern text-books. The equally meaningless questions of whether human conduct is determined " rationally" or " instinctively " still exercises the minds of theologians and writers on ethics. Such discussions can be avoided if it is realised that the primitive instinct and pure intelligence are alike abstractions, for neither can be observed in the conduct of any animal or man.

A truer orientation towards the problems of conduct is

obtained if we recognise that behaviour has at its roots innate dispositions which we may call " instincts " but that these possess innately a plasticity to the changing circumstance of the organism's environment. They do not show themselves in behaviour as invariable pattern reactions, but as reactions of a certain type, more or less varied to suit the requirements of the particular situation. This tendency to variation is what has been called " intelligence." The question in the study of behaviour is not, therefore, between instinct and intelligence—two opposed modes of reaction of totally different kinds—but between instinctive responses less or more varied from their primitive form.

We have divided the modes of variation of an instinct into four kinds. The first three of these may be represented as stages in a progressive growth of complexity of response. There is first the spontaneous variation which appears in an instinctive response when some element in the outside situation is varied. Secondly, we see variation called out by the trial of different lines of behaviour, some of which are rejected as unsuccessful while others become ingrained. Finally, we have the stage of variation most characteristic of human behaviour, in which the adaption of the response to the novel situation takes place by the thought processes. The fourth mode of variation, by which responses become specific instead of general cannot be regarded as a stage in the same line of progress. Certainly such specificity of instinctive responses is greater amongst human beings than amongst the lower animals, but it begins low down in the animal scale. Increased specificity of instinct is, however, certainly a feature of the growing up of the child.

We are forced to recognise even in the adult instinct a non-specific element which we have called the " appetite." Many of the problems of animal and human behaviour reduce themselves to the form : " What stage of instinct

modification is taking place in this particular case? Is the plasticity of behaviour observed in this monkey or child opening a puzzle-box merely the bringing out of a spontaneous modification from its instinctive repertory, or is it a modification reached by the method of trial and error, or has he adjusted his behaviour by thought? If by thought, has this been merely carried in concrete imagery or must we also assume the presence of verbal imagery?" These questions are, at least, precise and definite, and it is reasonable to hope that experimental methods may enable us to answer them. The same cannot be said of such problems as: "Is this animal's behaviour instinctive or intelligent?"

A very important recent contribution to the study of animal intelligence has been Professor Köhler's work with chimpanzees.[183] He has differed from other investigators by giving his apes problems of a less purely human kind than the locks, puzzle-boxes and mazes which have been customary.

The essence of most of his problems was to place food in a position where it could not be reached directly but only by some indirect method—removing an obstacle, using a tool, and sometimes even by constructing a tool.

He found the clearest evidence that solutions were reached by *insight* into the situation and not in the merely mechanical way in which some American workers have supposed all animal learning to take place.

Of equal interest are Köhler's observations of the limits of the apes' power of intelligently appreciating the elements in an environmental problem. While they showed intelligent grasp of the situation by trying to pile up boxes in order that they might reach food which was otherwise too high, they had no sense of the conditions under which such a structure would be stable, and chance alone seemed to determine whether the upper boxes were so built that they remained firm or whether they tumbled over. They also showed limitations in their powers of perception. A piece of rope regularly coiled over beams was, at first, treated as a man treats such a formless perception as a tangle of string.

CHAPTER V.

Classification of Instincts.

24. Instinct and Instincts.—It is not generally doubted that innate dispositions underlie a great part of human behaviour. In other words, the factor of instinct is generally recognised. When we begin, however, to try to distinguish separate instincts and to find out a basis of classification for them we approach more controversial ground. Some writers, indeed, would allow us to speak of "instinct," but deny that there is any value in the conception of "instincts." Professor McDougall, on the other hand, attaches great importance to his separation of a variety of different instinctive tendencies.[26]

In addition to the question of whether the conception of separable instincts is a valid one at all, we have the further difficulty of deciding which of several rival systems of classification we shall adopt. There are in the field three systems of classification using different criteria of what constitutes a single instinct. First, we have the "biological classification" which classes together the modes of behaviour which serve one biological function. This is used, for example, by Dr. Rivers[28] and Dr. MacCurdy.[48] Secondly, we may mean a single innate motor mechanism, or a "specific response to a specific stimulus."[195] This is the usage adopted by Mr. Shand[30] and also by the behaviourists. Thirdly, with Professor McDougall,[26] we may class as a single instinct behaviour directed towards a particular goal, whatever motor mechanism it may employ.

It must not be forgotten that these differences are mainly about the use of words and not about the facts of human behaviour. The distinction between tendencies to pursue certain goals (*e.g.* building a nest) and the tendency to carry out particular actions (the movements of wing and beak actually used in pursuing that end) is, however, an extremely important one. Much of the current criticism of the conception of human instincts ignores this distinction and becomes, in consequence, utterly irrelevant.

When dealing with the Cerambyx grub there was no reason for making the distinction, for the goals pursued by the behaviour of the grub and the details of the behaviour by which he pursued them were both alike innate. As we ascend the animal kingdom, however, we find that, while innate tendencies to pursue certain goals remain, the details of the behaviour by which they are pursued become less and less innate. but must be mainly acquired by the individual.

Whether we say that man has many instincts or that he has few and fragmentary ones, will depend on whether we decide to use the word " instinct " for innate tendencies to pursue goals or for innate tendencies to carry out particular actions. These two statements (although they sound widely different) may easily be made by two writers who do not differ in any important respect in their interpretation of human behaviour.

25. Biological Classification of Instincts.—This classification distinguishes the instinctive tendencies according to their function in evolution, and classifies them in three great groups :—

(1) The instincts of self-preservation.
(2) The reproductive instincts.
(3) The herd or gregarious instincts.

The *instincts of self-preservation* are those innate ten-

dencies which have as their biological function the survival of the individual possessing them. These are, for example, the tendency to seek for food, the tendency to escape from danger, and so on. It is clear that in the struggle for existence any animal lacking these tendencies would soon be eliminated, through death from starvation or by falling a prey to some other larger animal.

The *reproductive instincts*, on the other hand, have no value for the survival of the individual. These are the tendencies to find a mate, to construct a nest or other place for the rearing of the young, and to care for these young when they are born. From the point of view of individual survival, these tendencies have not only no survival value but actually favour the elimination of the individual possessing them. The individual animal possessing no innate tendency to sacrifice his own safety and well-being for his mate or offspring would stand a better chance of living to old age. They are, however, clearly necessary for the continuance of the race. The individual deficient in these reproductive instincts would leave no offspring, and so by the operation of the ordinary laws of natural selection they are implanted in every individual.

The third group of instincts is one which at one time was supposed to present insuperable difficulties to the theory of natural selection. It includes all the innate behaviour of the individual for the well-being of the herd or social group to which he belongs, even when this behaviour is opposed to his own individual interests. Such tendencies as the living together in groups larger than a family, altruistic behaviour, and socialised conduct generally, belong to this class of instincts.

It was pointed out, however, that in the course of animal development it might happen that the social group rather than the individual was the unit on which the laws of survival worked. Let us say, for example, that carnivorous

animals are living in a region so depleted of the animals on which they prey that a single individual is unable to get continuously sufficient food to survive. It is then possible that a herd of such animals (being a more effective hunting weapon than the same number of individuals hunting separately) might still be able to maintain itself under these more severe conditions.

It is clear that those herds, the members of which had most strongly developed as individuals the qualities which made the herd an effective hunting body, would stand a better chance of survival than the herds composed of members who lacked such qualities. The qualities necessary would be all those which drove the individual to act with the herd in an effective manner, and with the minimum of interference from his self-preservative impulses when these tended towards action inimical to the good of the herd. Herds whose individuals had these qualities most strongly developed would survive while herds with less perfectly socialised individual members would tend to be eliminated (thus, individuals possessing the social qualities would have on the whole a better chance of surviving than those deficient in them.)

This is probably, in a very diagrammatic form, the correct account of how the gregarious instincts came into being in the course of evolution. This discussion may be summed up by saying that these three classes of instincts serve the biological ends of the survival of the individual, of the race, and of the herd or social group respectively.

26. Instincts as Motor Mechanisms.—This is the simplest scheme of classification of the instincts although not, perhaps, the most generally useful. Systems of reflex and habitual muscular movements are co-ordinated together to form such complex muscular activities as walking, swimming, etc. Each of these is sometimes called an instinct.

Any one of these " instincts " can clearly function in more than one of the great biological systems. An animal running, for example, may be running from danger, or running to join a female, or to join the herd from which he has been accidentally separated. His single activity of running in these three cases is subserving his self-preservative, reproductive, and gregarious systems respectively.

27. McDougall's Classification of the Instincts.—In his *Outlines of Psychology*, Prof. McDougall distinguishes fourteen instincts, each of which, he says, is accompanied by one characteristic primary emotion. The first principle on which he distinguishes a single instinct is that it is the tendency to seek one particular kind of goal. Thus, he would call all ways of escaping from danger, expressions of the instinct of escape (whether escape took place by running away, flying, swimming, diving, or other behaviour). Secondly, he uses the criterion that each instinct so distinguished is accompanied by one particular kind of emotion. Thus, he says that escape (carried out by any of the above methods) is accompanied by some degree of the single emotion of fear, aggression by the single emotion of anger, and so on. An instinct in this sense would be called by Mr. Shand " the system of an emotion." Thus, he would speak of the animal escaping by different methods as employing different instincts all organised in the system of the emotion of fear.

Prof. McDougall's list of instincts with their accompanying emotional qualities is as follows :[26]

Names of Instincts (synonyms in Parentheses).	*Names of Emotional Qualities Accompanying the Instinctive Activities.*
1. Instinct of escape (of self-preservation, of avoidance, danger instinct).	Fear (terror, fright, alarm, trepidation).

2. Instinct of combat (aggression, pugnacity).	Anger (rage, fury, annoyance, irritation, displeasure).
3. Repulsion (repugnance).	Disgust (nausea, loathing, repugnance).
4. Parental (protective).	Tender emotion (love, tenderness, tender feeling).
5. Appeal.	Distress (feeling of helplessness).
6. Pairing (mating, reproduction, sexual).	Lust (sexual emotion or excitement, sometimes called love —an unfortunate and confusing usage).
7. Curiosity (inquiry, discovery, investigation).	Curiosity (feeling of mystery, of strangeness, of the unknown, wonder).
8. Submission (self-abasement).	Feeling of subjection (of inferiority, of devotion, of humility, of attachment, of submission, negative self-feeling).
9. Assertion (self-display).	Elation (feeling of superiority, of masterfulness, of pride, of domination, positive self-feeling).
10. Social or gregarious instinct.	Feeling of loneliness, of isolation, nostalgia.
11. Food-seeking (hunting).	Appetite or craving in narrower sense (gusto).
12. Acquisition (hoarding instinct).	Feeling of ownership, of possession (protective feeling).
13. Construction.	Feeling of creativeness, of making, of productivity.
14. Laughter.	Amusement (jollity, carelessness, relaxation)."

28. Uses of the Three Systems of Classification.—It is not necessary to discuss which of these three systems of classification of the instincts is the correct one. Clearly, if we use the word " instinct " for a group of tendencies in the biological classification, we are using the word in a different

sense from that of Mr. Shand or of Prof. McDougall. The question of the best sense is purely a problem in the use of a word, to be decided by consideration of which is the most convenient for the purpose we have in hand. There is no *correct* use of the word.

It is clear that the divisions of the three systems take place along different lines so that they cannot be fitted into each other. It has already been pointed out that this is the case with the biological and the motor-mechanism classifications. Similarly, if we try to fit Prof. McDougall's " instinct of acquisition " into the biological classification, we find that it does not belong entirely to any of the three systems. The most characteristic human hoarding behaviour is the accumulation of money. This is undoubtedly an activity belonging largely to the self-preservative group of instincts, but quite certainly not entirely. The driving force behind a man's accumulation of money is very largely care for his wife and children. To this extent, it belongs to the system of the reproductive instincts. The instinct of pugnacity may similarly be a self-preservative activity. The commonness of fighting between males in the pairing season shows, however, that it can also be organised in the reproductive system; and in such activity as warfare, it is organised in the gregarious systems of instincts.

The question of the relative merits of these systems cannot finally be decided by saying (as does Dr. Drever[29]) that Prof. McDougall's classification is a psychological one, and therefore to be preferred to a biological one. For many purposes in psychology, a biological classification may be more useful than one using psychological criteria. Since all three classifications are describing distinguishable things all of which may be of value to us for different purposes, it seems better to retain them all. The confusion arises, not from having three bases of classification but from applying

indiscriminately the one word "instinct" to the end product of all three.

When using the word "instinct," I shall mean an instinct in McDougall's sense—a disposition to seek one kind of goal. Such unit muscular activities as walking, flying, etc., I shall call (following McDougall) "motor mechanisms." For the divisions of the biological classification, I shall speak of "systems of instincts," calling them the "self-preservative" the "reproductive," and the "gregarious systems." If we are to construct a psychological system of value in sociological and economic theory, it is important not to drop the biological classification altogether, for it has immediate bearing on many practical questions. The psychological issue between individualism and socialism, for example, is a question of whether the instinct of acquisition must necessarily function only in the self-preservative and reproductive systems or whether it can also be made to function in the gregarious system (as can certainly the instinct of pugnacity).

29. The Value of McDougall's Conception of Instinct.—The justification for using McDougall's conception of instincts as an explanatory principle in the study of human behaviour is neither that his use of the word is the one right one or that it is a "psychological" one. Its value as a hypothesis lies in the fact that it provides a serviceable account of a great part of human conduct.

In talking of instinct, we must continually remind ourselves that man inherits no detailed tendencies to lines of action. He has no instinct to live in cities or to live in nations, to go to church or to vote for parliamentary candidates. What he has is a social instinct which can find expression in any or all of these ways; in which particular way it will be expressed depends largely on his external circumstances. The use of the word "instinct" for ten-

dencies of this kind is, therefore, in line with the observed facts of human behaviour.

It is not true to say that man is instinctively afraid of large animals (as has been shown by Professor Watson[45]). What is true is that he has an instinct of fear which is a tendency in danger situations to feel the emotion of fear and to adopt behaviour leading to escape. By his own experience, or by influence received from other persons or books, this instinct may become specific to certain objects (such as lions and tigers), so that fear and escaping behaviour will be called out by them. But it is only the general tendency to react in this way that is inherited, and such a tendency is what is meant by the word " instinct " as used by Professor McDougall.

This meaning of instinct must be clearly borne in mind if we are to judge fairly modern criticisms of particular instincts. It is no proof that man has no particular instinct that the details of the behaviour connected with an alleged instinct are obviously acquired. Thus Mr. Perry says that there is no gregarious instinct because men all lived originally in families and not in larger societies.[19] But this fact is no evidence that there is not a gregarious instinct which expressed itself first in the formation of family groups and afterwards, when conditions became favourable, in the formation of larger societies.

Professor Watson found that only very few and very simple behaviour tendencies are to be found in young babies; and, on this evidence, he states that man is equipped with only a few instincts and with a large number of tendencies to form habits.[45] Undoubtedly this is true if by " instinct " we mean innate motor mechanisms. In the present sense of the word " instinct," however, instincts are tendencies to habit formation. It matters little whether, with Watson, we call these " tendencies to habit formation," or, with McDougall, we call them " instincts," or, with Shand, " emotional systems." In any case, it is the investigation of the nature and number of these tendencies that is the important question for the understanding of the innate bases of human behaviour.

30. Difficulties in Professor McDougall's Conception of the Instincts.—The value of Professor McDougall's classification is now generally recognised. It must be admitted, however, that the divisions drawn between instincts are very largely artificial, and that there is nothing sacred in the number he has distinguished. What is called the " pairing instinct," for example, might be separated into a large number of different unit activities, such as courting, nesting, and so on (which certainly have different goals).

If it be objected that all these activities are accompanied by one kind of emotion, which Professor McDougall calls the " sexual emotion," one can reply that the distinctions between the emotions are even more artificial than the distinctions between the instincts. Differences in emotional quality occur through all the varieties of sexual behaviour (as indeed they do through the varieties of pugnacious and flight behaviour). How many primary emotions are distinguished in popular speech mainly depends on how many distinctions are made by the ordinary person for practical purposes. Mr. Bartlett[50] quotes the Rev. W. Deane,[51] who says that the Fijians distinguish eleven different varieties of fear, giving them all different names. The Fijian psychologist would presumably distinguish these as eleven primary emotions with just as much correctness as we distinguish " sexual emotion " and " parental emotion," or between the " feeling of ownership " and the " feeling of creativeness." There seems no reason for taking as final the very coarse discriminations between emotions in popular speech.

Further, the relationship between the emotion and the instinct in McDougall's classification seems somewhat arbitrary. Why is the feeling of isolation stated to be the accompaniment of the social instinct? It is not the emotion which appears in the exercise of the social instinct but in its deprivation, while amusement certainly accom-

panies the exercise of the instinct of laughter, not its deprivation. The treating of these fourteen instincts and their accompanying primary emotions as rigidly separable and undecomposable entities, and not merely as things which for the sake of convenience may be separated in thought, seems to be misleading and unjustifiable.

CHAPTER VI.

The Transformations of Instinct.

31. Practical Problems of the Instincts.—Every instinct poses a certain number of practical problems to the educator and legislator. These problems are of much the same form for every instinct.

First, most instincts have some modes of expression which are socially undesirable. These must be suppressed, if possible, by building up sentiments incompatible with them. If sentiments of this kind are unsuccessful in the work of suppression, more forcible methods (such as legal punishment) must be resorted to. Thus, mere individual quarrelsomeness is a socially undesirable expression of the instinct of pugnacity. It is more common amongst schoolboys than amongst adults, its suppression taking place very largely by the growth of sentiments against quarrelsomeness implanted partly by education, and partly by social disapproval of quarrelling.

Secondly, most instincts have modes of expression regarded as socially desirable. Thus, the expression of the instinct of pugnacity in willingness to take part in warfare for one's country, is a social asset to a militaristic state. This mode of expression of the instinct is carefully fostered in such a state by the military training of schoolboys, part of which training consists in the development of martial sentiments. The prestige of the military profession is also raised

by the use of brilliant uniforms and by the conferring on its higher ranks of titles of respect. The exercise of the instinct of pugnacity in this channel is thus made easy by training, and attractive by the marks of social approval given to it.

Thirdly, there is the necessity for providing alternative modes of expression for instinctive tendencies which have no natural mode of expression which is socially desirable. From the point of view of pacifism, no natural outlet of the instinct of pugnacity is desirable. But suppression of an instinct without giving it some desirable outlet will generally only result in it finding for itself an undesirable outlet. Suppressed native pugnacity may find an outlet in the socially undesirable form of a malice which expresses itself in every form of cruelty except physical violence (such as the writing of malicious anonymous letters). For the suppression to be successful we must find an alternative mode of expression for physical pugnacity ; we must try to divert the instinct, not to destroy it. William James suggested that in voluntarily accepted poverty, such as that of the ascetic saints, we might find a life heroic and pugnacious enough to give satisfaction to the instinct of pugnacity.[52] The martial symbolism of early Christianity or of the Salvation Army show how the instinct of pugnacity can be diverted to the ends of religion.

Professor Bovet gives mountaineering and chess as substitute activities giving satisfaction to the fighting instinct.[53] These modes of diversion of an instinct may, however, sometimes be of importance even when the instinct has a socially desirable outlet. Even the most military state cannot employ all its males permanently in warfare, so there must generally be a partial suppression of their pugnacity. The competitive games engaged in by armies in peace time (and by civilians) not only keep their bodies in fit condition for war service, but also serve the psychological function of

giving a harmless outlet to their innate aggressive tendencies from which they can be diverted, when the need comes, to actual warfare.

The problems which arise in the effective disposal of the instinct of pugnacity arise also in connection with other instincts. They might have been illustrated equally well from the sex-instinct. Indeed the work of the psycho-analysts, and the general recognition of the fact that psycho-neurotic mental disturbances are normally the result of an unsatisfactory disposal of the energy of the sex-instinct, has caused the problems of the suppression and diversion of the sex-instinct to receive a study more complete than that of any other instinct. The problems of the instinct of self-assertion have similarly been studied by Dr. Adler.* [16]

It is clear that the various transformations of instinctive activity mentioned above are of many different kinds. These have received various names, such as *sublimation*, *Platonisation*, etc. In the following paragraphs an attempt will be made to give an account of all these various transformations. For convenience in exposition, they will be dealt with separately, but it must be remembered that such

* It is still doubtful whether *any* instinct deprived of its primitive outlet sets up a condition of mental instability which can only be relieved by giving it another outlet. This is supposed to be the case by Professor Graham Wallas, who speaks of "baulked dispositions."[51] The conception is drawn from Freud, who applies it, however, only to the sex-instinct.[2] Bovet has shown that similar transformations takes place in the instinct of pugnacity.[53] Dickenson thinks that only the impulses of sex, hunger, exercise, etc., which are connected with periodical chemical secretions or deficits of them, are difficult to suppress[55]. What will not be doubted is that an instinctive activity may be transformed into a new activity (in accordance with the principle of the replacement of an unconditioned by a conditioned response), but it may be disputed whether any suppressed instinctive tendency must be so replaced. For example, does this rule hold of the "instinct of constructiveness?"

separation is largely artificial. There are no sharp lines in nature. The different kinds of transformation grade into one another, and it is difficult to say whether particular kinds of behaviour are to be classified under one heading or another.

32. Suppression.—*Suppression* is the failure to carry into action an instinctive impulse. Thus, when external circumstances make it impossible for a person to marry, his sex instinct is said to be suppressed. Similarly, the impulses of the instinct of pugnacity are suppressed when circumstances provoke anger, but the individual does not actually carry out aggressive behaviour. It will be seen that a certain amount of suppression of the primitive impulses of the instincts is a necessary condition for any civilised life. Hence comes the sociological necessity for dealing with the tendency of these suppressed elements to find expression in ways which may not be desirable from the point of view of the individual or of society.

Suppression is the condition under which all the transformations which we are about to describe take place. Before dealing with these, however, we must notice the condition in which the suppressed instinctive tendency finds no outlet in behaviour. This condition is known as *repression.**[2]

33. Repression.—If an instinctive tendency finds no expression in behaviour at all, the unfulfilled desire is stated by Freud to become painful to the mind of the person possessing it. Through the tendency of the mind auto-

* "Suppression" and "repression" are here used in the meaning given to them by Freud. Rivers, however, has introduced an unfortunate confusion into the terminology by using "suppression" in the sense in which "repression" is used by Freud, while he uses "repression" for the deliberate attempt to force something out of consciousness.[28]

matically to adjust its mental content so as to exclude painful thoughts (a tendency which Freud calls the " pleasure principle ") such a desire tends to pass out of consciousness altogether. It is then said to be *repressed.* The characteristic of a repressed tendency is that there is a peculiar difficulty in making it accessible to introspection at all. Freud, therefore, says that such an idea is *unconscious*, or, better, that it belongs to the *system of the unconscious.*[3] Since many mental systems which are not repressed (such as dispositions as distinct from processes) are, by their very nature, not accessible to introspection, the term " unconscious " seems to be badly chosen, and leads in fact to a good deal of unnecessary and barren controversy with philosophers. It would probably be better to adopt a suggestion made by Professor Broad and speak of such mental content as " inaccessible " instead of " unconscious," but Freud's terminology is probably now too firmly rooted in psychological literature to be replaced.

The importance of repression in psychology (and particulary in psychopathology) lies in the fact that it has been shown to be the root cause of many mental disorders, certainly of the psycho-neuroses, possibly also of some of the psychoses. From the point of view of consciousness a repressed system may appear to be converted into its opposite. A sentiment of love repressed may give rise to a conscious aversion to the person loved. A strong tendency to pugnacity, similarly repressed, may give rise in consciousness (and in actual behaviour) to a peculiarly strongly developed tendency to meekness. In these cases, what is appearing in consciousness and in behaviour is not the repressed sentiment but the system by which it is repressed.

This apparent conversion of a mental system into its opposite (which is one variety of the mechanism we shall call " compensation ") is one that is well known outside psychological treatises. An

exaggerated hostility between persons of opposite sex (like that between Beatrice and Benedick) is often recognised as a premonitory symptom of the development of a sentiment of love. Bigotry is often a compensation for suppressed doubts of the truth of one's own position (immediately before his conversion to Christianity, St. Paul became particularly violent in his persecution of the Christians). Foolhardiness is generally regarded as symptomatic of fear and not of fearlessness.

Many of the transformations to be discussed in the following pages owe their origin to initial repression. The suppression of an instinct may lead first to its repression, and an escape from the mental conflicts set up by repression may then be found by adopting some other mode of transformation. Thus, the psycho-analytic cure of a psychoneurosis is to provide the patient with some other mode of transformation of his repressed instinct which will relieve the pathological condition of the repression.

34. Regression.—*Regression* is a condition in which a suppressed instinctive tendency finds expression in a primitive form. The development of such mental peculiarities as the sexual perversions have been explained as due to the suppressed sex instinct of the adult finding expression in forms of sexuality which were natural to it in early childhood (called by Freud the *polymorphous perverse tendencies* of infantile sexuality).[2] The outbreaks of individual bad temper which take place amongst soldiers during inactive periods on the battle field are similar regressions of the developed adult pugnacity to a primitive form of individual quarrelsomeness.

From the point of view of sociology, the importance of the regressions lies in the fact that they are normally socially undesirable modes of behaviour. Sexual perversions, for example, are treated with a very high degree of social disapproval which makes the development of a perversion an unsatisfactory solution of a conflict set up by repression of

the sex instinct. In fact, the perversions themselves are normally suppressed for this reason, and Freud has shown that their repression very often leads to psycho-neurotic symptoms and that the perversion is often only a half-way-house to psycho-neurosis. The only interest, from the practical point of view, of the regressions is that they are socially undesirable modes of adaptation which it is the business of the practical sociologist to endeavour to turn into some other transformation of instinct which is socially desirable.

35. Canalisation.—*Canalisation* is a much less drastic way of dealing with an instinct which is partially suppressed. The word "canalisation" is taken from the process in irrigation by which a widely flowing river is confined within narrow banks. This is exactly analogous to the meaning when used as a name for a transformation of instinct. The instinct is not allowed free expression in all possible ways, but is tolerated only on condition that it restricts itself to a limited number of activities. Thus, the direction of the instinct of pugnacity into warfare is an example of canalisation. The soldier is allowed to exercise his instinct of pugnacity against the enemy but not against his comrades. The instinct of pugnacity is canalised. Social approval is given to sexual behaviour provided the object of it is a man's lawful wife (or a woman's lawful husband) only. This canalisation, as we have seen, is not merely a social requirement, but is inherent in the nature of the instinct itself. We cannot, indeed, draw a sharp line between the truly innate restriction of an instinct and its restriction to definite channels by social institutions. It is to the latter, however, alone that we wish to restrict the term "canalisation."

36. Deflection.—We now come to a kind of transformation of instinctive activity which has attracted much

attention amongst psychologists. This is the transformation in which the instinct finds a new object—*i.e.* one different from that towards which the instinct is directed in its primitive biological form. For this kind of transformation we will use the term *deflection*. Deflection corresponds on the level of developed behaviour to the formation of the " conditioned reflex " on the reflex level.* Thus, when a man finds satisfaction for his instinct of pugnacity by fighting against the forces of nature in mountaineering,† or by fighting against the forces of evil in the religious life, he is *deflecting* his instinct of pugnacity. When he finds satisfaction for his sexual instinct in artistic production or philanthropy, he is *deflecting* his sex instinct.

The process of deflection is of the very first practical importance, because impulses which have no socially desirable outlet, or impulses whose normal outlet has been thwarted by external circumstances, may be given socially desirable outlets by a well chosen deflection. The psycho-

* Cf. p. 184.

† It may not be obvious to those ignorant of mountaineering why this should be regarded as a fighting sport. Professor Bovet gives an interesting example of a mountaineer describing his sport in martial terms.[53] " This amphitheatre is formed of La Maya, Mont Dolent, the Aiguilles Rouges, the Tour Noir, and Darreï, which unite in a wall the better to bar the way, and which brutally rend the azure with their gigantic battlements. One would say that it was their mission to defend the approach to the white solitudes which stretch on the other side. . . . From time to time boulders leap down the great couloirs ; wait a little, and as it were a trial-avalanche rolls down ; anon all is silent, and this circle of giants remain there, terribly immobile, regarding you expectantly. Then—most insignificant and delicate little being, made only of flesh and blood—you arrive in the presence of these walls of granite and ice, and you oppose to them, it would seem, something yet stronger and more indomitable than themselves, . . ."[57]

analysts have used the word *sublimation* for a socially desirable deflection.*

The word *idealisation* may be used of a special kind of deflection in which the object to which the instinct has been redirected has no material existence, but exists on the ideal plane only. Thus, while the mountaineer has a material object for his pugnacity in the mountain, the Salvation

* The emphasis on social desirability in the definition of sublimation comes out clearly in the following passage of Professor Freud : " They [the sexual instinctive forces] are . . . sublimated, that is to say, their energy is turned aside from its sexual goal and diverted towards other ends, no longer sexual and *socially more valuable.*"[2] (The italics are mine.) It is clear that the introduction of a judgment of social value into the definition of a term makes that term of doubtful validity in descriptive psychology.

While sublimation is of undoubted practical importance, it is necessary to insist that it is not a very important conception from the point of view of psychological theory. A deflection is not of essentially different psychological nature by being socially desirable. A man who deflects his sex instinct after a disappointment in love by playing beautifully on the violin may be said to be sublimating it, since his mode of expression is socially desirable because it gives pleasure to other people ; but clearly it is exactly the same psychological process as would be his activity if his disappointment led him to play badly on the bagpipes. In the latter case, however, his neighbours would not regard it as a sublimation, because they would not regard his behaviour as socially desirable.

In a less simple form, the same problem arises in other cases of sublimation. The man who gave his life to religious activity has provided an example of sublimation if we accept the view of religious persons that the religious life is a socially desirable mode of behaviour : but other persons consider it useless. Whether the religious person is sublimating or not can only be decided if we know whether religion is a desirable or an undesirable outlet for instinctive tendencies. This is clearly not a psychological question at all. Much confusion could be saved if we abandoned the word *sublimation* as a psychological term altogether and spoke of all re-directions of instincts as *deflections*, whether they were socially desirable or not.

Army, fighting against moral evil, has an opponent existing on the ideal plane. Love also may be given to an ideal object, instead of to an actual person. In this case the sex instinct may be said to be idealised.

37. Objectification.—There are three more kinds of transformation of instinct of minor importance distinguished by Professor Bovet.[53] The first of these he calls *objectification*. This is the change which takes place when a man satisfies his instinct by watching the action to which it normally leads instead of taking part in it. The instinct of pugnacity is objectified by the child or man who looks on at fights instead of fighting. The fighting play of children does not always take the form of playful fights with their comrades, but sometimes of playing with toy soldiers or organising mock conflicts between other children. The lead soldier serves the purpose of this objectification in play of the fighting instinct. The watching of gladiatorial combats and boxing matches is a similar objectification. The objectification of the sexual instinct is found in the person called the *voyeur*, who can obtain his gratification only by watching, not by actually taking part in sexual behaviour.

Like other kinds of transformation, the sociological importance of objectification is that it can provide a socially harmless outlet for otherwise objectionable activities. The child is allowed by its parents to play with lead soldiers, and is not allowed to fight with its friends. The adult man is allowed to watch a boxing competition, but not to engage in rioting.*

38. Subjectification.—This is the transformation in which an instinct is turned on to the subject himself instead of

* It is, of course, arguable that, although socially harmless in themselves, these outlets are undesirable as fostering an undesirable mode of behaviour by providing an expression of it in play.

finding an outside object. It is not a very clear conception, but subjectification is described by Adler as one of the effects of suppression. In the objectification of the fighting instinct one watches other persons receiving blows : in the subjectification of the instinct one has *passive algolangnia* in which one takes pleasure in receiving blows oneself.* Humility, submission and devotion, voluntary subjection, flagellantism and masochism are instanced by Adler as effects of this phenomenon. Autoerotism would seem to be a similar subjectification of the sex instinct.

Such phenomena have no particular social importance ; none of the phenomena of subjectification are ordinarily socially encouraged. It is socially more desirable that the fervent ascetic should scourge himself than that he should employ his weapons against other people, but, if this is really a re-direction of the fighting instinct, at least we must admit that it is possible to find other modes of expression for this instinct of greater social value. It is probable, however, that the subjectification of the fighting instinct is not an important factor in the development of ascetic practices.

39. Platonisation.—In *idealisation* the object of the instinct is no longer a real person ; in *Platonisation* there is a real object but the behaviour itself undergoes the same change as takes place in the object in *idealisation.* The word *Platonisation* is taken from this mode of transformation of the sex instinct—Platonic love. Platonic love has a real sex object but has lost the physical sexual behaviour. Its love behaviour is entirely on the mental or ideal plane. Similarly one can have pugnacity against a real opponent

* This, however, is totally different from the explanation of passive algolagnia given by the psycho-analysts, who regard it as a compensation for the active algolagnia which is, they maintain, a primary element in the composition of the sex instinct.

without an external physical contest. The example taken by Professor Bovet is the playing of chess. There is a real opponent in chess, but the fighting is on the mental plane. Intellectual controversy is a Platonisation of the instinct of pugnacity rather nearer to the primitive pugnacious behaviour than the playing of chess, and one could trace a continuous series (through political controversy and boxing matches) between the completely Platonic fighting of the chess player and the crude physical fighting of the person exercising his instinct in the normal way.

Platonisation (in varying degrees) is an important mode of disposing of certain instincts, for it is capable of providing what is generally useless but entirely unobjectionable behaviour in place of instinctive behaviour socially undesirable. Two old gentlemen playing chess are of little direct value to society, but at least they are not doing the harm to the social organisation that they would if they exercised their instinct of pugnacity in brawling. Similarly, Platonic lovers do nothing for the increase of the race, but they do not undermine society by immoral behaviour.*

40. Pansexualism.—This name has been applied to a doctrine put forward by some of the disciples of Professor Freud, which seems to be implicit in his work. This is the view that all instinctive activities other than those belonging to the system of self-preservation are to be understood as transformations of the sex-instinct. Thus, the modes of cruel behaviour which we shall discuss later are regarded by the pan-sexualists as expressions of the impulse of "sadism," an infantile component of the sex-instinct;

*It may be noticed that there are abnormal forms of sexual desire of which the only expression socially tolerated is Platonic love. The Platonisation of his love behaviour is a necessary adaptation of the homosexual to the requirements of society.

the instinct of curiosity is supposed to be a transformation of infantile curiosity on sexual matters, and even the gregarious system of instincts has been stated by Freud to be a product of the sex instinct.[58]

From the point of view of this theory, all that is said in the present work about the instincts of pugnacity, of acquisition, etc. might be true but it would not be ultimate, since these instincts themselves would be regarded as the products of incomplete analysis, ultimately reducible to elements in sexuality. Freud regards the conflict between the impulses of Ego and of sex as the fundamental conflict in human life. With this view most psychologists are not in agreement. A more satisfactory scheme for the understanding of conflict seems to be obtainable if we suppose that the fundamental conflict is between the gregarious system of instincts as controlling force and the primitive elements in both the systems of reproduction and of self-preservation.

Professor Freud has made a valuable study of the ontogenetic development of the reproductive instincts and of their transformations. It is indeed to this original and brilliant observer that we owe the conception of the transformation of instincts which proves fruitful even when applied to other instincts than those of sex. It is possible to make use of these conceptions in our psychological theory without committing ourselves to the theory of pansexualism.

41. Play.—This is the most convenient point for a consideration of a phase of instinct which is not, indeed, a transformation of instinct but a germinal form of it. Amongst young animals of all kinds (including human children) we find a kind of activity which obviously has not as its object any external goal. This activity is called play. The activities of play bring into action motor mechanisms which will be of use in adult life. Young puppies, for example, carry out in play the same activities as they will use later both in

fighting and hunting, they roll each other over, take each other by the throat, chase each other, but all the time without doing any injury. They are, moreover, doing it with obvious enjoyment.

From the biological point of view, then, play may be described as a rehearsal of activities which will later be put to use in the serious business of life. The young puppy is strengthening his muscles, legs, back and jaws, upon which he will be dependent in the fighting and hunting of his adult life. On its psychological side, play is an activity enjoyed for its own sake, *i.e.* for the joy the activity itself brings. This is the essence of Prof. Groos's well known theory of play.[70 77] Prof. Groos recognised as play only those activities which satisfy both the biological and the psychological criterion. Playful activity is one which is a rehearsal of an instinctive activity, and it is an activity which is undertaken for its own sake (and not, of course, with the conscious aim of rehearsing useful activities).

The human child shows probably a greater variety of playful activities than any other young animal. He displays, for example, in addition to the fighting and hunting play which he shares with other animals, the activity of pulling things to pieces, which Groos calls *analytical play*.*

He also shows *synthetic play* (with toy bricks or modelling clay) in which he builds up new things. These are clearly rehearsals of the instincts of curiosity and of construction respectively. Later, he may exercise himself in play which simulates adult activities that are relatively distant from primitive instinctive forms of behaviour, as, for example, bartering, and even the carrying out of religious ceremonies.

Activities which fulfil Groos's definition of play do not, however, exhaust the list of rehearsal phenomena to be found in animal and human life. Courtship, for example, is an activity which is to some extent a rehearsal of the sexual act, and is indulged in for its own sake. It does not, however, belong to quite the same class as the fighting or hunting play of young animals, for it is an adult activity, leading up to and having an obvious function in the performance of the sexual act itself. Other rehearsal phenomena discussed by Groos are the baby's exploratory movements of the hands, and his other

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* Which is sometimes mistaken for cruelty when the object analysed happens to be a living creature.

activities which bring him new experimental sensations. We ought, probably, also to bring under the heading of rehearsal phenomena some of the infantile forms of emotional reaction which are regarded by the psycho-analysts as infantile elements from which the adult sex-instincts develop. The attachment of love to the mother, which is called by Freud the *Oedipus-complex*, probably serves a function in mental development similar to that of the playful activities. The *Oedipus-complex* is, perhaps, the infantile sentiment which is preparatory to the biologically more important sex-love of the adult.

CHAPTER VII.

The Emotions, the Sentiments, and Character.

42. Introduction.—Before proceeding to a more detailed treatment of the different instincts which lie at the basis of human behaviour, it will be necessary to examine more fully the nature of emotions and sentiments. It has already been said that the normal function of instincts in the human individual is to form the foundation on which the sentiments are built. The sentiment of love for a person of the opposite sex is thus grounded in his sex-instinct, and for his children in his parental instinct; various loyalties are founded on his gregarious instincts, and various sentiments of animosity (or hate) on his instinct of pugnacity. These loves, loyalties, and animosities are indeed the most prominent constituents of the developed adult's character, and, except for his instincts' residual appetitive element and his permanent tendency to form new sentiments, we should be doubtful, after examining the mental make-up of a single adult individual, whether we ought to ascribe to him instincts at all. Before dealing with such sentiments, however, it will be necessary to be clear as to the meaning of the word "emotion." A condition of mind in which the feeling element looms large is called an *emotion*. Fear, anger, wonder, and grief are examples of such conditions of mind.

The total contents of consciousness are traditionally split up into the three elements of *cognition*, *conation*, and *feeling*. By *cognition* we mean all ways of being aware of

anything. *Conation* is the mental side of action, *i.e.* of an activity taking effect in the outside world or of a change in the train of thought. *Feeling* is the element in consciousness corresponding to what we mean when we say we have a feeling of affection or surprise.* Particular feelings are generally called *affects*.

These three elements of *cognition*, *conation*, and *feeling* are the constituent aspects of any mental process. Any condition of mind at any time contains all three elements. It must be remembered that they are not separable entities which can exist by themselves, and that the division of states of mind into these three constituents is an artificial analysis for convenience in thought, not a division into really separable things.

43. Emotion.—Since an emotion is a complete state of mind, it has a conative, a cognitive, and an affective element. It is the affect, however, that is of principal interest in the psychology of emotion, for it is the dominant element in the total state of mind of the person under the influence of strong emotion. Indeed, it is this striking quality of their affect which forces these conditions of mind on our attention so that we give them a special name. When discussing the nature of emotion, therefore, writers are often only concerned with the nature of affect, and a certain number of disputes connected with emotion will be resolved if we remember that the affect is only one part of a complex state of mind.

We have already noticed the intimate connexion (which was first pointed out by William James) between an emotion and an instinct.[27] One of the most striking features of an emotion is the impulse to some kind of action which is

* The word *feeling* is also used for the feeling qualities of *pleasure* and *unpleasure*. For these I have preferred to use the more usual term of *feeling-tone*.

associated with the affect in such a way that the affect becomes stronger if the impulse is not obeyed, but is dissipated if the behaviour dictated by the impulse is carried out. Thus the strong and somewhat unpleasant affect belonging to the emotion of anger is associated with an impulse to the violent behaviour of attacking the person who has produced the anger. If (as is ordinarily the case in organised society) this mode of behaviour cannot be carried out, some relief to the affect is obtained by violent abuse of the person. If neither of these modes of behaviour can be carried out, the affect becomes unpleasantly strong. A certain amount of relief can, however, be obtained by any kind of violent behaviour even if not directed against the person who was the cause of the anger.*

44. The Disinterested Emotions.—An emotion is generally the response of a person to the situation in which he finds himself—fear to his own danger, anger to his own injury, and so on. But these same emotions may be called out by the situations of other people; we may feel fear at their danger, anger at their injuries, and so on. These are called the *disinterested emotions*. They are not confined to mankind; accounts of disinterested emotion observed amongst animals are frequently to be found in the writings of naturalists.

Disinterested emotion is very commonly found to be organised in the reproductive system of instincts, as when anger is shown by a mother when her offspring are threatened, or by a male when his mate is threatened. It may, however, be a response of the primitive comradeship element in the gregarious system of instincts.†

* Or by the creation of a mental phantasy of the injury or degradation of the person in question. For the relationship between emotion and phantasy production see Dr. MacCurdy.[186]

† Cf. p. 157.

Herds of gregarious animals, such as baboons and oxen, show anger when one of their number is injured or threatened,[70] and even bees are liable to sting the careless operator who crushes some while he is manipulating their hives.

No observer could fail to notice the prevalence of the disinterested emotions amongst human beings. They are the source of a large part of the activity of every individual on behalf of other persons, and their existence is also apparent to introspection. We feel indignation when we hear that one of our fellow-countrymen has been subjected to injustice in a foreign country, and a pang of disinterested fear when we see someone crossing a road incautiously who looks as if he is about to be run over by a motor-bus.

These were explained by those of the associationists who denied the reality of any but the self-interested impulses as due to association between the circumstances of the other persons and the emotion we have felt ourselves under the same circumstances.* The objection to this class of psychological explanation will be dealt with more fully later.† It is, in any case, unnecessary if we admit the reality of the gregarious instincts. Disinterested emotion seems to be most satisfactorily accounted for as a truly innate response organised in the system of the gregarious (or of the reproductive) instincts.

* As, for example, James Mill: "The idea of a man enjoying a train of pleasures, or happiness, is felt by everybody to be a pleasurable idea. The idea of a man under a train of sufferings or pains is equally felt to be a painful idea. This can arise from nothing but the association of our own pleasures with the first idea, and of our own pains with the second. . . . The fact, indeed, is that our very idea of the pains or pleasures of another man is only the idea of our own pains, or our own pleasures, associated with the idea of another man."[59]

† p. 179 ff.

45. Weakness of Disinterested Emotions called out by Mental Representations.—While the disinterested emotions are called out readily in the actual presence of other persons in distress, they are called out much less readily and less strongly by the mere thought of the distress of others. This is only one example of the general truth, that all emotional responses appear much more readily to actual situations than to imaginal representations of those situations. The case of the disinterested emotions is, however, of particular importance, for it produces a serious practical problem in modern social conditions.

Society is, at present, so organised that our decisions and actions frequently have great effects on the happiness or unhappiness of other persons whom we cannot see. The decision of a group of employers about wages, of a municipal authority about the evacuation of houses, or of the electors of one country about the steps to be taken for the recovery of debt from another, may have grave consequences in the happiness or unhappiness of the persons affected by the decision. These consequences may even be the misery and starvation of a large number of persons. Yet the persons making the decision are likely to feel disinterested emotion only very weakly on behalf of those affected by it, for the latter are too remote to call up vivid disinterested emotion. Similarly, our contributions to hospitals and relief funds would be given readily if we could actually see the sufferings we relieve, and appeals for these causes often try to make the sufferings as vivid as they can by striking pictures (such as those of the " Save the Children Fund "), or by vivid description.*

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* DE STOGUMBER. . . . I did a very cruel thing once because I did not know what cruelty was like. I had not seen it, you know. That is the great thing : you must see it. And then you are redeemed and saved.

CAUCHON. Were not the sufferings of our Lord Christ enough for you ?

DE STOGUMBER. No. Oh no : not at all. I had seen them in pictures, and read of them in books, and been greatly moved by them, as I thought. But it was no use : it was not our Lord that redeemed me, but a young woman whom I saw actually burned to death. It was dreadful : oh, most dreadful. But it saved me. I have been a different man ever since, though a little astray in my wits sometimes.

CAUCHON. Must then a Christ perish in torment in every age to

To this failure of the disinterested emotions to respond readily to merely imaginal representation is due much of what is commonly attributed to heartlessness and cruelty in modern social relationships. It is probably not true that we are more heartless or less easily influenced by disinterested emotions than our forefathers, but we live under conditions in which these emotions have less chance of beneficent action for the relief of suffering. The business man who practices and defends "hardness" in his actions with respect to his employees * would often not hesitate to give generously to one of them if he actually visited his home and saw his need.

The disinterested emotions, like the other emotions, were originally responses to actually present situations, and our mental constitutions have not changed in such a way as to adapt ourselves to a condition of society in which our responses to imagined situations are of much more practical importance than our responses to actually present situations.

This evil is not, of course, purely a psychological one. There is no doubt that mental exercises directed to that end could facilitate the emotional response to imagined situations, but there is a limit to the amount of such sensitiveness that would be possible for a person who is continually making responsible decisions which affect the happiness of other persons. Life would be intolerable for the business manager who felt himself all the misery which his decision to cut down the number of his employees would cause; nor could one be a general who felt sympathetically the pain of all the bereavements caused by his decision to order an advance.†

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save those that have no imagination?—*Saint Joan*, Bernard Shaw, London, 1924.

* This hardness was rationalised at the beginnings of the industrial era by the amazing economic doctrine that one best served the interests of others by pursuing one's own interest. In this manner Whately defended the action of the corn dealers who raised the price of corn in time of scarcity.[54]

† The fact that this failure of the disinterested emotions to come into play in the relationship between the employer and employed is unavoidable in large organisations does not alter the fact that it may have serious social consequences. A large body of men under a management which, by its very nature, must be "unfeeling" in its relationship with them, are in an ideal situation for the formation of "hate" sentiments against this management.

On the other hand, an increase in the general power of persons to feel disinterested emotions in response to imagined situations would be pure gain. The evils of a great part of our population living under conditions of ugliness, squalor, and need would stand a better chance of being removed if people as a whole felt these evils strongly enough to be stirred to take active steps to remove them. There would be fewer wars if all nations could be free from the evil influence of enthusiastic militarists who are unable to feel the misery which wars produce.

46. The Expression of the Emotions.—In the bodily accompaniment of an emotion there are three distinguishable parts : (1) the behaviour associated with the emotion (such as striking in anger), (2) certain changes in the facial muscles, such as sneering in contempt, raising the eyebrows in wonder, and (3) changes in the blood supply and in the viscera.

The second of these, the facial changes (and similar changes in other parts in the musculature, such as the cringing of submission) are known as the *expressions of the emotions*. It is on observation of these that we are mainly dependent when we infer the existence of emotions in other people. It is probable that the most important evolutionary function of all the expressions of the emotions is as a means of communicating to other persons the nature of the emotion experienced, and thus arousing in them corresponding emotions by the principle of sympathy.

Darwin discussed the biological explanation of the actual forms of the expressions of the emotions in *The Expression of Emotions in Men and Animals*.[64] He maintained that some of the facial movements were relics of movements which in time past would have been serviceable to the animal executing them. Thus, the movement of sneering is the baring of the canine teeth preparatory to attack, and the turning down of the corners of the mouth in disgust is a relic of the facial movements which would have been made

to get rid of food of unpleasant taste. These methods of expression he called *serviceable associated habits.* Other expressions he explained by a principle of antithesis. The cringing attitude in submission is, for example, the result of a relaxation of the muscles which are contracted in the upright gait of assertiveness. Thirdly, he noticed some expressions, such as the trembling of fear, which seemed to have no evolutionary value. These he considered served no purpose, but were due to the direct action of the nervous system. The second of these principles (that of antithesis) is of doubtful validity, but there is little doubt that many of the expressions of the emotions are relics of once serviceable habits, and that others have no value (except probably that of arousing sympathy).

47. The Physiological Mechanism of the Emotions.—The bodily changes in heart beat, breathing, blood supply, etc., which take place on the perception of a stimulus producing emotion result from the activity of a part of the nervous system to which is given the name of the *autonomic system.** This is a system of nerve fibres which have connections with the central nervous system (comprising the brain, the spinal cord, and the nerve fibres from them) but are functionally distinct from it. The autonomic is the nervous system which controls many of the automatic responses of the viscera such as the beating of the heart. It is connected with a series of ganglia which run down the outside of the spine, and with other nerve-ganglia in the viscera, some of which are isolated while others are organised in groups, each of which is called a *plexus.*

This system is apparently a survival of the diffuse type of nervous organisation which still exists in those primitive animals whose nervous functions have not become, like ours,

* Or *sympathetic system.* The nomenclature for this system is very confused.

centralised in the brain and spinal cord. The changes in the viscera and blood supply which take place in emotion are dependent on the activity of the autonomic nervous system, but our knowledge of the physiological mechanism of these actions is still very imperfect. The efferent impulses of the autonomic come partly from the central nervous system, but they are also initiated in the autonomic system itself by the action on this system of chemical secretions from a number of ductless glands called the *endocrine organs* (the *thyroid gland*, the *suprarenal glands*, etc.).

Some of these glands secrete on the perception of an emotional situation. In fear and rage, for example, Cannon[61] showed that the supra-renal glands secrete a substance called *adrenalin* which acts on a part of the autonomic system called by Prof. Langley the *sympathetic system*[73] (and by Herrick the *thoracic-lumbar system*)[12], which causes dilatation of the pupil, protrusion of the eyes, a quickened heart-beat, the pallor of the skin. Many of these changes are clearly adaptive. The driving of blood from the skin, for example, reduces bleeding from a wound, and adrenalin is sometimes injected artificially for the purpose of stopping bleeding. The adrenalin, moreover, causes the rapid recovery of a muscle from fatigue, and therefore makes possible the sustained muscular action demanded in the systems both of fear and rage.

48. The James-Lange Theory of the Emotions.—William James[27] and a Swedish physiologist named Lange[71] put forward at about the same time theories of the nature of emotion, which, although not identical, were sufficiently alike to be generally treated as one theory under the name of the *James-Lange Theory of the Emotions*. The bodily changes mentioned in the last paragraph have always been noted as accompaniments to emotion, and its intimate connection with the viscera is suggested by many phrases which

attribute love to the heart and sorrow to the bowels. Descartes[75] even went so far as to say that certain emotions were felt in the viscera and not merely in the brain.*

Now, there are certainly interoceptive nerves by means of which we can have sensations derived from changes taking place in the visceral system.† The essence of the James-Lange theory was that the sensation of these visceral changes was the emotion.

James stated this theory sometimes in terms which were open to serious criticism. He spoke, for example, of the visceral changes *causing* the emotions, and said that we do not cry because we are sorry, we feel sorry because we cry.‡ Less open to obvious objections, however, was his more considered statement that "the bodily changes follow directly the perception of an exciting fact, and that our feeling of the same changes as they occur is the emotion.".[27] The principal evidence brought forward by James in favour of this statement was that if we think away all the bodily accompaniments of an emotion there is no emotional content left at all.

* "the cause of them [love, hate, desire, joy, and sadness] is not, as is the case with wonder, in the brain alone, but also in the heart, the spleen, the liver, and in all other parts of the body, in so far as they serve in the production of the blood, and thereby of the spirits." (Art. XCVI.).

† See p. 196.

‡ This formulation is objectionable for two reasons. First, James obviously did not mean that sorrow was the sensation merely of the secretion of the lachrymal glands. Secondly, one must object to the unnecessary introduction of the conception of cause. The statement that the sensation of the visceral change *is* the emotion (or, rather, the affect) is in no way helped by saying that the visceral change *causes* the emotion. Ribot was willing to accept everything of the James-Lange theory except the statement that the visceral change caused the emotion, which seemed to him as philosophically objectionable as the older statement that the emotion caused the visceral change.[60]

Apart from criticisms against this theory caused by William James's rather reckless use of the conception of " cause " there are certain observed facts which are difficult to reconcile with this theory. First, while it is true that powerful emotions of fear, anger, or joy cause large visceral and vaso-motor changes, there are other important emotions of a fainter kind, such as the intellectual pleasure we have in working out a mathematical problem, in which it is less easy to demonstrate that any bodily changes have taken place at all.

In addition, there are two lines of experimental evidence which are at first sight difficult to reconcile with the James-Lange theory in its primitive form. Sherrington showed that if a dog had its spinal cord severed in the lower cervical region that dog could show affection, fear and anger, although it could be receiving no sensations from its viscera[61]. Cannon, moreover, has shown that such different emotions as rage and fear have much the same visceral basis.[61] It has, therefore, been argued that what makes the difference between the emotions cannot be differences in sensations received from the viscera.

All of these objections can be overcome if we make two extensions of the James-Lange theory. First, we must recognise that if emotion in its original condition was an actual sensation of visceral changes, what we describe as an emotion in our adult life may very often be merely the image of such changes. If the emotion is either a visceral sensation or the image of a group of visceral sensations, then the intellectual emotions, or the emotions of Sherrington's spinal dogs, may be simply conditions in which the emotional behaviour is associated with an image of visceral changes instead of with those changes themselves.*

* Some physiological changes, however, accompany the most intellectual emotions, for a measurable change takes place in bodily resistance with any emotion whatever.

Secondly, we must emphasise that the James-Lange theory is an account of the origin of affect, not of emotion, and that the emotion is a complex state of mind of which the affect is a part. Fear and rage may have much the same visceral basis, but form part of a state of mind with totally different associated cognitions and conations. When adrenalin is secreted and the consequent changes in the blood supply, hair, breathing and stomach take place, we call the condition " rage " if the cognition which started it was of an insult or injury received from some object less powerful than the individual experiencing the emotion, so that the accompanying conations are impulses to strike or injure, while we call it " fear " if the injury was received from another person so much stronger that the accompanying conation is the impulse to escape. As affects, fear and rage are not very different, as we may easily decide by introspecting while under their influence.* This is true of many of the emotions. The affect of all the depressing emotions feels much the same, our discrimination is made between them because of the difference between their various associated behaviour impulses and cognitions.

We may formulate. then, a satisfactory physiological theory of the emotions as follows :—An emotion is a complex state of mind comprising (like all states of mind) elements of cognition, conation and affect, which is characterised by the exceptional strength of its affective element. The affect itself is a sensation or an image of bodily changes (in the viscera and blood supply). These

* If this is true, there seems to be no justification for Professor McDougall's criterion for a single instinct that it has a single emotion associated with it.[25 26] The truth appears to be that the affects are very vaguely distinguishable in themselves, and that a single name (*fear, anger,* etc.) is given to an emotional condition because it accompanies behaviour directed towards a single goal.

changes are not felt as bodily changes, but appear in consciousness as affect.

49. Pleasure and Unpleasure.—Sensations and affects are either pleasurable or unpleasurable. These qualities of pleasure and unpleasure we call *affective tone* or *feeling tone.* There are, moreover, mental conditions in which the principal content is pleasure or unpleasure. Pleasure is the condition accompanying the harmonious functioning of the bodily organism, unpleasure accompanies any failure to attain such a harmonious functioning (*e.g.* through excessive fatigue or through the perception of a hostile environmental situation).

The difference between pure pleasure or unpleasure and an emotion is that the bodily conditions of pure pleasure and unpleasure are more diffuse. When a particular visceral disturbance comes to the forefront of affective consciousness, the state of pure feeling passes into an emotion. A condition of pure pleasure, which is intense and is associated with a particular object, is the experience of *joy.*

While pleasure and unpleasure are generally produced as reactions to the environment, their visceral origin is shown by the fact that they may be produced entirely by changes in the condition of the organism without any external exciting cause. Thus, Dr. Head showed that moods of acute unpleasure are symptoms of some forms of visceral disease,[62] while pleasure is often a symptom accompanying the last stages of consumption. Emotions may also be purely visceral in their origin, as, for example, the fear which accompanies attacks of angina.

There are two simple types of reaction which develop early in evolution. These are the *seeking* and *avoiding* responses, which are adopted by the primitive organism towards beneficial and noxious external objects respectively.* Pleasure is the sensation of the general bodily

* Cf. p. 189.

condition which accompanies a seeking reaction, while unpleasure similarly accompanies an avoiding reaction. Pleasure and unpleasure accompany the indefinite conative tendencies of seeking and avoiding, as the emotions accompany more specific behaviour tendencies. A pleasurable emotion has as its behaviour concomitant a reaction which belongs to the seeking class, and an unpleasurable emotion is similarly attached to a reaction of the avoiding class.

It is probable, therefore, that the feeling qualities of pleasure and unpleasure are among the most primitive elements in mental life. It can be shown that they have as their organ a primitive part of the central nervous system. Drs. Head and Holmes have found that if the *optic thalamus* (an organ in the mid-brain) is cut off from the cerebral cortex there is a resultant change in behaviour and feeling which may be described as *affective overweighting*.[1] Pleasurable sensations are felt as exquisite, unpleasant ones are felt as unbearable and are accompanied by an uncontrollable withdrawal of the part to which the painful stimulation has been applied. The person suffering from such a lesion seems to be reacting in a biologically more primitive way. The behaviour suggests the uncontrolled mass movements of seeking and withdrawing displayed by primitive organisms. The *optic thalamus* is the primitive centre for the pleasure-unpleasure ways of feeling and action, and in the normal person these reactions are very largely inhibited by the cerebral cortex.

50. The Sentiments.—When we speak of *love*, *hate*, or *respect*, we are dealing with a different order of mental phenomena from that of the emotions. When we say that a person is angry we mean that he is actually experiencing an emotion with a particular quality of affect and with certain bodily accompaniments. When we say, however, that one man hates another, we are asserting nothing about the particular experience that he is having at the moment; but we are attributing to him an enduring disposition to have certain emotions in certain situations. If A hates B it is possible that he is not thinking about B

at the present moment at all, and in that case he is having no experience about B. If he does think of B, his experience is not necessarily of any one affective quality; he would have a variety of different experiences in different situations of B. He would, for example, feel repugnance in B's presence, anger at his good fortune, joy at his misfortune, and so on. The disposition to feel such emotions in such situations of B is A's disposition of hate.

The dispositions of love, hate, respect, etc., have been called "sentiments" by Mr. Shand,[30] and this usage has been now generally followed. Shand describes the sentiments as the greater systems in which the emotions are organised, while McDougall defines a sentiment as an organised system of emotional dispositions centred round the idea of some object.[25]

Three kinds of sentiment can be distinguished, those we feel for single objects, those we feel for all objects of a certain class, and those we feel for abstract conceptions. These may be called *concrete particular*, *concrete general*, and *abstract* sentiments respectively. For example, love for a particular child, or hatred of a particular cat, would be *concrete particular sentiments*, while love for all children, or hatred of all cats, would be called *concrete general sentiments*. As examples of *abstract sentiments* we may take the love of justice or hatred of cruelty.

Emotional reactions are called out even by abstract sentiments, but less strongly than by the concrete sentiments. It is easier to love a child strongly than to love justice. Since, however, many of the sentiments of social importance are of the nature of abstract sentiments, it is important that the emotional reactions of these should be made as strong as possible. This is often done by providing a concrete nucleus round which an abstract sentiment can gather. The national flag and King provide such nuclei for the

abstract sentiment of patriotism; and, as a result, this sentiment may take such a form as to suggest to the careless observer that it is a concrete particular sentiment for this nucleus. Similar nuclei often serve a similar purpose in the religious sentiment. A sacred book, a cross, a totem, or an image may be the concrete object which suffices to call out the emotions of the religious sentiment. The reason for the existence of these foci is the difficulty with which strong emotional reactions are produced by purely abstract sentiments.

We have already approached the sentiments from the opposite side (that of instinct), and have seen that a sentiment is essentially an instinctive disposition which has become attached to a specific object. This passage from the generalised instinctive disposition to the specific disposition of the sentiment is one which always takes place in the development of human character. The main importance of the instincts in the adult human being is their place as foundations on which the sentiments are erected.

Every sentiment undergoes development and organisation during its period of existence. A sentiment of hate, for example, becomes strengthened when we indulge in the revengeful behaviour dictated by it, and is weakened and disorganised by persistent refusal to indulge the behaviour and emotions belonging to it. These changes in the sentiment also react on the rest of the character.

Shand sums up these principles of the development of the sentiments and their reaction on the rest of the character in his *Law of Organisation of the Sentiments*. This law states that: "Every sentiment tends to include in its system all the emotions, thoughts, volitional processes and qualities of character which are of advantage to it for the attainment of its ends, and to reject all such constituents as are either superfluous or antagonistic"; every growing sentiment

tends to work towards its own more efficient organisation by rejecting what it does not need, and acquiring what it does, and by this hidden fundamental law its advance is governed. (*E.g.* men who love themselves tend to grow hard-hearted because the tender emotions have no function in self-love and atrophy from want of exercise.)[30]

51. Sentimentalism.—The sentimentalist is the person whose sentiments appear to be strong and numerous but do not lead to effective action. William James considered that the source of sentimentalism was the indulgence of the emotions for their own sake instead of allowing them to take their place in the mind as movers to action. He considered that every indulgence of feeling which did not lead to its own proper action was increasing sentimentalism. Stage representations and the reading of novels might, he said, have this effect, for in them the emotions were indulged with no outlet in action—pity, for example, was aroused without leading to action for the relief of distress.[27]

Professor McDougall describes the sentimentalist as the person who forms sentiments about sentiments.[26] This is more limited but not otherwise essentially a different conception from that of James, for the forming of sentiments about sentiments is a very effective way of escaping the demands of action. There were during the war those who loved their country and those who loved patriotism. The latter were the patriotic sentimentalists. They indulged in a great deal of emotion, but it did not lead to courageous or self-sacrificing action. One can die for one's country, but one cannot die for the sentiment of patriotism. So the sentiment of patriotism is the safer object of devotion for the sentimentalist. The person who forms sentiments about sentiments is, however, only one kind of sentimentalist.

52. Character.—A man's character is the sum total of his mental dispositions. Like all words describing dispositions, *character* is not the name of something we can actually observe. It is a hypothesis to account for uniformities in conduct. The actually observable thing is a man's behaviour (if we use behaviour in a very wide sense to include his emotional responses as well as his bodily responses). If

there were no uniformities observable in behaviour, or if behaviour were determined entirely by a man's environment, we should not speak of his *character*. It is because human behaviour is to a certain extent predictable, and because it is not predictable entirely in terms of the environment, that we postulate enduring mental dispositions and give the name *character* to the whole system of these dispositions.

A person's character may be divided into two parts, that part which is innate and that part which he has acquired. Of his innate character there is not only the part common to all men, his generalised instinctive dispositions, but also a part which is different in different individuals. This is called his *temperament*. The acquired elements in his character are his sentiments and habits.

We speak of a person being of *strong* or *weak character*. We mean essentially by a person of strong character one whose conduct is determined by his own sentiments and not by the influence of other people or by the peculiar circumstances of his environment. One who, wishing to get to a certain point, would continue to go through all obstacles, over mountains, across rivers, and in spite of the dissuasions or threats of other persons, would be a person of *strong character*; while one who was turned back by the first obstacle or the first discouragement would be a person of *weak character*. The behaviour of the second would be predictable much more in terms of the environment and much less in terms of his own dispositions than that of the first person.

When a person is prevented from carrying out the conduct prescribed by his own character through the influence on him of other people, he is said to be *suggestible*. Suggestibility will be treated more fully when we discuss the gregarious system of instincts, for it is through his suggestibility that a man is sensitive to the opinion of other persons and thus becomes susceptible to social influences in the determination of his conduct.*

The person of strong character (relatively free from the influences

* cf. p. 164.

of suggestion) must not, however, be confused with the person who would pursue a course because that course was opposed by the persons around him. This is the response of *contra-suggestion*. The disapproval of other persons is sufficient to make such a person carry out a course of action. This is not evidence of a strong character, but of over-compensation for a weak one. The contra-suggestible person shows behaviour which is really not independent of the environment. It is predictable in terms of his social environment, only the prediction must be that the person will do the opposite of that suggested by other persons.

Mere strength of character will be seen to be not necessarily a desirable quality. Complete determination of conduct by internal dispositions would be a mark of complete lack of adaptation to the environment. A certain amount of adaptation to environmental demands is necessary if one is to survive in one's relationship to outside objects, and similar adaptation to the requirements and feelings of other persons is a necessary condition of living as a socialised being. One's aim in character formation (so far as this is a process which can be controlled in education) should be the creation of a character strong enough to be able usefully to struggle against outside influences, yet not so strong as to lose adaptation.

53. Temperaments.—A man's temperament is the element in character postulated to account for the uniformities in his emotional reactions. The violent man, for example, is one who expresses all his emotions in a violent and extreme way. *Temper* is generally used as a word for describing the quality of a particular emotion. Descriptions of the temperaments of men have been common in the literature of psychology from the earliest days. They have varied in different writers, but generally four temperaments have been distinguished. The *sanguine* temperament is characterised by superficiality of emotion and inconstancy; the *bilious* temperament is one which shows depth and stability of emotion and inflexibility of purpose; the *nervous* temperament is characterised by rapidity of thought and movements, while the *phlegmatic* temperament is accompanied by slowness of thought and movement.

It is clear that these are not scientific conceptions but are survivals from the days when temperamental differences were ascribed to the predominance of one of four humours in the blood. The most clearly defined are the *sanguine* and the *bilious* temperaments ; but the distinction between them breaks down unless we are convinced that the same properties show themselves in all emotions. If a person, for example, can show superficiality in love but depth and stability in scientific investigation (as certainly he can), whether one describes that person as of sanguine or bilious temperament will depend on which of those sentiments one is most interested in. The nervous and phlegmatic temperaments are defined less consistently by different writers and all the characters used for distinguishing them are somewhat indefinite. It may also be objected to the conception of the temperaments that there is always considerable artificiality in distinguishing types ; few persons could be fitted exactly into any of these classes.

It is possible that the temperaments are valid descriptions of individual differences even though it is impossible to make them precise. Certainly it would be necessary to modify the classical descriptions of the temperaments in such a way as to make it clear that the same individual may show different temperaments at different times.

It is in abnormal mental conditions, however, that one can see the classical temperaments most clearly distinguishable. Mania and melancholia, for example, are conditions of extreme nervous and extreme phlegmatic temperaments respectively. Similarly, excessive secretion of the thyroid gland produces an extreme excitation of the emotional system which corresponds to some extent with the classical description of the sanguine temperament. It is possible that the classical temperaments are justified as descriptions of different conditions of secretion of the endocrine

gland system.* If this is the case, the further distinction and refinement of the idea of temperamental types may prove to be a task for the physiologist, not for the psychologist.

54. Introversion and Extraversion.—Dr. Jung's distinction of *introvert* and *extravert* is one which rather suggests the distinction of the classical temperaments.[65] But the basis of the distinction is the person's attitude towards the environment, not the character of his emotional responses. The introvert is the person to whom phantasy is more important than reality, who tends to adapt himself by thought construction rather than action, who becomes a philosopher rather than a scientist. The extravert, on the other hand, is more concerned with external reality than with phantasy, adapts himself by feeling rather than thought, acts on the environment instead of phantasying, and tends to have scientific rather than metaphysical interests. The extreme case of introversion is the person suffering from *dementia praecox*, who lives entirely in a world

* It is necessary here to guard myself against the misinterpretation that I suppose that all individual differences are to be explained by reference to the endocrine system. Little is known about the exact relation of human conduct to the activity of these organs, and that little can be richly elaborated by anyone with a fertile imagination. An authoritative medical writer says, for example: "The variations between animals of the same species are due to the ductless glands. Race characteristics are produced and perpetuated by the same factors, and the differences among individuals of the same race likewise depend on endocrine activity; and resemblances in body, mind or psyche, whether the resemblance is that of normality or abnormality, are due to like or similar relations in the activities of the endocrines." [81]. It is necessary when we read a passage like this to remind ourselves that it is prophecy and not a report of the results of scientific research. Its basis in assured knowledge of the relationship between mental phenomena and the activity of the endocrine organs is a very slight one.

of phantasy and has lost contact with the real world; while the extreme case of extraversion is the *hysteric.*

These conceptions of Jung are found to be useful ones, although open to some of the same objections as the classical temperaments. There is the same danger, for example, of exaggerating types. We must admit that the pure introvert and the pure extravert are rare and that often introversion and extraversion are different phases in the life of the same person. If either the introvert or the extravert attitude is exaggerated, this is an abnormality which is due to failure to deal with conflicts. Introversion, for example, may be a reaction against a painful environment in which the introvert is trying in the phantasies of his mind to obtain the pleasures which the environment has denied him. This is, however, clearly a mal-adaptation, for it reduces the energy which he puts into the work of modifying the environment. Effective action and not dreaming is the road by which the adapted character tries to find happiness.

There are certain complications which Jung has found necessary to introduce into his conception of introversion and extraversion. In his earliest work on the subject, Jung said that one might be consciously extraverted but unconsciously introverted, so that traits of character belonging to the two attitudes in the same person could both be explained on the introvert and extravert theory. Later, he has introduced a further complication by subdividing both introvert and extravert types into four sub-classes in which adaptation is found by thinking, feeling, sensation and intuition respectively.[66] These complications, while perhaps making Jung's theory truer to the facts, have made them much more difficult to apply; and his later work on psychological types, in which he assigns historical characters their exact position in his eightfold classification, seems rather fanciful.

CHAPTER VIII.

The Instincts of Nutrition, Fear, Sex, etc.

55. The Instinct of Nutrition.—The instinct of nutrition is the system of dispositions grouped around the impulse to fill the stomach with the food and drink necessary for the maintenance of life. More than any of the other instincts, the instinct of nutrition is dependent on acutely uncomfortable organic sensations (of hunger and thirst) which develop if the end of the instinct is thwarted. The most complex business and other activities have at their root this persistent necessity to satisfy the demands of nutritive impulses. They are, of course, complicated by the intrusion of many other instinctive impulses as well as those of the instinct of nutrition (as, for example, the reproductive instinct and the instinct of pugnacity).

Those of us whose standard of comfort is such that we never know the impulse of hunger or thirst, or only at very moderate strengths and with ample opportunity for their gratification, are probably inclined to under-estimate the strength and urgency of this instinct. If, however, the means of satisfying the instinct of nutrition are not easily attained, its impulses become very strong and assume almost uncontrollable force.* This for example, is the case

* It will not be forgotten that even the very slight threat to the means of subsistence, which was implied by the system of rationing during the war, made the question of food assume an importance in people's minds and conversation which would have appeared incredible to them in the days of plenty.

amongst populations attacked by famine, and in more prosperous countries amongst those members of the population who are forced by the smallness of their remuneration to live somewhere near the level of bare subsistence.

Under conditions of famine, food-seeking impulses become so insistent that it is almost true to say that this instinct when violently aroused takes precedence over all other behaviour tendencies.* The more delicate social adjustments disappear and finally the whole system of social and altruistic tendencies that we call the *instinct of primitive comradeship* seems to suffer a temporary destruction by the imperious demands of the unsatisfied instinct of nutrition. Even sex and parental love are not apparently always able to survive in competition with prolonged hunger.

Even in less extreme forms of excitation of the nutritive instinct there is probably inhibition of other impulses which may have grave social consequences. Insecurity of employment and low wages make the threat of actual hunger a serious one amongst a large part of the population of civilised countries. It is difficult to estimate what loss in culture and the social impulses results from the wide incidence of this threat. Such cultural achievements as art and science have little attraction for those whose efforts only just enable them to obtain the bare necessities of life. When, moreover, there is actual shortage of the food supply, the failure of the social impulses to maintain themselves in

* That this is not quite true is shown by many accounts of heroic self-sacrifice under conditions of prolonged hunger and thirst. The voluntary infliction on themselves of prolonged and severe deprivation of food and drink by ascetics shows also that these impulses can be brought under voluntary control. These facts do not, however, alter the observation that ordinarily the responses of the instinct of nutrition when strongly aroused take precedence of other behaviour tendencies.

competition with the impulses of the instinct of nutrition is shown by the dangerously anti-social attitudes which develop amongst those members of the community upon whom the shortage presses most hardly.

56. The Instinct of Fear.—The emotional and behaviour dispositions called into action by danger (called by Prof. McDougall the *instinct of escape*)[36] constitute a fundamental and easily recognised human instinct. It is not, however, one that has particularly close relationships with social reactions. It will not, therefore, be dealt with here at as great length as its importance in general psychology would justify. The emotion of *fear* is called out in situations which threaten danger, and its accompanying behaviour is *escape* (by withdrawal from the dangerous object or by immobility). The extreme form of fear, known as *terror*, is accompanied by a non-adaptive reaction of complete collapse, with tremors of the body. This is generally only called out when the conditions are such that there is no possible means of escape, but it may also appear when escaping behaviour could have been carried out. There is also a response of disinterested fear, which belongs to the gregarious system of instincts.

The workings of the instinct of fear in animal life are too well-known and its behaviour too universal for its existence ever to have been in dispute. Prof. Watson has shown that the reactions of fear can be elicited from a baby in the following situations: (1) When its support is suddenly removed, (2) when a loud sound is produced, (3) sometimes when a push or slight shake is administered as the child is falling asleep or about to awaken, and (4) occasionally when the blanket is pulled just as the baby is falling asleep.[45] These responses appear to be present at birth, but apparently not fear of the dark. He has also shown that babies of from 124-165 days old did not show fear of

animals even when these came in contact with the babies, nor did they show fear of the large animals in a zoo. Thus, in this instinct, as in the others we have studied, the disposition appears to be innate while the particular objects which stimulate it (with the exception of the simple situations mentioned above) are determined by later experience.

At the same time, although it is probable that we are not innately afraid of any particular objects, there is a certain amount of evidence that those objects which called out the fear reaction in primitive man more easily acquire the property of calling out fear in ourselves than do those objects whose dangerous properties are known only in high states of culture. Thus, as Prof. Graham Wallas points out, we feel fear on great heights even though a hand-rail is saving us from any danger of falling over, while we seem unable to feel fear of the much more dangerous situation of drinking water in a certain kind of foreign hotel.[54] This may, however, be only another illustration of the difficulty with which emotional reactions are called out by objects which are only present in thought (for the bacteria are not actually visible to us).* Similarly, the threat of future hell-fire was probably never a very effective deterrent to bad conduct, for its terrors could only be presented to the imagination and would thus arouse only weak emotional responses as compared with those which would follow from actual perception of danger. For the same reason, it is probable that much judicial punishment at the present time is a much less effective deterrent than is generally supposed.

It has sometimes been held by political theorists that self-interested motives are the prime movers of the conduct of all men, and that fear alone can drive them to socialised conduct. Thus fear is the only method by which a government can hold in check the self-interested conduct of the members of its society. Hobbes, for example, taught this doctrine[82]. He recognised the existence of the social intincts in animals but denied them to mankind (although he seems to have recognised the instinctive character of the

* cf. p. 96.

reproductive system of instincts). With considerable ingenuity, he argued that conduct proceeding apparently from other motives was, in reality, dictated by fear. Pity, for example, he attributed to "the imagination that the like calamity may befall oneself."

"... Again, men have no pleasure (but on the contrary a great deal of grief) in keeping company, where there is no power able to over-awe them all. ... So that in the nature of man, we find three principal causes of quarrel. First, Competition; Secondly, Diffidence; Thirdly, Glory. ... Hereby it is manifest, that during the time men live without a common Power to keep them all in awe, they are in that condition which is called Warre; and such a warre, as is of every man, against every man.

... And thus much for the ill condition, which man by mere Nature is actually placed in; though with a possibility to come out of it, consisting partly in the Passions, partly in his Reason.

The Passions that encline men to Peace, are Fear of Death; Desire of such things as are necessary to commodious living; and a Hope by their Industry to obtain them. And reason suggesteth convenient Articles of Peace, upon which men may be drawn to agreement." [82]

The evidence for the existence of the social instincts and of their influence in determining social behaviour is so strong that this opinion of Hobbes can now be regarded as little more than a curiosity in the history of psychological speculation. Indeed, its only theoretical attraction lies in its dangerous appeal to the minds which find a strange satisfaction in reducing variety to simplicity by maintaining that various things are really only forms of something else. We can, however, attain simplicity only at the cost of inaccurate description if we ignore the plain fact that the driving forces behind human conduct are varied.

It must, of course, be recognised that fear is one motive in socialised conduct, and that this motive is utilised by the method of legal punishment to reinforce the social impulses when these are not sufficient. There is no evidence, how-

ever, that legal punishment plays any more fundamental place in the determination of social behaviour than that of supplementing the social instincts where these fail. It is unlikely that the fear of punishment alone could weld men together into an effective society, unless their loyalties, their disinterested emotions, and their sensitiveness to social approval and disapproval, had already formed a social organisation which merely needed buttressing at points of weakness.

While Hobbes's denial of the existence of the social instincts and his attribution of socialised conduct to fear would no longer be upheld by a serious student of psychology, it seems to be the implicit premiss of much confused popular thinking on the function of legal punishment. If, for example, it is suggested that a man should be reprieved who has killed his wife, the unacknowledged premiss of many of the indignant defenders of justice who oppose this course appears to be that we should all murder our wives if we were not afraid of being hanged.

A certain approximation to the condition of rule by fear is to be found in the martial rule of a subject people by unacknowledged rulers. Observation of such social experiments, however, strengthens the conclusion that this is not the usual mechanism of government. The oppressed people are rebellious and the ends of an effective social organisation are defeated by the absence of appeal to social motives. Experience shows also that such social organisations are unstable. A subject people can be kept from rebellion for a time by fear, but their final reaction against government by fear is a violent one.

57. The Sex Instinct.—The sex instinct is clearly complex and includes all activities connected with mating. Courting, the nesting of birds, and the protection, feeding, etc., of the chosen mate, as well as actual sexual intercourse, are all parts of the behaviour of this instinct. Coyness (with its corresponding masculine behaviour of sexual aggression) and a certain part of the appreciation of beauty must also be included within the system of this instinct.

The sentiment characteristically founded on the sex instinct is the sentiment of sex-love.

The sociological importance of the sex instinct lies in the observation that many of the sustained conflicts which lead to psycho-neurotic conditions take the form of a conflict between the demands of the sex instinct and social prohibitions. When this conflict takes an unusually strong form it is normally because the sex instinct has developed unusual strength. This may be due to a pathological over-excitability of the sex instinct or to its unusual strength through early indulgence. On the other hand, unusual severity of this conflict may be due to the fact that the desires of the sex-instinct have taken a socially prohibited form.*

A striking feature of the craving of the sex instinct is its undoubted dependence on internal secretion. Abnormally small or abnormally great sexual desire may be caused by under or over secretion of certain of the ductless glands. It is possible that in the future it may be found possible to express much of the difference between the forms of sexual desire in terms of glandular secretions.

The sentiment characteristic of the sex instinct is that of love for a person of the opposite sex, and its behaviour is that of sexual union and of the care and protection of the mate chosen. This behaviour of caring for and protecting the mate is continuous with the activity of protecting the offspring, which is attributed to the parental instinct. No

* Whether these unusual forms of sexual desire are innate or acquired is a matter about which there is still dispute. The psycho-analysts have pointed out the environmental conditions of childhood and adolescence which produce abnormalities in the sex-instinct, and generally seem to regard all such abnormalities as having been acquired in these ways. (cf. p. 82.) Ferenczi, however, considers that at least one kind of homosexuality (its rarer form of subject homosexuality) is truly innate.[83]

sharp line can, therefore, be drawn between the behaviour of the sex and parental instincts : a man's activity in getting together a home, for example, clearly belongs to both systems.

For this reason it is convenient for many purposes to group together the sex and parental instincts under the one name of " the reproductive system of instincts," for they are both concerned with different stages of the one biological goal of producing offspring. The sentiments produced in the system of both sex and parental instincts are, moreover, so similar that both are given the one name of " love " ; and the resemblance between the pre-pubertal love of a boy for his mother and his post-pubertal love for his chosen love-object is so close that many of the psycho-analysts speak of him as having transferred the love given to his mother to his new love-object.

A further peculiarity of the sex instinct is the extent to which its impulses undergo transformation. Indeed, the terminology of instinct transformation used in Chap. VI. was mainly given originally to the transformations of the sex instinct. Imperious as are the demands of the sex instinct, its more or less complete suppression is the price which many individuals must pay if they are to live at peace with their social environment. The possibility of its transformation is, therefore, almost a necessity for the harmonious existence of civilised society. So the sex instinct has become the most protean of all the instinctive tendencies, and it is to be recognised as underlying many cultural activities (even those of religion) which seem very far removed from primitive sex activity.

58. The Parental Instinct.—The instinct which leads the parent to care for his or her children is one which is widespread in the animal world. The conditions of its appearing in different animals are, however, very diverse. Some

animals, such as the cuckoo, have no parental behaviour beyond that of depositing eggs in a place adapted to the needs of the young when they hatch out. Amongst other creatures the parental instinct is developed entirely by the male; for example, the male stickleback is stated to guard the nest and remain with the young ones for a short time after they are hatched, while the female has no concern with them at all after she has once laid her eggs. Amongst many kinds of birds the function of sitting on the nest and caring for the young is distributed equally between the male and female. In human beings, however, the instinct takes what is its most usual form amongst the higher animals, in which the mother is mainly concerned with the care of the young, and has the parental feelings most strongly developed (though not exclusively).*

These differences between the forms taken by the parental instinct are of considerable social importance because they are correlated with different degrees of permanence in the marriage bond and with other details of social organisation. There is no reason, for example, why the sexual relationship between parents should be an enduring one unless both are concerned with the bringing up of the young. The sentiment of sex love which provides such an enduring bond amongst human beings and other animals by whom this responsibility is shared is thus partly to be explained biologically by its service to the parental instinct. This is another point of contact between the sex and parental instincts which justifies us in grouping them together within the one system of the reproductive instincts.

The parental instinct has always been admitted as a

* In some primitive communities the father is very little concerned with his children and the man who mainly shares with the mother her care for them (and presumably her feeling for them) is the mother's brother.

source of altruistic modes of behaviour and of disinterested emotions. Hobbes, for example, who denies the social instincts, admits the existence of altruistic behaviour in the parental instinct.[62] Although we must claim the existence of the gregarious instincts as a separate system, and as practically a more important source of altruistic behaviour and feeling even than the parental instinct, it must be admitted that in primitive communities which consist of family groups, it is hard to say where the parental instinct ends and the gregarious instincts begin.

59. Instinct of Curiosity.—The instinct of curiosity is one that we shall have occasion to discuss later when dealing with the psychology of scientific discovery. It is to be found amongst many animals; the goal towards which its behaviour is directed is a clearer perception and knowledge of some unusual object. The emotion associated with this behaviour is *wonder*.

I have, during the war, had the annoying experience of setting up a heliograph in the middle of a large field with cattle grazing a great distance off, and finding myself at the end of a short time the centre of a ring of cattle who have gathered round to look at the unusual object and its operators. Even such timid animals as deer are notoriously curious, but more commonly the response of timid creatures to an unusual object is flight.

The curiosity of animals, however, is easily satisfied. The persistent investigation and analysis of unusual objects and the extension of the emotion of wonder even to common objects which make up the activity of scientific investigation are peculiar to man.

60. The Instinct of Constructiveness.—It must be admitted that we cannot be as confident of the existence of this instinct in human life, as we can of the existence of the major instincts such as escape, pugnacity, and acquisition. Men do certainly construct things, but it is possible that

they do so merely to attain useful ends and not because they have an innate tendency to do so. Mr. Veblen has, indeed, written a book on the instinct of workmanship,[84] but he does not attempt in it to face the problems raised by postulating the existence of a separate instinct, and defines this instinct so vaguely that it would cover nearly every instinctive activity of which man is capable.* If, however, we turn to the evidence from both comparative and general psychology there seems to be sufficient reason for postulating the existence of a separate instinct to make things.

Amongst animals, we see birds making nests and beavers building dams. If a beaver is placed under conditions in captivity where its dam is quite useless, it still goes on building. Constructiveness is found also in the variety of children's play called by Groos *synthetic play*.[77] With toy bricks, cards, and more particulary with modelling clay, children can be happily employed in making things, deriving from this making a satisfaction which is independent of the value to the child of the finished article. This independence is shown, not only by the frequent loss of interest in the article when it is completed, but also by the child's resentment of the interference of the un-understanding adult who interferes in the process of construction. The adult, seeing the child with clumsy and laborious efforts do something which he himself could do without effort, takes its tools from the awkward fingers of the child and completes the task himself. He is greeted, not with the gratitude for his help which he feels he has earned, but with disappointed indignation ; it is the activity itself, not its product, that is the object of such play.

* He states that its functional content is " serviceability for the ends of life, whatever these ends may be."

This satisfaction in constructive activity itself is not, however, found only in the play of children. Any adult person who has made a box or table or even printed a notice by hand will have recognised in himself the same satisfaction, equally independent of the beauty or usefulness of the finished article.* It is not, in fact, necessary in order to get this satisfaction that the end-product of the activity should be a new article ; it is sufficient that a new purposeful arrangement in space of objects already existing should have been made. The same glow of emotion, which may be called the *emotion of constructiveness*, is felt after having laid a carpet as after having made a box. What is necessary is that the activity should have had results in the external world.

Hard labour, which has had such external results, is never so emotionally unsatisfactory as is such drudgery as that of the tread-mill, from which no external results emerge. This difference (in conjunction with the considerations drawn from the observation of constructive activity in animals and the play of children) seems sufficient reason for speaking of an *instinct of constructiveness*, whose end is the making of things or of new combinations of existing things.

This instinct can (like other instincts) undergo transformation, so that, for example, its operations may be on the plane of ideas and not of physical objects. The metaphysician or scientist constructing new theories is carrying out an ideal activity which gives the same sort of satisfaction as physical construction.

* An amusing example of purely constructive behaviour in adult life is to be observed in those individuals who possess a motor vehicle on which they exercise their constructiveness to such an extent as to interfere with their use of it for travelling about. At the present time, the same phenomenon is often to be observed with complicated wireless sets.

A practical sociological problem is raised by the fact that in modern industry much work is emotionally unsatisfactory to the employee, not merely because it is monotonous and uninteresting, but because it is not constructive, and so does not give satisfaction to this instinct. The prisoner on a tread-mill and Sisyphus rolling eternally a stone to the top of a mountain are typical examples of such work. Anyone familiar with the inside working of modern factories will call to mind many tasks not far removed from these in simple unconstructiveness. The worker who spends all day smoothing with one finger the starch which has been put on a collar by another worker provides an example which could be parallelled from other occupations.

61. The Instinct of Laughter.—It matters little whether or not we speak of the tendency to laugh at certain objects or situations as a separate instinct. Certainly it is a behaviour tendency which is innate, although it is not easy to define it (as we can the other instincts) by reference to a goal towards which its behaviour is directed. It seems, moreover, to be a mode of behaviour entirely or almost confined to human beings. It is, therefore, in a somewhat different position from the other instincts, and whether or not we include it in our list of instincts will depend on the exact meaning we attach to the word *instinct.*

There are two main problems in the psychology of mirth. First, at what kinds of thing do we laugh? Secondly, what is laughter itself (*i.e.* what are its nature and functions)? Different answers to both these questions have been given by different thinkers; and, since it is probable that none of these answers gives the whole truth, it will be as well to go over several examples of them and to glean what we can. The difficulty in the first question is not to decide what are the individual situations or objects which are liable to arouse mirth, but to discover what

common property they have which makes them mirth-provoking.

It is possible, of course, that there is no one common element in all ludicrous events and things, but that more than one cause may provoke the same response of laughter. We must not forget that there are at least three classes in the ludicrous—wit, humour, and the comic,*—and it is possible that the mirth-provoking element is not the same in all of these.

62. Spencer's Theory of Laughter.—Spencer was mainly concerned with the nature of the physical behaviour of laughter, not with the objects producing it.[85] Incidentally he mentions that the causes may be acute pleasure, acute pain (as in hysterical or sardonic laughter), or a ludicrous situation. The essence of the latter he supposes to be "that consciousness is unawares transferred from great things to small— . . . there is what we call a *descending* incongruity."

He noted that emotional tension is dissipated by bodily activity and intensified by being denied expression in bodily activity. Anger is relieved by violence, sorrow by weeping. Laughter is, he thinks, similarly a discharge of mental energy through bodily activity, only it is an activity of incoordinated movements of facial muscles and those used in breathing. Its function is to relieve mental tension.

* These three classes of the ludicrous are not sharply distinct, for they pass insensibly into one another. We may take the antics of the clown, or a dignified man running after his hat as types of the comic. A ludicrous incompatibility with ordinary experience is an essential element in the comic. The word "wit" is used of a ludicrous manipulation of words; the pun is one variety of the witticism. "Humour" is less easy to distinguish. Like wit, humour may be conveyed by words; but in humour the ludicrous element belongs more to the meaning and less to the form of the words than in wit.

The particular movements of muscles we call " laughter " have no further significance than the fact that these are convenient ones to serve as an outlet for mental energy otherwise not used in bodily activity.

63. Bergson's Theory of Laughter.—Professor Bergson takes a man slipping on a piece of banana peel as his first type of the kind of thing at which we laugh.[86] We laugh at this man because, in falling under the action of gravity, he is behaving like inanimate matter instead of carrying out the purposive behaviour characteristic of a living being. The function of the laughter is to punish mechanical rigidity or clumsiness of behaviour. With great ingenuity, Professor Bergson extends this explanation to all the variety of things at which we laugh. In the contortions of clowns, the rigid gestures of an inferior orator, and even in witticisms, he traces the same mechanical rigidity as the element which determines our laughter.* It must be admitted that the explanation of mechanical behaviour as the element which causes laughter becomes rather far-fetched when we consider the more complex causes of laughter. With sufficient ingenuity, however, it does seem possible to fit a very large number of the causes of laughter into this formula, if we see sufficiently good reasons for wishing to do so.

Bergson's explanation of the *function* of laughter, however, breaks down completely when we extend it to these cases. Undoubtedly the theory that laughter is a form of social chastisement is sometimes true. Certain kinds of awkwardness in social relationships are laughed at, and

* It is not a fair criticism to say that we do not laugh when we see a man fall over the edge of a cliff. Bergson recognises that mechanical behaviour is not the only condition necessary to evoke a response of laughter. It is also necessary that the situation should be one which does not call out any very strong emotion.

laughter stops them from being repeated. But it is equally true that laughter is sometimes an expression of social approbation and not of disapproval. The raconteur, the clown, and the wit are encouraged by the laughter of their audience and deliberately try to provoke it. One may follow Bergson in stressing the social side of the function of laughter. This side is shown by its extraordinary contagiousness; we very quickly laugh when other people laugh, while to laugh when we are alone is unusual enough to be almost a mental abnormality. But on its social side we must distinguish between the laughter of derision and the laughter of approval. Laughter may have the function of conveying to the individual laughed at either social disapproval or approval.

64. Theory of Professor McDougall.—Professor McDougall[26] puts forward as his contribution to the theory of the function of laughter one which is suggested by the physiological theory of the emotions. Laughter has both the psychological effect of breaking up trains of thought and sustained activities, and the physiological effect of stimulating the respiration and the circulation, raising the blood pressure, and sending a fuller stream of blood to the head and brain. In other words, it produces the physiological condition characteristic of joy, and by direct action on the bodily system gives a pleasurable tone to the laughing person's mental condition.

The things at which we laugh are the slight misfortunes of other people, which, through the sympathetic pain they induce, would otherwise have a continually depressing influence on our mental life. These occurrences which, apart from laughter, would have been mildly displeasing and depressing, become occasions of laughter, and this laughter breaks up the depressing train of thought which has been started, and produces pleasurable affect by direct

action on the physiological system. In this form of laughter we do not laugh because we are pleased, we are pleased because we laugh.*

While recognising that this theory provides a valuable explanation of the very common form of laughter produced by minor pains, there seems no reason for restricting this source of laughter to *sympathetic* pains. Minor pains of all kinds can produce laughter, and the laughter saves us from their depressing effects. Certainly this is not a complete theory of laughter, for all small pains even of other persons are not ludicrous. It is much funnier to see a man sit down on a pin than to see him prick his finger, although the pains may be equal.

65. Freud's Theory of Wit.—Professor Freud has no new contribution to make to the question of the function of laughter,[91] but regards it as an expression of pleasure. His interest is in the problem of the origin of that pleasure. He notices in wit the tendency to compression—to make one word convey two meanings, or to convey a criticism or an indecent suggestion in words which appear on the surface to be merely harmless statements of fact. This tendency to compression he calls *economy*. Some forms of wit have this economic form of expression, but serve no ulterior end; these he calls "harmless wit." He takes as an example of harmless wit a comment of the *Fliegende Blätter* on the saying, "Never to be born would be best for mortal man," that "hardly one man in a thousand has this luck." Harmless wit rouses laughter merely by its technique. It has (if we may borrow the terms from our discussion of art)† the "form" of wit without "content."

* Prof. McDougall admits, however, Spencer's discharge of surplus nervous energy as a special form of laughter, found in nervous laughter and in the laughter of pure high spirits.

† cf. p. 338.

A more common kind of wit is one which Freud calls " tendency wit," in which the witty form of expression is used to gratify a repressed tendency, sexual or hostile. The indecent witticism, for example, is an expression of a sexual idea which the mechanism of repression would not have allowed expression in a more open form. We may take as an example of a witticism with hostile tendency Freud's story of the comment of a guest at a party at which he was expected to admire the portraits of the two unscrupulous but successful business men who were his hosts. He gazed at the blank space of wall between the two pictures and asked : " But where is the Saviour ? " The hostile idea conveyed by this criticism : " You are two thieves " would obviously not have been allowed expression in direct form. He sums up his theory of wit in the statement that the pleasure of wit originates from an *economy of expenditure in inhibition.*

Freud also extends his theory of economy to humour and to the comic. The pleasure from these is stated to be due to an *economy of expenditure in feeling* and *in thought* respectively. These explanations, however, do not seem to be particularly illuminating, and perhaps are motivated by the desire (so common in writers on this subject) to bring all forms of the ludicrous under similar formulae.

In Freud's theory, we may doubt whether *harmless wit* is very important. In any case, pleasure in *harmless wit* appears to be a secondary pleasure derived from the fact that the form is the same as that of the *tendency wit* which gives gratification to repressed tendencies. The importance of Freud's contribution lies in the fact that he draws attention to the importance of the gratification of these repressed hostile and sexual tendencies in the pleasure derived from wit. Repressed tendencies probably play a part in other forms of the ludicrous. Parts of the body about which

speech is conventionally forbidden play a large part in comic performances, and even add a quota to the ludicrous element in minor accidents.*

66. Conclusions.—We may distinguish five kinds of laughter.

(1) The laughter of pure high spirits and of relief. Its function is probably (as stated by Spencer) to provide an outlet for surplus nervous energy.

(2) The laughter of derision. Its function is to punish certain kinds of behaviour in our fellow creatures, perhaps always (as stated by Bergson) mechanical or clumsy behaviour.

(3) The laughter of approbation. The function of this laughter is to encourage certain kinds of behaviour in the person producing it.

(4) Laughter at minor pains. The function of this is to produce a pleasurable instead of a depressing state of feeling.

(5) Laughter at certain indirect expressions of repressed tendencies. Such laughter is probably of the same physiological origin as that of high spirits—*i.e.* it serves as an outlet for superfluous nervous energy.

There are, of course, no absolutely sharp divisions between these kinds of laughter. The laughter of approbation obviously originates in the fact that laughter is a pleasure-giving phenomenon. People laugh at a clown in order to make him continue laughter-producing behaviour.

* Those who visit cinema performances must have noticed that if a fire-arm is discharged in a comedy film, the odds are very heavily in favour of the bullet being shown as striking someone in the buttocks, and that this incident is greeted by roars of laughter incomparably greater than would have been the case if the injury had been in any other part of the body. We may also ask why it is more ludicrous if a man sits down on his hat than if he crushes it by putting his foot on it.

The reason why his behaviour is laughter-producing is either because it mimics the clumsiness which would produce the laughter of derision if it were not carried out deliberately, or because it mimics one of the minor mishaps against which laughter would be used as protection if they were actual occurrences and not mere stage representations.*

* The above was written before I had read Mr. Greig's illuminating and entertaining work on laughter and comedy.[161] His theory of laughter is summed up as follows: "... the laugh is a response within the uncertain and ill-coordinated behaviour of the instinct of love. It appears to arise within such behaviour when an obstruction of some kind is first encountered, and then, no matter how, suddenly overcome; it marks the escape of psycho-physical energy mobilized to meet the obstruction, but not actually required for that purpose, and therefore for the moment surplus." This theory, also, is open to the objection that the author tries to fit all forms of laughter under one formula—a formula originally devised to account for one kind of laughter which it fits well, but which needs progressively more ingenuity as it is made to account for laughter of a kind more remote from that for which the theory was originally designed. Mr. Greig seems to have been imperfectly acquainted with Professor McDougall's important contribution to the subject, or he could hardly have assumed that laughter is always an expression of pleasure. Even for the kind of laugh which is an expression of relief when an obstruction is encountered and then overcome, there seems insufficient reason for saying that this obstruction is always to the behaviour of love, and that laughter may not equally well be the expression of relief when an obstruction to the behaviour of some other instinct is overcome.

CHAPTER IX.

The Instincts of Acquisition and of Pugnacity.

67. The Instinct of Acquisition.—It has been generally noted that the dominant motive behind conduct in modern society is the impulse to acquire wealth or its equivalent in money and to retain it. This fact has sometimes been regarded as one to be deplored and remedied,[67] sometimes as an inevitable part of human nature which the economist or sociologist must take account of without making futile attempts to alter. It becomes, therefore, important for the psychologist who wishes to make his science contributory to the solving of social problems to attempt to discover how far this acquiring and retaining behaviour is rooted in an "acquisitive instinct," and how deep-rooted such an instinct is.

This enquiry was attempted by Rivers, on whose conception of the instinct of acquisition the present account is largely based.[68] The behaviour generally covered by the term *the instinct of acquisition* has been the behaviour of acquiring and hoarding things. These two modes of behaviour, acquiring and hoarding, are so intimately bound together that we may conveniently follow the ordinary custom of treating them together in our consideration of the instinct of acquisition. Our data for the enquiry must be drawn from the study of acquisitive and hoarding behaviour in animals, from the development of this behaviour in childhood, from its crude and uncontrolled manifestations in mental disease, and from the comparative study of its occurrence in normal adults.

Amongst animals we find hoarding, primarily of food for future consumption. Examples are to be found in the hoarding of honey by the bee and the burying of bones by the dog. The biological purpose of these examples of hoarding is obviously the provision of food for future use, but it should be noted that bees store honey in quantities beyond their needs for the winter, and dogs bury bones when there is no shortage in the supply of them. These facts justify us in seeing behind such conduct a specific instinct of acquisition and not merely the activity of the instinct of nutrition conditioned by seasonal shortage of the food supply. This conclusion is more strongly borne out by such acquiring of useless objects as is reported by the observers of the conduct of jackdaws and magpies. The acquirement of territory by male birds before the nesting season is also an example of the operation of the instinct of acquisition. The particular interest of the instinct as displayed by bees is its apparently complete organisation in the system of the gregarious instincts. In this respect it is in sharp opposition to the acquisition of territory by birds, which resembles more closely the individual acquisition of European human society.

68. The Territorial Instinct in Birds.—Since the acquisition of land is one of the persistent manifestations of the instinct of acquisition in man, it is important to study a case of this acquisition at a lower stage of evolution. Mr. H. E. Howard has published a valuable book showing the development in the males of various species of birds of an innate disposition to acquire a territory and to fight any male of the same species who ventures to intrude in it.[8] The song seems to serve the purpose of warning other male birds that the territory has been acquired and of letting the female know that a male bird is there under the conditions necessary for pairing.

This territory sometimes extends (like that of the cuckoo) to several fields, while the Guillemot requires only a few square feet of rock. The territorial acquisition serves, in ways differing with different species, the ends of the instincts of reproduction. For

example, such birds as the chaffinch require a speedy supply of food drawn from a small area so that the old birds and the young may be adequately fed without any danger of so long a desertion of the nest as might cause destruction of the young by cold.

A point of particular interest in these observations is the alternation in the male bird between behaviour in which he is gregarious, and behaviour in which he insists on this isolation. During the winter he moves about as a member of a small or large group, showing no hostility towards other males, and no particular interest in females. Then, at the beginning of the breeding season, he leaves the flock and establishes himself on an area of ground, on which he tolerates no intrusion either by other individual males or by the remainder of the flock. At the same time, he may for intervals desert his own territory and repair to the neutral ground occupied by the rest of the flock, and show his old friendly attitude towards other members of it. The situation calling out the pugnacious attitude is, therefore, the standing in his own territory and not merely the development of the sexual organs which takes place at this time.

It should be noted that the territorial instinct in birds (although it gives rise to behaviour opposed to that of the gregarious instinct), belongs, not to the system of the self-preservation instincts, but to that of the reproductive instincts. It is probably also correct to regard the instinct of acquisition in man as normally belonging to this system rather than to the system of the self-preservation instincts; and we may suppose that its organisation in the latter system is always an abnormality. The normal springs of a man's acquisitive behaviour are the needs of his wife and family, and purely self-regarding acquisition is a secondary manifestation of the instinct.

69. The Instinct of Acquisition in Man.—Acquisition and hoarding start early amongst children. The psychoanalysts state that the earliest objects collected are excreta and that, as children are discouraged from this, they collect harmless but generally useless objects such as stamps, cherry-stones, beech nuts, etc. Later, their instinct is satisfied by wealth of all kinds (but particularly by the accumulation of money), although they may carry over into adult life the comparatively useless acquisition of childhood and collect china or stamps.

The pansexualists state that all these later objects are substitutes for the excreta of early childhood, and even that the gold desired in later life is an excreta-substitute. One may doubt whether this statement means very much. If the fact of collection of excreta in early childhood is universal, we have here an incident in the development of the instinct of acquisition, which is satisfied first with this object, later with the useless collections of childhood, and finally with real wealth or with money. This is an interesting fact in the psychology of mental development, but it gives no ground for the statement that these later objects are of the nature of substitutes for excreta. It is more reasonable, from the biological point of view, to regard wealth (which stands for food) as the primary object of acquisition, and the earlier ones as substitutes for it, the acquisition of which bears to the developed instinct of acquisition the same relation as that of early play activities to other instincts.

The forming of useless collections is found as an accompaniment of certain forms of insanity (e.g. *dementia praecox*). Excreta also may be collected and treated as objects of value, being given, for example, as a present. In these phenomena the instinct of acquisition is showing the regression to an infantile form characteristic of the progress of dementia.

On the border line between the sane and insane manifestations of this instinct we find the miser. He collects the same object as normal persons—wealth in the form of money—but his acquisition has lost its relation to the primitive needs of food, etc., and of efficient reproduction, for it is relatively ungraded, and his real biological needs may suffer in the pursuit of it. There seems to be good reason for regarding the miser's activity of the instinct of acquisition as a regression to the irrational collecting of the child, and this regression is stated to be associated with particular strength in early years of the dirt-collecting tendency (anal-erotism) which has not satisfactorily been outgrown.

Similar to the behaviour of the miser (and probably also similar in origin) is the hoarding of trivial objects found as an element in the character of otherwise normal persons. Persons of undoubted sanity are frequently met with whose houses are always in a state of extreme

untidiness because their owners seem incapable of parting with any object, however trivial, which has once come into their possession. Old theatre programmes, notices of meetings, empty boxes, and invitations are retained with a useless persistence which bears witness to the strength of the instinct of acquisition even when its activities have been deflected from their primary biological end.

It is probable that the strength of acquisition differs widely amongst different persons even in modern civilised society, and that the successful business man is one in whom the instinct of acquisition is relatively strong and persistent in its driving force even after the primary biological needs for food, shelter, etc. have been satisfied. Men whose mental energy is mainly directed through the channels of other instincts (as scientists, explorers, religious persons, etc.), and those whose instinct of acquisition is satisfied in other ways than the acquiring of wealth (as collectors) show relatively little tendency to acquire wealth further than is required for their needs.

It is natural, of course, that the acquisitive tendency should be strongly exercised in those living near to the subsistence level ; but the strength of the acquisitive instinct itself can only be judged by observing this tendency after primary biological needs have been satisfied. While it is true that the acquisitive tendency still persists, it persists with widely differing strengths in different individuals and may be more or less masked by other instincts. It is probable that economists have often erred in their estimation of human motivation by taking the successful business man as the representative individual in this respect, and attributing to other persons the same strength of acquisitiveness with less ability to satisfy it ; whereas it seems more probable that the successful business man has as a dominant element in his character the acquisitiveness which is comparatively subordinate in other characters.

Rivers has pointed out that there are races of men who have very little of the emotions and behaviour belonging to private ownership.[68 69] Amongst some of the peoples of Melanesia there is no private ownership except of such objects (*e.g.* weapons) as a man makes for himself. Canoes are possessed by a family group, and land is generally held in the same way. About such communal possessions there appears to be no quarrelling.

Rivers tells an amusing story of how a party of Melanesians applied his own method of investigation to himself by closely questioning him as to what he would do if he were given a pound. When they discovered that he would not divide it with his relatives, they laughed heartily at a line of conduct so different from their own customs.

Dr. Malinowski[191] says, however, that it is a mistake to suppose that there is not private ownership of such objects as canoes amongst the Melanesians, although it is an ownership more limited in its privileges than ownership amongst ourselves and more hedged in by definite obligations to other members of the social group. He denies that the Melanesian attitude towards property is correctly described as simple communism.

There seems, then, to be sufficient evidence from the study both of animal and of human behaviour for postulating an instinct of acquisition. Individual acquisition is probably normally organised under the system of the instincts of reproduction, and the abnormality of the conduct of the miser is not only (as Rivers states) that the instinct is ungraded and has lost its relationship to primary biological needs, but also that it has lost its connection with the reproductive instincts and has become entirely organised under the system of the instincts of self-preservation. In communal societies we find a similar organisation of the instinct in the system of the gregarious instincts as is found in bees.

The practical problem for those dissatisfied with the condition of society resulting from the present dominance of individual acquisitive tendencies is so to modify existing social institutions that acquisitive modes of behaviour

may become socialised (*i.e.* organised within the system of the gregarious instincts). The existence amongst certain human societies of such socialisation of the instinct of acquisition shows that there is no psychological ground for regarding such an attempt as of prohibitive difficulty (although, of course, there may be serious practical economic difficulties).

70. Is there an Instinct of Pugnacity?—It is not doubted by anyone that pugnacious behaviour is a widespread phenomenon amongst human beings. What may be doubted is whether there is any real instinct of pugnacity or whether such behaviour is always undertaken in the service of other instincts. Have men any innate tendency to fight, or do they merely fight in order to gain property or to dominate other persons? The case against the instinct of pugnacity has been put forward on ethnological grounds by Mr. Perry.[19] While his facts do not seem to warrant the denial of the existence of an instinct of pugnacity, they show clearly that pugnacious behaviour between social groups is a much less constant phenomenon in the history of civilisation than is often assumed by psychologists.

He points out that food-gathering communities in the primordial state were peaceful and that cruelty and violence were rare. Warfare was an acquired habit which resulted from the circumstances of the development and decay of the archaic civilisation. The peoples of Egypt, Babylonia, etc., underwent a progressive education in violent modes of behaviour, which began with the hostility between the two sides of the dual organisation. Militias became standing armies, and human sacrifice developed. He also points out that people in the food-gathering stage at the present time are peaceful, and that the education of a peaceful people in violent modes of behaviour has taken place recently in Fiji and elsewhere.

These facts do not seem to give sufficient ground for denying the existence of an instinct of pugnacity. To establish this conclusion it would be necessary to prove that quarrelling was absolutely absent from primitive peoples, a fact which is certainly not proved, and which is rendered highly improbable by the existence of pugnacious behaviour amongst the animals. Moreover, the acquirement of warlike modes of behaviour by primitive peoples show that there is an innate foundation on which this behaviour is built. The ready acquirement of a habit is good evidence for the existence of an instinct. These facts do, however, show the utter groundlessness of the popular theory that warfare is an ineradicable mode of behaviour. Although, like all other developed modes of behaviour, it is instinctive in its basis, it has been acquired in the course of the development of civilisation, and it may be discarded even though its instinctive foundation remains.

71. Fighting amongst Animals.—Fighting-play is an activity which is found among the young of a large number of animals. The most usual kind of activity amongst puppies is playful fighting, which occasionally degenerates into struggles of a more serious kind. Groos has pointed out that such playful contests are found amongst animals which are not aggressive towards members of other species, as well as amongst the beasts of prey.[70] If we accept his theory that play is rehearsal for the serious activities of adult life, it seems to follow that such play is essentially a preparation for adult fighting between animals of the same species and not merely for aggression against other species.

Such fighting between adults of the same species is a phenomenon widespread in the animal kingdom. It has been very generally supposed to be connected with sexual activities. Some writers have supposed that the subjuga-

tion of the female by the male primitively takes the form of a contest, and that courting is a later refined substitute for the crude physical combat.[71]

A form of contest which has been more generally regarded as of importance, however, is the struggle between males of the same species for the possession of the female. These struggles are common about the mating season ; the female is supposed to give herself to the victorious male. The prevalence amongst some male animals of fighting weapons not found in the female (*e.g.* stags, cockerels, etc.) suggests that these kinds of fighting may have played an important part in the evolution of some species. It may be doubted whether the courting combat is ever of much importance, but there is no doubt that the struggle for the female, as described by Groos and Darwin, is one of the fundamental expressions of the instinct of pugnacity amongst animals. The existence of similar weapons in both sexes of other species, however, shows that this is not the whole truth about pugnacity in animals.

There are, however, other kinds of fighting which clearly possess no sexual significance. As an instance, we may take the combats between cows for leadership, described by M. D. Baud-Bovy.[72] This struggle takes place each year in the pasturages of Thion (or Sion) towards the end of June or in the first days of July, when the herds arrive on the high pasturages. It has great practical importance, for the victorious animal is proclaimed (not only by the herdsmen, but in some sort by the cows themselves) as "queen." The queen, whose functions last during a whole year, has the privilege of walking at the head of the herds, and this privilege extends even to the herd to which she belongs. This herd goes before the others, and so gets the best of the pasturage.

On July 2nd, 1902, M. Baud-Bovy saw the fight at Thion. "From all sides," he writes, "appear the herds; the cows, with extended muzzles and tossing heads, emit violent and unwonted bellowings. In order to avoid too serious injuries, the horns of the cows are slightly blunted. . . . Soon rapid engagements have taken place; young beasts who had over-estimated their strength, after some unfortunate encounters, have retreated humiliated to the ranks." One magnificent cow overcame three adversaries in turn. After each victory, she bellowed until some other hitherto victorious cow answered her challenge. These were also defeated by her or retired without fighting as if sure of defeat. Finally, she engaged the queen of the previous year, and threw her on to her knees. After showing a little more resistance the old queen was driven from the field and the victor was left alone, proudly throwing out anew her challenge.

Mr. Howard maintains, moreover, that fights amongst birds are not dependent on the presence of the female, but are normally for territory.[8] They are practically absent when the birds are together in the gregarious condition in the flock. A fight takes place when another bird settles on territory which has been appropriated already, and the fight is abandoned when he is driven off. Generally a male is fighting a male, but a male and female together may fight another pair, or a male and female together may attack a single female, or even a single female may be seen to attack another female. Sometimes the male will engage one by one the individuals of a flock which has landed on his territory. Rooks, who live in a community, are reported to fight for territory between communities as a whole. Warfare often occurs between different species brought into competition by requiring the same nesting conditions: for example, the raven and the peregrine or buzzard; the moor-hen and lapwing, thrush, or starling; magpies and wood pigeons, etc.

72. The Instinct of Pugnacity amongst Children.—Professor Bovet has had an opportunity of bringing together a large number of facts connected with pugnacity amongst children.[53] While it is true that children sometimes fight in order to assume possession of some object or to do injury to some person, it remains true that the great majority of children of nine to twelve years of age pick a

quarrel for the pleasure it brings them; in other words fighting is play for them.*

These contests grade into others of a more serious nature which, although very often entered into for the enjoyment the activity of fighting itself brings, end as serious fights in which real injury is done. A desire for domination appears to be at the root of these children's fights. Bovet points out that teasing is an activity of children which is obviously closely related to the fighting instinct. Children, he says, do not fight because they are teased; they tease in order that they may fight. Sometimes, however, teasing, instead of leading up to a contest, is substituted for it. This and other transformations of primitive pugnacious behaviour tend to take place when an improvement in manners causes the child to look unfavourably on actual physical fighting.

73. Fighting amongst Human Adults.—The close association between fighting and sex observed amongst the animals is found also amongst human beings. Domination of the female by violent behaviour has sometimes been suggested as the primitive form of the marriage ceremony, but the researches of Professor Westermarck seem to have placed beyond doubt the fact that the so-called "marriage by capture" has never been more than an unusual development from peculiar environmental conditions.[78] Fighting between men for the possession of women has, however, been more common. The tournaments of the middle ages took place in the presence of women, and often the prize was the possession of a woman. The more highly modified

* Groos states that fighting play amongst children appears much less early than in the young of other animals, and is rarely found before three years of age.[77] It should be noted, however, with respect to Bovet's observations on teasing, that teasing certainly appears earlier than this.

forms of pugnacious behaviour to be found in present-day competitive games are in a certain measure (although certainly not entirely) displays for the benefit of a feminine audience.*

Such contests have played an important part in the marriage customs of some peoples. Prof. Westermarck gives examples from Paraguay, California, Australia, and Papua. He quotes the following passage of Hearne about the Northern Indians: "It has ever been the custom among these people for the men to wrestle for any women to whom they are attached; and, of course, the strongest party always carries off the prize. A weak man, unless he be a good hunter and well-beloved, is seldom permitted to keep a wife that a stronger man thinks worth his notice. . . . This custom prevails throughout all their tribes, and causes a great spirit of emulation among their youth, who are upon all occasions, from their childhood, trying their strength and skill in wrestling."

Actual physical struggles without sexual significance are, of course, also found amongst men. Men may quarrel about any object they value as well as about the love of a woman (or merely for the satisfaction of their self-assertion). Except for the highly conventionalised combat of the duel, however, these disputes do not generally lead to actual physical fighting amongst civilised men except under conditions of regression to primitive modes of behaviour. Such regression takes place sometimes under the influence

* Boxing contests, from which women are generally absent, form only an apparent exception. Absent from the actual contest, women form an important part of the audience who are virtually spectators by reading newspaper accounts of boxing matches. A psychologist cannot fail to understand the significance of the emotional response of a large number of women to a successful heavy-weight boxing champion.

of alcohol, and drunken men often fight readily. A similar regression appears to take place after severe hardship, such as occurs during an exploration. Without any stimulus from feminine onlookers explorers appear to quarrel amongst themselves about trivial things in a manner in remarkable contrast with the suavity of their manners under ordinary conditions. A similar quarrelsomeness has been observed in experiments on the effects of deprivation of oxygen. This is a matter which requires further research.

74. Transformations of the Instinct of Pugnacity amongst Adults.—Pugnacious behaviour in its most primitive form of mere individual quarrelsomeness is obviously a disposition socially harmful. Success in carrying on life under conditions of complicated inter-dependence between individuals necessitates some other method of settling individual disputes than resort to violence, and some other satisfaction of man's innate disposition to pugnacity than by doing physical injury to his fellows. Resort to the law-courts for the settling of disputes is one way by which primitive pugnacity is rendered unnecessary, and, where the provision of this alternative method of obtaining satisfaction is sufficient to stop men from resorting to physical violence, the law also steps in to punish regression to the cruder primitive way of settling disputes.

We have seen that Hobbes imagined that the primitive condition of mankind was a war of every man against every other man, and that a stable social organisation was only obtained by the suppression of this condition by legislation.* While this conception of a primitive anarchical war is certainly a fiction, it remains true that a stable social condition can only result from the suppression, canalisation, and transformation of individual aggressive tendencies.

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* cf. p. 118.

This is well illustrated by the total collapse of a social group which may result from the outbreak of individual pugnacious tendencies from their accustomed suppressions. The following example of such a collapse is given by the author of *Arabia Deserta*.

"It is a proverb here, that a man will slay the son of his mother for an old shoe-leather. The breach was this : some children disputed for an apple, the strife increased, men rose from the clay benches, men came forth from the thresholds, and drawing to their partialities, every hot head cried down, despised and threatened his contraries. Men armed themselves, and the elders' reverence was weak to appease this strong sedition. Barbarous shoutings were answered with bloody words; they ran apart from both sides to their quarters, and as every man entered his cottage there he shut himself in and fortified the door; then he mounted upon his clay roof to shoot against the next hostile houses. None of them durst come forth more in all that year, for their adversaries would let shots fly at him from their house terraces. Upon both sides they saw the harvest ripen and stand out so long, without reapers, that all their bread was lost; at length also their pleasant autumn fruits, hanging ruddy in the orchards, rotted before their eyes. There fell eight beleaguered champions, in eight months, beside some it was said who perished with hunger. In this time many, not partisans, had abandoned Maan ; the most went to settle themselves in the Hauran : all the small traders removed to Shemmîa.—These Eve's sons were lost for the apple at Maan ! "

But the matter does not end here. An instinct denied its primitive outlet has at its disposal a fund of energy which must be used in another direction if the individual is to attain inner harmony. The instinct of pugnacity may be given an outlet in competitive games, in arduous struggles against the forces of nature such as are found in exploration, in mountaineering, or in a struggle against moral evil. The fighting instinct may provide the energy behind the militant enthusiasm of an ardent pacifist; and the lust of intellectual battle may be seen in the eyes of a sociologist hotly contesting against the theory that there is an instinct of pugnacity.

What we have called the instinct of pugnacity is almost certainly complex, and the variety of its transformations in the different kinds of sport is probably partly accounted for by the different elements in its constitution which different sports satisfy. There is, for example, a desire for danger (or adventure) in the composition of this instinct. During the war, this desire often led men to expose themselves unecessarily when they were wearied of the inactivity of the trenches. Mountaineering is probably largely a deflection of this element in the instinct of pugnacity (although certainly the mountain may also be represented as an enemy). Toboganning and ski-ing probably owe their attraction entirely to the satisfaction they give to this craving for the stimulation given by the exposure of oneself to danger. Sailing, like mountaineering, is probably complex in its appeal. The wind is an enemy against whom one is pitting one's wits and skill.

75. War and the Instinct of Pugnacity.—While individual physical pugnacity is undesirable in all social organisations, collective pugnacity is often, from the point of view of a single social group, an activity valued by the group, so the disposition leading to it receives social approval and is cherished. The spirit of collective pugnacity is kept alive by team games, or by military manoeuvres, and the warrior is an esteemed member of the social group.

It will hardly be doubted that in primitive warfare with hand-to-hand fighting the combatants are exercising their instincts of pugnacity, and that by fighting they obtain a mental satisfaction whose absence in times of peace is shown by restless discontent and desire for active service. But in modern warfare the conditions have so changed from those of the primitive battle that, for effective soldiering, the instinct of pugnacity in the individual soldier must already have undergone some transformation. He gets a fierce primitive satisfaction from occasional hand-to-hand struggles, but more often he is engaged in some manipulative activity which has no immediate connection with killing the enemy, or in long periods of simple inactivity.

It is sometimes said by those who wish to oppose any attempt to remove war altogether as an outlet of pugnacity that such effort must be futile because "human nature cannot change." This momentous proposition appears to mean that any activity which is instinctive at bottom must continue in its primitive form. If this were true the law-courts would be an institution no less futile than the League of Nations. Both, in fact, are valuable institutions because human instincts can undergo large modification from their primitive ends and forms of expression. The suppression of primitive individual pugnacity sets free a large amount of energy which can be usefully employed in other directions.

Professor Bovet has shown how the sublimated instinct of pugnacity was put into constructive religious work by Ignatius Loyola and by William Booth.[53] Those who deny that the impulses of collective pugnacity might be similarly controlled and given to socially valuable struggles against the forces of moral evil and the hostile elements in our physical environment would do well to consider how much transformation the instinct of pugnacity has already undergone before it is effective in modern warfare. Throwing bombs from aeroplanes, performing the mathematical calculations necessary in modern gunnery, or standing for weeks or months inactive in a trench are kinds of behaviour far removed from primitive pugnacity. Psychology gives us no reason for supposing that the impulses of pugnacity could not undergo the further transformation necessary to render them forces of social value in a pacific state. It is not, however, the destruction of these impulses but their transformation that must be immediately aimed at.

The practice of head-hunting amongst the Papuans was an important element in their culture, for manhood was attained by the youth who had brought back the head of a member of a hostile village. When he had done this he had the status of manhood and was able to marry. Mere suppression of head-hunting by the authority of their British rulers was found to lead to a degeneration of the villages, for none of their youths attained manhood, and they could produce no socially recognised certificate of courage which would lead their women to love them. This difficulty was got over by the institution of bringing back a wild boar's head. This required from the young men no less strength, skill, and courage than the old custom of obtaining a human head, and its adoption as the condition for initiation into the state of manhood was no less successful than the older one, and no less satisfactory to the women who

needed evidence of manhood and courage. So social degeneration was prevented by this simple expedient of making wild-boar hunting a " cultural substitute " for head-hunting. It should not prove an insoluble problem for sociology to devise a " cultural substitute " for the practice amongst civilised races of requiring their young men to prove their manhood by the method (equally wasteful in social values) of killing the young men of other civilised nations with bullets and high explosives.

Although war between nations may appear to be advantageous from the narrower point of view of a single national group,* there can be no doubt that, from the wider point of view of the race as a whole, it is an evil too serious to be tolerated. By an inversion of ordinary natural selection it takes its victims from among the most fit, its damage to life and wealth are such that it is doubtful whether total destruction of Western civilisation will not result from a continuance of the appeal to arms for settling international disputes. This being the case, it is an urgent problem for the psychologist to discover how best to utilise the impulses of the instinct of pugnacity in a way less destructive than the large scale slaughtering of members of other nations.

There is, in fact, no lack of ways of employing these impulses in a manner beneficial to society as a whole. Ignorance, disease, and vice are enemies demanding all the self-sacrifice, courage and determined pugnacity, which are at present poured out in the socially useless activity of soaking the earth in blood. A German opponent of militarism wrote truly in 1913 : " Every individual who acquires the soldier's mind in his youth is a warrior lost for the struggles of the spirit." [80]

* Even this is more than doubtful. The economic and biological loss of the victors in the late war (even apart from the load of mental and physical suffering which it entailed) far outweighed their material gains.

76. Cruel Behaviour.—The tendency to inflict pain on other creatures has not generally been given the rank of a separate instinct. It is, however, an innate tendency which is observed amongst children, and is later largely suppressed by the force of social disapproval and by the development of the sympathetic emotions. Playful infliction of suffering is found amongst certain carnivorous animals (such as the domestic cat) as well as amongst children, and (within limits defined by conventions) in the cruel sports of adults. Such sports as hunting, bull-fighting, bear-baiting may be classified as "cruel sports," since they have in different degrees the infliction of suffering on an animal as a central event. While there are undoubtedly other elements making up the attraction of these sports,* the victimisation of the animal is clearly an essential part, as is shown by the relatively unsatisfactory appeal of the French bull-fight (in which there are merely displays of dexterity not followed by the death of the bull), or of hunting a drag.

Regression to pleasure in mere cruelty is found in the perversion called "sadism," and the pansexualists call the element of primitive cruelty in the normal character the "sadistic tendency." Sadism, however, as generally understood, is sexual pleasure derived from the infliction of pain. While it is probably true that this tendency is a primitive element in the composition of the sex instinct, as maintained by Professor Freud, it is doubtful at present whether all cruelty must be referred to this source. There are two instincts in which the willingness to inflict pain is serviceable —the hunting and the fighting instincts—and it is at least

* As, for example, the satisfaction they give to what we may call the *hunting instinct*. It will generally be agreed that there is such an instinct, and I see no reason for identifying it, as does Professor McDougall, with the *instinct of nutrition*.

possible that the cruelty of the hunting field or boxing ring is the expression of these instincts, and that it is totally unconnected with the sex instinct. Prof. Bovet seems to regard cruelty as a by-product of the objectification of the fighting instinct, for pleasure taken in watching fighting necessarily involves pleasures in seeing blows dealt.[53]

77. Transformation of the Impulse to Cruelty.—While to a predominantly fighting and hunting community indifference to suffering had considerable survival value, particularly to the males, this ceases to be true in a more civilised community. The cruel impulses find, in fact, their only socially unobjectionable outlet in sports. In a very much transformed condition, they are probably of great value in undoubtedly useful activities. The occupation of the surgeon, for example, is generally taken as an example of the sublimation of cruelty, and there is probably truth in this view.

For most persons, however, cruel sports offer the only outlet to this element in their character, and in any civilised country they form an outlet which is strictly "canalised." Only a limited number of cruel sports are tolerated in any civilised community. The fox-hunting Englishman is revolted by bull-fighting, and his pleasure in shooting pheasants does not lead him to tolerate the shooting of larks. The progressive canalisation of cruel sports in England has been a remarkable example of the tendency of a mental disposition to atrophy under changing conditions. The abolition of cock-fighting and bull-baiting have taken place because, partly through a weakening of the impulse to cruelty, partly through a growing extension of the sympathetic emotions to animals, social disapproval of these sports grew stronger than the instinctive demands they satisfied.

The process is still going on, and there is a rapidly growing

expression of social disapproval of certain forms of cruel sport still generally permitted (such as the hunting of carted stags and pigeon shooting) ; and, of course, large numbers of people abstain from all forms of cruel sport. It is not improbable that in the course of time all such activities will be eliminated from adult hunting-play. We appear to be witnessing the atrophy of an innate disposition for which no socially useful outlet is available for most people. Mr. Perry has pointed out how rapidly cruel behaviour can be acquired by a gentle and peaceful people when these acquire warlike behaviour.[49] An example of this, near to our own time, is also probably to be found in the outbreak of violent and brutal crime which is stated to have taken place in England and other countries after the conclusion of the war. We seem to have in this progressive decrease of cruel behaviour an illustration of the opposite fact that the suppression of an instinctive tendency through successive generations leads to a progressive atrophy of that tendency. It is not true that human nature never changes ; what is true is that it changes very slowly, much more slowly often than human institutions.

CHAPTER X.

The Gregarious System of Instincts.

78. The Gregarious System of Instincts.—The popularity of the gregarious instincts after the publication of Mr. Trotter's *Instincts of the Herd in Peace and War*[88] has been followed by a reaction, and sociologists are inclined to deny that there is anything corresponding to Trotter's herd instinct at all. Mr. Perry writes, for example :

"It is commonly asserted that men possess a gregarious instinct, that causes them to accumulate in communities ; and that the possession of this instinct has helped in the process of development of civilization. If that be the case, it is remarkable that all the food-gathering peoples show no traces of this process at all, for they live in family groups. . . . The clan system itself, on which the archaic civilization is built up, is simply a variation, produced by agriculture, of the same habit. Once agriculture is introduced, it is possible for family groups to live in closer contact, but that is not evidence of their desire to do so."

"Reasoning on the lines of the instinctive tendency of men to live in communities leads nowhere ; least of all does it explain the means whereby one group of families is able to dominate others, and often to cause various clan groups, that is, various enlarged families to live in juxtaposition."[89] The cultural element, of which this is the expression, is stated by Mr. Perry to be the organisation of the ruling group in the dual organisation, parts of which group transferred themselves to another place taking with it all the cultural elements (doctrine of theogamy, etc.) necessary to keep it in existence.

About this criticism we may say very much what was said with reference to the same author's criticism of the

instinct of pugnacity.* If it were meant, when we spoke of the gregarious instinct, that existing forms of social organisation are themselves instinctive in their nature—that we have, for example, an instinct to live in cities, to form business organisations, or to elect members for parliament; then we must agree that the assumption of any such instinct is unfounded. But this is not the kind of thing we mean by an "instinct." A human instinct is, as we have seen, always a general tendency; the particular forms of behaviour in which it finds expression are the results of external circumstances which cannot be predicted merely from psychological considerations. The nature of the sex instinct does not help us to tell what particular woman a man will choose as his mate; nor does the nature of the gregarious instincts tell us what particular forms of social organisation will be adopted at different stages of civilisation. These are determined by external circumstances of cultural development which can be known to us only by the researches of anthropologists.

What is innate in human character is the general tendency to form social groups and to adopt social kinds of behaviour, not the impulse to any specific mode of social grouping or of social behaviour. It is possible that this instinct expressed itself in the earliest times by the formation of a social group which was merely the family; and, later (when circumstances, such as the introduction of agriculture, made a larger grouping more convenient) in the formation of groups in which several families lived together.

The gregarious system of instincts comprises, however, not merely the innate tendency of men to live together in groups, but also all the tendencies which are called out by a social environment. The sensitiveness, for example, to other persons' feelings, which we call *sympathy*, the sensi-

* p. 141.

tiveness to other persons' opinions, which we call *suggestibility*, and the readiness to follow other persons' courses of action, which we call *imitation*, are all social reactions.

Other social reactions are the disinterested emotions, and the feeling of shame which one member of a group feels when he has broken a social convention (particularly if social disapproval is expressed by other members of the group). It will be noticed that all of these reactions are adaptive to a social environment; or we may express this from the point of view of the group by saying that harmonious and effective social grouping is dependent on the presence of these tendencies in the individual members of the group. It is his possession of these peculiarly social ways of reacting that justifies us in speaking of man as a gregarious animal and in attributing to him a gregarious system of instincts.

It would certainly be in vain if one attempted to explain the particular course of social grouping in the history of civilisation by a mere appeal to the gregarious instinct. The forms in which this instinct has expressed itself have been determined by circumstances of cultural development and by economic requirements which are not psychological in their nature at all. But it is equally unscientific to attribute the course of civilisation entirely to these non-psychological factors and to ignore the fact that they were acting on an instinctive gregarious tendency. It is improbable that without this instinctive tendency any force of external circumstances would have driven men to live in social groups at all. If it had, it would have formed groups of men which were incoherent and unstable because the members composing them were not equipped with the instinctive social tendencies which make possible the welding together of individuals into a harmonious group.

The existence of the social tendencies is not, however, in dispute even amongst those who deny the existence of the gregarious instincts. It is generally recognised that man is suggestible, sympathetic, and imitative, and that these qualities are innate. The innateness of these social reactions is what we mean by affirming the existence of a gregarious instinct.

79. Instincts belonging to the Gregarious System.—It is necessary to include in the gregarious system socialised forms of instinctive tendencies which primarily serve the ends of one of the other systems. For example, acquisition and pugnacity may exist in socialised forms. There are, however, other instincts which are entirely organised within the gregarious system.

The following five fundamental social relationship tentencies are distinguished by Mr. Bartlett[50]: (1) the tendency of *primitive comradeship* (a relationship between equals), (2) the tendency of *assertiveness* (or dominance), (3) the tendency of *submissiveness*, (the last two are both relationships between superiors and inferiors.) (4) the social tendency to *conservation*, (5) a social *constructive* tendency.

80. Primitive Comradeship.—The tendency to crowd together, to feel dissatisfaction at isolation and satisfaction in being one of a herd, is to be found amongst gregarious animals as well as in mankind. An isolated chimpanzee seems like something less than a whole animal.[184] Galton describes how an individual of a herd of Damara oxen "cannot endure even a momentary severance from his herd. If he be separated from it by strategy or force, he exhibits every sign of mental agony; he strives with all his might to get back again, and when he succeeds he plunges into its middle to bathe his whole body with the comfort of closest companionship."[37] This is a description of the tendency of primitive comradeship on a low level of instinctive behaviour. The same tendency may be seen in the relationship between human beings. Social comradeship in its purest form can only subsist amongst groups of persons, none of whom are dominant and none submissive. The club is characteristically a social organisation designed to preserve primitive comradeship amongst a group of people.

A good illustration of the pure primitive comradeship relation (as distinct from one in which assertiveness and submissiveness enter) is provided by the following passage descriptive of William James (quoted by Bartlett) : " Men and women of all sorts felt at ease with him . . . he was distinctly not a man who required a submissive audience to put him in the vein. A kind of admiring attention that made him self-conscious was as certain to reduce him to silence as a manly give and take was sure to bring him out. It never seemed to occur to him to debate or talk for victory."[50]

81. Assertiveness and Submissiveness.—These two instinctive tendencies may conveniently be treated together. There is a tendency which will very quickly be observed in any human social group for some members to push themselves to the fore while others voluntarily submit themselves to their dominance.*

Galton noticed this dual relationship also amongst Damara oxen.[37] While most of these animals show an incapacity to rely on themselves and a faith in others, and are willingly led by any one of their number who has enough self-reliance to accept that position, a certain number of them show a peculiar amount of self-reliance. These are noticed by the men who bring them in because they graze apart from, or ahead of, the others. They are broken in as fore-oxen and their lead is willingly followed by the others. We have already seen a similar acceptance of submission amongst the cows of Thion[72] (cf. p. 142), but in this case the leader was not allowed to retain that position merely by an innate tendency to dominate, but had to fight for it.

* Probably both assertive and submissive tendencies are to be found in every individual, and the person dominating one social group may be submissive in another. A man may show his instinct of assertion in his family, while he is submissive in the office where he earns his living in a subordinate position.

In groups of human beings it is similarly noticed that some individuals have peculiar power of coming to the front and dominating others. These are known in popular speech as persons of strong or dominating personalities. They belong to the type of leader called by Sir Martin Conway the *crowd-compeller* (*e.g.* Napoleon, Disraeli, etc.).[89] Indeed, a group which has any function to serve other than that of the mere indulgence in primitive comradeship is apparently more effective if it is so organised that some of its members are in a position of authority which is accepted by other members of the group. If the function of the group is to oppose another group (the function of armies, trades unions, federations of employers, etc.) or to accomplish effects in the outside world (the function of a workshop) or merely to come to a joint decision (as in a committee), the condition for effectiveness in action appears to be some sort of organisation as superiors and inferiors.*

In many cases, as on a committee, the superior-inferior relationship may exist only temporarily while the end of the group is in the process of attainment. Other superior-inferior relationships are maintained permanently, and we have thus the phenomenon of different social classes. Permanent superior-inferior relationships are probably due to many different causes. There is, first the tendency for sentiments to persist; the sentiment of respect felt by the inferior for the superior remains, and, so far as this sentiment (and the opposite sentiment of the superior for the inferior) underlies such social grouping, the relationship tends to be permanent.

An equally important fact is that for the attainment of the ends of the social organisation for which the superior-

* I am using *superior* and *inferior* in a severely technical sense to mean those individuals who take a dominating and a submissive position respectively in an organised group.

inferior relationship has been employed a permanent relationship is often the most efficient. The earliest groupings of this kind undoubtedly were to serve the ends of religion and of warfare. It is certain that for warfare, and it was supposed that for dealings with the gods, a permanent superior-inferior organisation was the most efficient. A committee may work as efficiently at its next meeting if a fresh member is in the chair, but an army with the relationship between commanders and those under command reversed would be an inefficient fighting organisation. Furthermore, some are more fitted for the position of leadership than others, either through superior intelligence or through a greater innate assertiveness, so that, even with no permanent superior-inferior social organisations, these would tend always to be in the dominating position in every new social group.

Various other factors tend to make this relationship permanent. The superior group may, for example, be of different race and of different colour (as was true to some extent of the Indian castes). Hereditary titles and hereditary wealth make it possible for some families always to remain in superior positions in social groups. Differences in speech and custom similarly tend to make these divisions permanent. It is obvious that while the ability to act as leader is to a certain extent innate, so that the hereditary qualifications for leadership may be based on sound biological principles, inheritance may also place artificially many men in the position of group leader who have no innate capacity for this position.

The Admirable Crichton, by Barrie, depicts the coming to the front of the person innately qualified to be group leader and his dominance over those who are only qualified for that position by the inheritance of social advantages, when the severe struggle with the environment brought about by a ship-wreck makes necessary the formation of a

really effective social group. The shyness and embarrassment which most people feel when required to take a position which involves for the moment the adoption of a position of leader is the instinctive reaction of the submissive tendency against taking a position of group leader. It is probable that those who are born leaders (in Sir Martin Conway's sense) feel no such embarrassment in taking a position of leadership.*

While for many purposes (and probably for industrial no less than for military organisation) a group organised in the superior-inferior manner is the most efficient, the permanence of this relationship has obvious social dangers. This mode of organisation works ideally when the inferiors in a social group accept the relationship willingly for the purpose for which the organisation is working. This happens when they form sentiments of respect for the superiors of the organisation and feel themselves in sympathy with the object of the organisation. But sentiments of resentment (or hate) can also be formed against the superiors of a social organisation, and this is liable to happen when the inferiors feel that the purpose of the organisation is one in which they are not interested (*e.g.* when they feel that their activity is being "exploited" by the superior class); when the permanence of their membership of the group is insufficient to enable them to build up a sentiment of loyalty to it; and when they have no special reason for forming sentiments of respect for members of the superior class.

All of these are probably important factors in the psychology of modern industrial unrest. It is probable

* Similar behaviour was observed by Galton, who describes the inconvenience caused to the traveller in ox waggons which results from the fact that the oxen behave like a company of bashful gentlemen at the time when their host is trying to get them to move from the drawing room to the dinner table, and no one will go first, but everyone backs and gives place to his neighbour.[37]

that (even apart from the more severe repression of disturbance amongst serfs) a condition of serf labour is a more stable one than that in which there is a class of free workers receiving wages. However bad might be his conditions of work, the serf was generally employed by the same landowner all his life, and was therefore able to form sentiments of loyalty for the estate on which he was employed. His superior, moreover, was a hereditary nobleman, and it was therefore easier for the serf to form for him a sentiment of respect (however insufficient the grounds for it may appear) than it is for the modern worker to form a similar sentiment for his employer, whose superior position in the social organisation may be of short standing.

The source of weakness to a large social organisation of a strongly divided superior and inferior class is well illustrated by Mahatma Gandhi's realisation that, if India was to be made a strong and independent social organisation, it was necessary to get rid of the divisions of caste, and by his effort to destroy the barrier between high caste Indians and the untouchables. Trotter also remarked on the fact that at the beginning of the war, when an external danger threatened our nation as a whole, there was for a time of almost complete freedom of intercourse between members of different social classes in England.

82. The Instinct of Conservation.—This is referred to by McDougall as the tendency to prefer the familiar to the unfamiliar. It may be seen at work in the strong sentiments which are built up round existing institutions and which cause opposition to their change. It is to this tendency that institutions often owe their survival beyond the time when they serve useful social purposes. It is seen at work in the sorrow and indignation felt by many people at such changes of familiar institutions as would be involved in the abolition of the monarchy, or of the House of Lords, or in a change in the structure of the Book of Common Prayer. Of course, the people who oppose such

changes do so partly because they believe that the institutions threatened serve a useful social function.

If, however, we examine our own feelings with respect to some change to which we are strongly opposed, we shall find that over and above any belief in the usefulness of the institution threatened, we have strong emotional reactions called out by our mere desire that it should not change. Men who served with a brigade, for example, during the war, which was so depleted in numbers that it was fused with another brigade and lost its individuality and its number, will know that the pain they felt at the change was little reduced by the fact that the new mode of organisation was of greater military value.

This attitude of opposition to changes in social institutions may be called *conservatism*,* and the innate tendency from which it springs, the *instinct of conservation*. The attitude of conservation is one which tends to grow stronger with age, and Rivers has pointed out that the element in a tribal organisation which stands for conservation is its old men.[49]

Bartlett has pointed out that the tendency to conservation is selective in its nature.[50] No social group preserves all its institutions. We may take, for example, the case of marriage restrictions and the corresponding relationship terms. Under changing social conditions, both of these may ultimately disappear, but the relationship terms long outlast the marriage restrictions. The system of naming which belongs to a clan organisation with exogamic grouping is found, for example, still to persist amongst many tribes of North American Indians, although the social organisation itself has quite disappeared.

* This attitude is not, of course, to be indentified with political conservatism, although no doubt much of the emotional strength of political conservatism is supplied by this innate quality of character. It may, however, also be strong in those who are not political conservatives.

83. Social Constructiveness.—This is the social form of the instinct of construction. It is the tendency to make new social organisations. In every social group, we can observe this tendency to bring together various social elements in new institutions.

We find it at work amongst the undergraduates in a University who are always forming amongst themselves various clubs and societies which, having no strong tradition which can promote sentiments of loyalty leading to social conservation, do not generally very long survive their founders. From a study of the formation of new religious sects, one is led to the view that the social constructive tendencies are particularly strong in the persons we have already described as group leaders, and that new social organisations generally tend to be built around them. The tendency to social constructiveness is generally, although not necessarily, found to be in conflict with the tendency to social conservation. In fact, the conservation tendency seems to oppose the formation of new social institutions as well as trying to conserve old ones.

84. Suggestion and Suggestibility.—The word *suggestion* is now commonly used for the process by which an opinion, a feeling, or an impulse is communicated from one person to another, by a process other than that of rational persuasion. It is found that if a statement is repeated frequently and confidently, the person hearing the statement tends to believe it (or, if it is a command, to translate it into action) independently of adequate grounds for doing so.

This process is seen in its most striking form in the suggestions given by a hypnotizer, and an actual hallucination may be produced by this method in a hypnotized person. The hypnotizer, for example, may tell his subject that the matchbox at which he is looking has changed into a fox terrier, and the hypnotized subject will then react to the

matchbox as if it were a fox terrier and apparently actually sees it as one. Some writers on this subject, as for example Dr. Pierre Janet, would restrict the word *suggestion* to these cases in which an imposed idea (possibly of an absurd kind) realises itself in consciousness with a completeness which is impossible in a normal mind.[91]

The word, however, is now used in a much wider sense. When people are influenced to give their votes in an election by seeing hoardings covered with repetitions of the command " Vote for Snooks," or when they are induced to buy a particular article by a mere confident repetition by the salesman of statements of its merits, which they have no rational grounds for believing, they are said to be acted on by the method of *suggestion*. The three conditions under which a suggestion of this kind takes effect are : (1) its frequent repetition, (2) the use of a confident tone of voice in making the suggestion, and (3) the possession by the person making the suggestion of the quality which we may call *prestige*. The prestige of the suggester is not an essential factor but very much facilitates the suggestion.

It has been suggested that suggestibility (the tendency to receive suggestions) is essentially a phenomenon of the gregarious system of instincts. The function of the gregarious instincts is to make the members of a group carry out common action for the welfare of that group.

In order that they should do this, it is necessary that they should think, act, and feel together. If one member of a flock of sheep is frightened and starts running away, the others immediately run away with it and seem influenced by the same emotion of fear. If one member of a herd of wild cattle perceives a source of danger and adopts a defensive attitude, the others will show the same reaction and the whole herd will adopt a formation of defence. This tendency of the herd to be influenced by the behaviour

and feeling of one of its members may be attributed to the suggestibility of its individual members.

The fact that suggestibility is of gregarious origin among human beings is rendered probable by the observation that the influence of suggestion from one's social environment is much stronger than from any individual. Recognised systems of belief accepted by all the members of the social group in which an individual lives tend to be accepted without criticism by that individual. Emotions as well as modes of action spread quickly through a crowd, and fear or anger felt by one or a few members of a crowd is quickly spread to others. If this is the true root of suggestibility it means that suggestion is a gregarious phenomenon whose function is to produce the unity of action which is essential in an effective social group. This was the explanation of suggestion put forward by Rivers.[28]

If, however, we accept the view that suggestion is primarily a gregarious phenomenon, that man is primarily suggestible because he is a gregarious animal, we are left with the task of accounting for individual suggestion. This is presumably the response of a gregarious animal to the herd leader. We saw in Galton's study of the Damara oxen that certain individuals had the function of initiating herd action. The individual members of the herd willingly accepted the lead in matters of conduct from this herd leader. The person from whom individual suggestions are received in a human being is the person who occupies the position of leader. The artificial methods used to increase the prestige of the persons from whom suggestions are to be received, such as the scarlet gown of the doctor (which was at one time worn when treating patients) and the distinctive uniform of the officer, all have the effect of raising the person from whom suggestions are received to the position of a leader.

The effect of a high degree of suggestibility is to make the individual one of a herd at the cost of his individuality. Since we all have an element of the assertive tendency as well as of the submissive tendency, a too powerful attempt to impose a suggestion may result in its rejection by the person to whom it is made. This mode of reception of an attempted suggestion is known as *contra-suggestion*.*

Thus, a judge who indicates to a jury too definitely how he expects them to return their verdict, may be surprised to find that he has roused this attitude in them and that they return a contrary verdict which is not justified by the evidence. A too aggressive manner in a person making a suggestion, which makes his hearers conscious of the fact that he is trying forcibly to impose his views on them is liable to rouse the same response.†

A more serious difficulty in the way of regarding suggestion as primarily a herd phenomenon is the existence of the variety of suggestion called *auto-suggestion*. Forms of speech repeated to oneself over and over again may have the same effect of automatic acceptance as would the same forms of speech repeated by another individual.[43] Thus we can make ourselves go to sleep by repeating over and over again the formula "I am falling asleep" just as we can be made to go to sleep by another person repeating suggestions of sleep to us in a confident tone of voice.

* It should be noted that in true contra-suggestion this rejection is no more a voluntary action than is the acceptance of a successful suggestion. Conscious processes of thought may have a great deal to do with the subsequent acceptance or rejection of a suggestion, but the processes themselves are automatic.

† A skilful orator who wishes to make suggestions to his audience which will be unacceptable to them, does not do so at the beginning of his speech, or he would rouse the attitude of contra-suggestion, He begins by telling his audience things they already know and already agree with (or at least are ready to receive), then, after he has got them into an attitude of enthusiastic acceptance, he is able to communicate less welcome suggestions without rousing their hostility.

In the case of auto-suggestion, however, it is probable that we are setting into action ourselves a mechanism which was primitively a mode by which we were influenced by other people. It should be particularly noticed that words are used in this method, and the use of language is quite certainly primarily a social phenomenon. We are in auto-suggestion reproducing for ourselves as nearly as we can the conditions under which primitively we should have received suggestions from a herd leader.

Suggestion, as it has been described above, may be seen to have three aspects: a cognitive, an affective, and a conative aspect. What is communicated may be a thought or idea, a feeling, or the impulse to a course of action. Dr. Rivers would use the words *intuition*, *sympathy*, and *mimesis* for these aspects.[38] Professor McDougall prefers to restrict the word *suggestion* to the communication of thought, and to describe the communication of emotions as *sympathy*, and of courses of action as *imitation*.[39]

Suggestion in this restricted sense is of considerable importance in social psychology, for it will be readily recognised that most of our opinions are products of this process. It is rarely that we have sufficient data for forming opinions of our own on questions of politics or international affairs, and most of us are content to take these opinions second-hand from the persons who surround us. In fact, it may be noticed that those opinions most purely products of herd-suggestion are those held with the greatest ardour; while opinions formed more individually by weighing evidence and coming to conclusions, are held more tentatively.

Sympathy is unquestionably the source of much socialised behaviour.* The effectiveness of a simple social group

* Sympathy must be distinguished from disinterested emotion (cf. p. 94). Both are tendencies organised in the gregarious system, and both may occur together in any particular case of altruistic emotion. Disinterested emotion, however, may be felt on behalf of someone who does not feel the emotion himself. We may feel dis-

depends largely on the fact that the distress of one member will lead to sympathetic pain and relief of the distress on the part of others, and that the anger of one member will communicate itself to the others. Emotions communicated from a group often lead to action of a more whole-hearted and uncontrolled kind than those originated individually. The fear of crowds is sufficiently violent to have received the name of *panic*, and their anger is liable to show the same lack of control.

Imitation is the carrying out of an action because it is carried out by another person. Theoretically we must distinguish between unconscious and conscious imitation, although, in fact, it is not easy to distinguish them in practice. Imitation was used by M. Tarde as the cardinal principle of explanation of human conduct, but he used it in a sense wide enough to include practically what we have meant by suggestion (in all three of its aspects). In this sense, it is no doubt an important factor in human behaviour, but the exaggerated importance attached to it by Tarde[92] and by M. LeBon[93] leads to a one-sided and incorrect view of human nature. We do not merely inherit the disposition to imitate other people, and then acquire from them all our other behaviour tendencies. There are other instincts

interested fear on behalf of a man who is in the way of a rapidly moving tram car, although he has not himself seen the danger, or disinterested anger on behalf of someone who has not resented the insult offered to him. The situation calling out disinterested emotion is the perception of another person in a position of danger, humiliation, etc. The situation calling out sympathetic emotion is the perception of another person's emotion. Sympathy tends to be less selective in its action than disinterested emotion, and is generally most strongly called up when the person sympathised with gives expression to his emotion. In practice, of course, the situations for disinterested emotion and sympathy generally occur together, which probably accounts for the fact that they are persistently confused.

besides the social instincts, and other modes of behaviour than those that are acquired from the social environment.

There was at one time an opinion in comparative psychology that the tendency to imitate was the only innate disposition of the young animal, and that all the uniformities in conduct of members of the same species was due to their imitation of other animals of their own kind. This hypothesis has, however, been conclusively disproved by experiments in which the young of various animals have been brought up in isolation from their own kind. The results of these experiments show that, without any doubt, instincts are inherited and that only a small part of the uniformity in the behaviour of the animals of any one species is to be attributed to imitation. In the restricted sense in which we are here using the word *imitation*, it is probably not a very important factor in human behaviour, although it certainly plays a large part in the process of habit formation in children.

85. Loyalty.—We have already seen that the essential function of an instinct in human life is to form a nucleus on which a sentiment may be formed. We have already discussed shortly the sentiment of respect which springs from the instinct of submission. A sentiment more characteristic of the gregarious system of instincts is the one known as *loyalty*. A loyalty is the sentiment for a social group*

* The social group for which loyalty is felt may, of course, have any degree of organisation. It may be what is called by McIver a *community* (a group of persons merely possessing some common life) or an *association* (a body of social beings organised for the pursuit of common interests).[91] Or loyalty may be felt for an institution, *i.e.* the structure of a social organisation as distinct from the individuals comprising it. That a man can have a sentiment of loyalty for a mere institution (even for a team or a church of which he dislikes or despises all the individual members) is a peculiarity of the sentiment of loyalty which must be remembered.

or for a social institution. Since every individual is a member of more than one social organisation, he has a complicated system of loyalties which sometimes conflict with one another. He has, for example, his loyalty to his cricket club, to his church, to his business, to his own town, and to his nation.

It is a commonplace to remark that loyalties to smaller groups do not necessarily interfere with loyalties to larger groups although their ends seem inconsistent. A Manchester man's loyalty to Manchester does not prevent him from co-operating with a Liverpool man in the defence of England when there is a war. In fact, it is usual in an army to encourage group feelings about the smaller units—regiments, companies, and even platoons—because it is believed that the general tendency to form loyalties will result in an increased loyalty to the larger organisation of the army as a whole. This is what is called inculcating *esprit de corps*.

While this is generally true of such social organisations as are comprised in modern states, there have been times in the past when the effective action of a large organisation has been impeded by the exclusive loyalties of its members to smaller rival organisations within the larger group. This, for example, was true of the European nations under the Feudal system, when the strength of individual loyalties to their feudal overlords was stronger than any sentiment they possessed about their country as a whole. The passage from feudalism to nationalism was, of course, mainly one of changing social organisation brought about by political and economic necessities. It was not primarily psychological, but side by side with this social re-organisation there was a re-organisation of the sentiments of individuals. The smaller loyalties became subordinated to and organised within the loyalty to the larger organisa-

tion. This particular form of the sentiment of loyalty (in which its object is the country) is called *patriotism.*

Ibsen, in *The Pretenders*, portrays the conflict between the Duke Skule and King Haakon, standing for the feudal and national sentiments respectively. He shows Skule awed at Haakon's conception of a loyalty which should extend to Norway as a whole. He realises that he himself belongs to the more primitive psychological stage of development to which smaller loyalties alone are possible, and realises that no other claim to the throne is as strong as Haakon's " great kingly thought " of a united Norway.

We are now at a stage of social development when the natural unit of our loyalities is the State, and when, on the whole, smaller loyalties are subordinated to and organised within the sentiment of patriotism. But there seems neither psychologically nor sociologically a reason why the state should be regarded as the final point to which loyalty can extend. *Internationalism*, or the feeling for a community of men wider than the limits of one's own individual state, is a development beyond nationalism corresponding to the step from feudalism to nationalism. Social and economic developments are making the inter-dependence of nations more important than their rivalries.

There is no psychological barrier to the formation of the kind of loyalty that is required by internationalism. Already we have in the Christian churches, in the British Empire, and in international socialism social organisations wider than national boundaries, which call out from their members loyalties which transgress the limits of the state. The passage from exclusive patriotism to a patriotism subordinated to and organised within an international sentiment is as essential a step in the mental development of our times as was the passage from feudal to national sentiments in the days of Duke Skule and King Haakon. Reactionary attempts at the present day to build up exclusive patriotic sentiments are as dangerous as were the efforts of Skule to bolster up the old narrow feudal loyalties

CHAPTER XI.

The Acquired Elements in Behaviour.

86. Habit Formation.—If a bodily action is repeated more than once its subsequent performance becomes facilitated until finally it may become automatic. Such actions, for example, as shaving, or performing the movements necessary to open a door, have been repeated so frequently that they now take place with the minimum of conscious control. These are called *habits*. They are acquired elements in our behaviour.

On a much higher level of complexity of organisation, the sentiment is similarly an acquired element of character. If we were to extend the word habit far beyond the bodily actions which it was originally meant to cover, we might speak of the sentiment as an emotional habit. All human instincts have had built on them a large number of such acquired elements of behaviour, and the actual behaviour of an adult person is largely the resultant of a number of habits at various levels.

Since every human action is probably at its beginning a response to an instinctive craving, and at its end a conglomeration of habits which have been formed by previous activity, it is obvious that no sharp line can be drawn between an *instinctive* and a *habitual* action. Yet this distinction can conveniently be used for those actions in which the innate element is less or more completely lost in an overgrowth of acquired ones. We can, for example,

properly call shaving a *habitual* action as contrasted with eating, which is *instinctive*; for, although shaving may originally have been behaviour dictated by the instinct of display or by the gregarious instincts, the actual form of its actions has no relation to any innate system of motor mechanisms, whereas eating is the same activity as that of the primitive animals carried out in almost exactly the same way.

If we accept this contrast between instinctive and habitual actions it is probably not true to say that instincts are the only movers to action or that emotional experience is connected only with instinctive activities. The performance of a habitual action itself gives pleasure, and unpleasure is caused by interference with it. Particularly after people have reached an age at which they do not readily form new habits, any interference with their habitual mode of behaviour is resented by them and felt as acutely unpleasurable.

87. Fatigue.—The process by which an action tends to be better and more easily performed at each successive repetition (and thus finally to become a habit) is called *practice*. Opposed to the effect of practice is another factor by which the subsequent performance of an action is interfered with by previous performances. This factor is called *fatigue*. A curve showing the onset of fatigue can be obtained by means of an instrument called the *ergograph*.* The subject is required to deflect his middle finger, which is so connected with the instrument that each deflection raises a weight for a short distance. After the operation has been performed several times, the deflections of the finger grow smaller and finally cease. Rest is now necessary before the finger can recover its ability to raise the weight. If, however, the weight is lightened, a new series of deflections can be obtained.

The condition of fatigue has also a mental concomitant—the feeling of tiredness—a complex of bodily sensations generally un-

* Any curve showing the decrease in quantity or quality of the work done on successive performances of an action is called the *curve of fatigue*.

pleasurable. This feeling usually accompanies the condition of reduced efficiency of working which we have called fatigue. Hence the word " fatigue " is commonly used in popular speech indifferently either for the conscious fact (knowable only to his own introspection) that a man feels tired, and for the fact (knowable to other persons through study of his behaviour) that continued activity has caused reduced efficiency in that activity. Either or both of these facts is ordinarily indicated by saying that the man is fatigued. Such ambiguities must be avoided in accurate psychological description, and since we have used the word *fatigue* for the behaviour phenomenon, it will be better to avoid that word for the accompanying conscious phenomenon and to speak instead of the *feeling of tiredness*.

The most obvious explanation of the phenomenon of fatigue is the physiological one. When work is done by a muscle the energy for this work is supplied by processes of metabolism which take place in the muscle. These processes consist in the breaking down of more complex chemical substances and the formation of lactic acid. The products of metabolism accumulate in the muscle, which is thus rendered incapable of further work. In the ergographic experiment, however, the muscle refuses to contract any more before the accumulation of the products of metabolism has reached such a point that the muscle is really incapable of doing any more work. The end-plate of the muscle (the structure through which the nerve fibres are attached to the muscle) and the nerve fibres themselves refuse to transmit motor impulses to the muscle before the muscle itself is exhausted.*

There is a further complication, however, in the explanation of the fatigue recorded in the ergographic experiment. It has already been mentioned that after the fatigue of the finger a new series of contractions can be obtained if the experimenter reduces the weight. It was discovered by Mr. R. A. Spaeth that with certain subjects it is sufficient to tell them that the weight has been reduced in order to get a further series of contractions from the finger, although meanwhile the weight may actually remain unaltered.[95] This suggests that the inability of the muscle to make further contractions is not entirely the result of its physiological condition (or that of its end-

* The end-plate thus acts in the same way as the fuse in an electric light circuit. This is made of an easily fusible metal which will melt and therefore interrupt the current long before the current is strong enough to injure the other parts of the circuit.

plate or motor nerve-fibres), but that there is a central factor at work as well.* Judging, therefore, from actual performance it is impossible to separate the effects of genuine physiological fatigue from central interference with the performance of work.

The difficulty of making precise the conception of fatigue in mental work is even greater. It is certain that we all feel tired after a hard day's mental work, and that both the quality and quantity of mental output is then reduced. How far this reduction is caused, however, by a factor similar to physical fatigue and how far it is due to a central inhibition related to the condition of boredom, it is impossible to determine. Dr. Arai performed the incredible task of multiplying pairs of four figure numbers in her head for twelve hours a day for four days, and found that her time for working out each sum at the end of each day's task was only twice as long as at the beginning.[15] This shows that an extremely severe mental task may be followed by surprisingly little fatigue effect.

Professor Muscio has discussed whether it is possible to make precise the conception of fatigue at all.[97] He points out that there are a very large number of factors affecting the performance of work: incitement, practice, condition of health, strength of incentives, absence of competing incentives, etc. Failure of any of these factors results in performance of the task becoming worse, and the effects of them are not in practice always separable from the effects of the presence of the products of metabolism in the muscles of the worker. He proposes, therefore, for fatigue the very general definition: "a condition (partly specifiable by reference to the accumulation of metabolites and the blocking of impulse paths) caused by activity, in which output produced by that activity tends to be relatively poor."

We shall attain to a conception of fatigue which will apply both to bodily and mental fatigue and will be in accordance with the complexities of the experimental facts if we see in it mainly a protective mechanism against exhaustion of the tissues employed and not a direct result of their exhaustion or even of their partial exhaustion.† It may be noticed that all the symptoms of muscular and

* An example of a central factor simulating fatigue is the condition known in ordinary speech as "boredom."

† Some of the external symptoms of fatigue are, of course, direct results of the physiological results of work. Such, for example, are the increased rate of breathing, muscular stiffness, etc.

of mental fatigue have as their tendency the prevention of the performance of further activity. In muscular fatigue there is slowness of movement and loss of coordination : in mental fatigue there is a loss of control over the thought processes and a tendency for the mind to wander. The symptoms of muscular fatigue are produced when the products of metabolism have accumulated in the muscles because such accumulation marks a stage in bodily activity when much more activity would be injurious to the tissues employed. The point at which fatigue comes on, however, is also determined by other factors, as, for example, the strength of the incentive to work. Fatigue sets in very quickly when taking monotonous and uninteresting exercise. For example, when walking through dull streets all the symptoms of fatigue may develop when the amount of metabolites produced must still be very small, while ten times as much exercise might have been taken through enjoyable country with less apparent effect of reduced efficiency. The influence of other factors is even more apparent in mental work. The feeling of tiredness, headache, and mind-wandering may be found to develop in a short time of working at an easy but thoroughly uninteresting mental task (such as marking elementary examination papers). This cannot be a direct result of exhaustion of some group of neurones in the brain, for a more difficult but more interesting task may be carried on for a much longer time without these symptoms developing. Indeed, Dr. Arai's work leads us to suspect that no ordinary mental task ever brings us near to the true exhaustion of the part of the brain used. Biologically, no doubt, the function of mental fatigue is to protect our brains from such activity as would injure them, either by too long sustained mental work or by not going to sleep at night. This protective mechanism appears, however, to be a very sensitive one and it may be set into operation by a merely monotonous task. In abnormal conditions the fatigue mechanisms may operate with no adequate bodily cause. This is, for example, one of the symptoms of neuraesthenia.

The onset of fatigue (or of the partial muscular exhaustion of which fatigue is a symptom) limits the amount of muscular work which a man can do in one day. This explains the fact that reduction of working hours does not always reduce output, but may actually increase it if the earlier working hours have been excessive so that workers have been in a condition of chronic fatigue. Other practical effects of fatigue study have been to show the value of rest pauses in certain occupations, and to make possible the elimination

of wasteful and inefficient methods of work (such as those in which unnecessarily large weights are lifted, in which work is unnecessarily monotonous or carried out under bad conditions, and in which the optimal period for working is exceeded by "overtime.")*

88. Association.—An important method by which the structure of our habitual behaviour and thought become modified is by the tendency of mental and bodily processes to become cemented together in series so that they are reproduced serially. This is called *association*. A simple example of association occurs in learning by heart. If we learn the series of nonsense syllables: PEZ, RAS, TOB, LUM, SYM, ROP, we have formed a connection between the motor habits of saying each syllable such that the pronouncing of PEZ, makes us ready to say RAS, RAS leads to TOB, and so on. When we have learned the series in one direction we are unable to repeat it backwards, for the association is from PEZ to RAS, from RAS to TOB, and not in the opposite direction.

That this principle of association might be used to explain the succession of elements in a train of thought was first suggested by Hobbes.[82] Hume took over the same principle of "the association of ideas" and distinguished four ways in which association could take place: by resemblance, by contiguity (in time or in place), and by the relation of cause and effect.[198] An idea *b* followed an idea *a*, because *b* was like *a*, or because *b* and *a* had previously been experienced at the same time or at the same place, or because *b* was the effect of *a*.†

Later, the principle of the association of ideas was used by

* The object of research in industrial psychology is not, of course, merely to increase output. The comfort and happiness of the worker is a more important consideration. Fortunately both ends can often be attained by the same means.

† cf. p. 230 ff.

Bentham,[89] James Mill,[90] and J. S. Mill, to explain human conduct.* Certain lines of behaviour were supposed to be followed because they had become associated with the idea of pleasure, while others were avoided because they had become associated with the idea of pain.

That there is a good deal of truth in this account of the acquired elements in behaviour is fairly obvious. The child begins life with no innate tendency to avoid touching a hot poker. He hurts himself by touching one, and (after perhaps one or two repetitions of this experience) he avoids them henceforth. No one will doubt that this avoidance of a hot poker after an experience of burning is a fact. We may doubt, however, whether it is correctly explained by saying that the child has associated the "idea of pain" with the poker, or whether an explanation of human conduct is adequate which assumes that our only innate tendencies are to seek pleasure and avoid pain.

89. The Associationist-Hedonist Theory of Action.—The theory that the incentive to every human action was the fact that it had become associated with the idea of pleasure and that such actions as men avoided were those that had become associated with the idea of pain for a long time dominated the psychology accepted by economists. James Mill's account of a mother's care of her child may be taken as an example of this teaching :

"First of all, there can be no doubt, that all that power of exciting trains of ideas of our own pains and pleasures, which belongs to the

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* These writers may conveniently be referred to together as the *associationist-hedonist* school, since they all attached importance to the association of ideas and to pleasure as the main determinant of human conduct. They differed, however, amongst themselves. The association of ideas did not, for example, take in Bentham's psychology the central place it occupied in that of James Mill.

pains and pleasures of any of our fellow-creatures, is possessed by the pains and pleasures of a man's child.

In the next place, it is well known that the pains and pleasures of another person affect us, that is, associate with themselves the ideas of our own pains and pleasures, with more or less intensity, according to the attention which we bestow upon his pains or pleasures. A parent is commonly either led or impelled to bestow an unusual degree of attention upon the pains and pleasures of his child; and hence a habit is contracted of sympathizing with him, as it is commonly, and not insignificantly named; in other words, a facility of associating the ideas of his own pains and pleasures, with those of the child.

Again, a man looks upon his child as a cause to him of future pains or pleasures, much more certain than any other person. The father regards the son somewhat in the light of another self, a great proportion of the effects of whose acts, whether good or evil, will redound to himself. An object regarded as a great future cause to us of future pains or pleasures, we call an object of intense interest; in other words, a train of interesting ideas, that is, of ideas of pains or pleasures, is associated with it."

The first quarrel that a modern psychologist would have with this account is that it treats maternal behaviour as acquired, whereas it is certain that it is mainly innate. We believe that the tendency to care for her child is the expression of the mother's maternal instinct and that thoughts or ideas of pleasure which may reinforce this behaviour are comparatively unimportant elements in it. The mother cares for her child because she is driven to do so by the immensely powerful parental instinct. The persistence of her love in face of difficulties and dangers, and even when her child is giving her pain and thoughts of pain, is not accounted for by the hedonistic theory at all.

It is certainly true, as James Mill urged in favour of his view, that she will care as much for a child she wrongly believes to be her offspring as for her own child. This fact would be a fatal objection to a parental instinct innately attached to a particular object. But it is no objection to

a parental instinct (as we are forced to conceive instinct) which is a general tendency that can find its expression in the formation of a sentiment for any particular child. The sentiment of love for a particular child is unquestionably acquired. There is no reason, however, for supposing that it is acquired in the way James Mill describes. Its mode of acquirement is probably much the same as that by which chicks acquire the habit of following their mother—*i.e.* the parental instinct attaches itself to any child who is continually with a person in whom the instinct is awakened.

Even when the performance of an action is accompanied by pleasure and the failure to perform it is accompanied by unpleasure, there is no reason for supposing that this pleasure and unpleasure are themselves the movers to action. Behaviour tendencies are themselves innate. We run away from a bull, not because standing our ground and waiting for him is unpleasurable, but because the perception of the danger situation is immediately translated into the action of running away. The unpleasant affect of fear reinforces the impulse (and by direct action on the nervous system makes our running away more efficient), but there is no evidence that the impulse is generated by the unpleasurable feeling.

There is also a tendency in Bentham (sometimes referred to by modern psychologists as " the intellectualist fallacy ") to treat all action as the result of deliberate calculation, and to make calculation of the amount of pleasure and pain the motive which determines these deliberate actions. This tendency is really related to his failure to recognise the instincts as impellers to action. Impulsive action in which there is no deliberation is not unusual in human behaviour, and even in thought-out action there is generally an element of impulse. It is, moreover, a simple matter of observation that when we do deliberate about our actions, our thought processes are not necessarily concerned with future pleasure or future pain.

Anyone using modern psychological terminology will object to

James Mill's account of sympathy as the association of the idea of pleasure with the pleasant circumstances of another person. What is required to be explained in sympathy is why I experience pleasure at the happiness of another, not why I have the idea of pleasure. Mill, however, was using the word idea in a sense broader than is usual at present. He meant by idea any mental presentation—a feeling of pleasure as well as a thought of pleasure. His account of sympathy is, therefore, less inadequate than it appears, but much confusion was certainly caused by this too extended use of the word *idea*, and much of the simplicity of the associationists' formula for conduct was the result of their habit of using the term " idea " to mean many different kinds of mental fact and using " association of ideas " for many different relations between such facts.

The term *association of ideas*, for example, was used (as we should use it now) for the tendency of one thought to call up another. It was used for the relationship we should call *meaning* and it was used for the tendency of a situation to call up emotional responses. The triumph of the principle of the association of ideas which made it attractive to the psychologists of the early nineteenth century was that by its means a diversity of mental phenomena could be included under one simple formula; but we now see that this apparent triumph was only due to the fact that this one formula was used with various meanings.

A further criticism of associationism made by William James was its tendency to treat an *idea* as a fixed and separable entity like an individual object. Human thought and action were made to appear simple by the assumption of this largely fictitious element of thought.

It was recognised by James, however, that when we have said all that can be said in criticism of the doctrine of the associationists we have not destroyed the cardinal principle of associationism. James preferred to say that what are associated together in our thought are objects and brain-processes and not ideas. It is certainly true that the associationists were wrong in denying the existence of instincts, but when the acquired elements of behaviour are explained on the most approved modern theory of the *con-*

ditioned reflex, we find that we have come back to the old principle of association by contiguity in time.

It is quite clear that the principle of association is an important one in explaining the genesis of behaviour. It is necessary, however, to eliminate the misleading implications of the word "idea," and to avoid exaggerating the function of pleasure and pain in forming bodily habits. It is also necessary to recognise that associations are formed on the basis of many innate behaviour tendencies (the numerous instincts) and not merely a single innate tendency to seek pleasure and to avoid pain.

The elements which may be associated may be behaviour tendencies or emotional reactions, and not merely mental representations. Thus a succession of laryngeal movements are associated in learning a series of nonsense syllables. An emotional reaction is associated with a perception when a child having been once frightened by a rough dog afterwards experiences fear when it sees any dog. When a child learns not to touch a hot poker by having once been burnt by one, this is probably simply the association of the reactive tendency to avoid with the perception of a poker.*

In the case of the parental instinct, there is no reason for supposing that the sentiment founded on it is acquired in the way Mill describes. There are other instincts, however, which do become attached to objects by the method of association. A child starts life with the instinct of fear. The emotion of fear becomes attached to all dark situations after he has been frightened in the dark or had fear associated with darkness by having horrible stories told to him. Similarly he can be made afraid of dogs, cows, policemen, etc.

* It is plain to introspection that a reactive tendency to avoid may be active when the person possessing it does not think of pain at all.

It must be noted that what happens in learning by heart is not that the idea of *Our* calls up *Father*, etc. (as Mill said), but that the largyngeal movements of saying *Our* gives rise to the laryngeal movements of saying *Father*. The succession of laryngeal movements may be very largely automatic. Had James Mill taken the saying of the Rosary instead of the Lord's Prayer as his example of learning by heart, this would have been apparent, for the method of using the rosary is by automatically repeating "Hail! Mary . . ." while the mind is occupied, not with the idea of the words repeated, but with meditation on something different.

90. The Conditioned Reflex.—The classical experiment on the conditioned reflex was performed by Pawlow, using a dog as his subject. If food is presented to a dog his salivary glands begin to secrete.[7] This is known as an *unconditioned reflex*. If now a bell is rung several times at the same time as food is presented to him, it is found at the end that the secretion of saliva will take place when the bell is rung without the presentation of food at all. The mere ringing of the bell is now sufficient stimulus to cause the secretion of saliva. This is called a *conditioned reflex*. Salivary secretion has become conditioned to the new stimulus of the bell.

Similar conditioned reflexes can be produced in a human being. If an electric shock is given to a person's finger every time a light is exposed, the withdrawal of the finger will finally appear as a conditioned reflex response to the light alone.

We have here on the reflex level a phenomenon which at once suggests the process of transformation of an instinct we have already called *deflection*. If we wished to carry over into the terminology of instinct modification the language of the conditioned reflex, we might say that in

deflection an instinctive response was conditioned to a new situation, just as in the conditioned reflex of the dog the salivary secretion has become conditioned to a new stimulus.

It will be clear that, as we have already said, the conditioned reflex is the acquirement of a reflex response to a stimulus by the principle of association by contiguity in time. The formula for association by contiguity in time was that if the ideas of the objects *A* and *B* had frequently occurred to a person's mind simultaneously or successively (through his seeing the objects simultaneously or successively) then the idea of *A* would in the future call up the idea of *B*. If in this formula we substitute for *idea of A* the words *the stimulus A* and for *idea of B* the words *reflex response to B* we get the formula for the conditioned reflex. If, therefore, we follow the more extreme behaviourists in making the conditioned reflex the explanation of all acquired modes of behaviour, we have a picture of human conduct which is extraordinarily like that of the associationists (except, of course, that the behaviourists admit also the existence of instinct).

It seems at least probable that many of the peculiarities of emotional response which are now explained by reference to the unconscious will be better explained as properties of systems of conditioned reflexes. The visceral and vaso-motor changes which make up the physiological background of emotion are, as we have seen, a complex of reflexes within the autonomic nervous system. These presumably can become conditioned to a secondary stimulus. Let us take, for example, the classical account of a case of claustrophobia investigated by Rivers.[28] This was a doctor who was afraid to enter into an enclosed space (such as a dug-out or an underground tube), and it was found by Rivers that the origin of this fear was an incident which had occurred when he was very young and was frightened by being attacked by a dog in a dark passage. This incident had passed completely from his mind, and when, as a result

of treatment, it was restored to consciousness his fear of enclosed spaces disappeared.

The explanation of this event, on the conditioned reflex theory, would be that the visceral and vaso-motor reflexes of fear were called out by the dog situation (as an unconditioned system of reflexes). This occurred in conjunction with the enclosed space situation and the autonomic reflex response of fear was thereafter conditioned to any enclosed space situation. Hence the claustrophobia. Because the cause of this condition had vanished from consciousness, and therefore could not be made the subject of rational thinking, it remained a response on the reflex level. When brought into consciousness the groundlessness of the fear response to the dark passage situation was seen and the system of conditioned reflexes disappeared.

91. Inheritability of Conditioned Reflex.—The conditionment of a reflex to a new stimulus is clearly an " acquired character," so orthodox biology would lead us to suppose that it could not be inherited. If an animal is trained to make a conditioned response to a stimulus, we might expect that its offspring would need no less training before the same response was established. Professor Pawlow, however, has recently reported an experiment in which he found a marked improvement in the rate of learning in offspring whose parents had been trained in the same response.[100]

He took a set of wild mice and trained them in the food reflex, using an electric bell as secondary stimulus. Three hundred repetitions were necessary before the reflex was well established. The offspring of these needed only 100 repetitions, the third generation needed 30, the fourth 10, and the fifth 5. At this point of the experiment Pawlow left Petrograd, but hoped on his return to find a generation of mice who gave the response the first time the bell was rung. If this hope is fulfilled, he will have produced a genuinely innate response simply through inheritance of an acquired mode of behaviour; in any case, if his observations are correct, an acquired modification of behaviour has been inherited.

If Pawlow's results are confirmed, it is easy to see that they will have important bearings both on psychological theory and on social practice. If an acquired mode of behaviour can become innate in later generations, Samuel Butler's idea of an instinct as a habit which has become ingrained in successive generations is less fantastic than it at first appears. It also suggests that desirable mental changes in men may be produced by an improvement in their habits

and environment, and not (as is often assumed by modern social theorists) only by the weeding out of undesirable offspring by a process of artificial selection.

There is little doubt that other workers will repeat this experiment in order to discover whether they can or cannot obtain Pawlow's extraordinary result.* Even if we see no grounds for denying the possibility of the inheritance of acquired mental dispositions, we must be surprised at the extraordinary speed with which Pawlow's mice seem to have improved in successive generations. It has been asked whether he took sufficient precautions to eliminate the effects of unconscious selection of those offspring who were to be trained. It seems unfortunate, moreover, that he started by using wild mice. We do not know how much of the increased rate of training between the first and second set was due merely to the fact that the second generation were born in captivity.

* Meanwhile other experimenters report that no improvement in successive generations results from other kinds of training—as, for example, when rats are trained in a maze.[101] This, of course, is not conclusive evidence against Pawlow's results, although it is an additional reason for caution in accepting them If the inheritance of acquired psycho-physical dispositions is proved, it will still remain for investigators to discover what dispositions are inherited and what are not.

CHAPTER XII.

Sensation and Perception.

92. Action and Thought.—We have so far spoken of the human organism as merely acting. In the discussion of the modes of instinct modification, however, we noticed that the modification of conduct by processes of thought* was an important element in human behaviour. It will be necessary now, therefore, to consider the thought processes in some detail, and we must begin by considering the way in which the elements of thought come into being. We must, in fact, study the psychology of sensation and perception, for without knowledge of the outside world by sensation and perception, there would be no thought.

93. The Organism and its Environment.—The simplest living creature is an organism surrounded by other objects. Its continued existence as a separate living entity depends

* This seems to be the simplest way of expressing the fact that if I think about my behaviour it is different after my thought than it would have been before. I do not mean to imply (or to deny) the doctrine of *interactionism* (that thought, a psychical fact, affects conduct, a bodily fact). This seems to me to be the kind of controversy which a descriptive psychology must steer clear of if it is to avoid barren disputation. I should have no objection to a behaviourist paraphrasing my sentence by saying "modification of conduct by what takes place in the body when I appear to think." The fact itself is beyond question, and it would be only possible to avoid using the language of interactionism by a very tedious circumlocution.

on the continued suitability of its reactions towards other objects. These may be divided roughly into two classes, those that are harmful and those that are beneficial to it. Towards these it adopts reactions of opposite kinds, which we may call *avoiding* and *seeking* reactions.* Thus the primitive organism avoids other organisms seeking to prey on it by contraction or withdrawal of its whole body (an *avoiding* reaction). It secures its own food by bringing its body towards the desired object (a *seeking* reaction).

The continued existence of the organism clearly depends on its success in adopting the appropriate reactions towards different objects. An organism which had a tendency to adopt an avoiding reaction towards its own food supply or a seeking reaction towards other organisms which required it as food would soon be eliminated altogether. Thus the tendency to adopt the appropriate reaction in different situations is implanted by natural selection, and without any previous learning we find even such simple organisms as the amoeba seeking and ingesting smaller amoebas, and escaping from larger ones.

These are the essential facts of the conditions under which animal behaviour and thought has grown up. There is a free-moving organism of delicate and complicated structure, and a real outside world, partly dangerous and partly helpful to the organism, about which his sense-organs must give him so much information as will enable him to make suitable reactions towards different parts of this outside world. By the interaction of the environment and the physiological structure of the organism is produced a series of movements of incomparably greater complexity than those of inorganic matter, which we call the organism's *behaviour*.

* Or *negative* and *positive* reactions.

The environment of the human being is, of course, almost infinitely more complex than that of an amoeba, and his reactions towards it are also more complex. His behaviour is more difficult to study because he has also a complex mental life ; he reacts to the situations in which he finds himself by thought as well as by overt action. But this complexity should not blind us to the fact that the biological nature of human development is essentially the same as that outlined above.

In the long course of evolution man has been surrounded by an environment partly favourable to him and partly hostile. Every individual's survival has depended on the effectiveness of his reactions towards that environment. The growth of his mental powers has always resulted from the necessity of this attunement between himself and his environment. Consciousness has developed presumably because the conscious organism can adjust itself better to the demands of its environment than can an unconscious mechanism of the same organic complexity. A great number of the processes of life have remained outside consciousness because their presence in consciousness was of no value for the adjustment between the organism and its environment.

94. Psychical Life.—The existence of consciousness itself, as well as of every particular detail of conscious processes, depends on the fact that in the evolution of the organism it had " survival value." We can only begin to understand the place and function of the elements of psychical life if we see what part they played in securing the survival of the individuals possessing them. This biological point of view should be kept constantly in mind when examining the different elements of consciousness.

We cannot, of course, say at what point in evolution mental life begins. We do not know whether the amoeba

has any consciousness, nor is this a problem which we can profitably discuss. We have, however, in our own consciousness what appear to be the mental correlates of the primitive withdrawing and seeking reactions. These are the conditions known as " pleasure " and " unpleasure."* Pleasure is the feeling accompanying the experience of a beneficial environmental condition and is accompanied by behaviour of the seeking kind ; while unpleasure is felt in a hurtful environmental condition and is accompanied by behaviour of the withdrawing kind.

Dr. C. S. Myers points out that we must further subdivide the feelings or " affects " connected with harmful and beneficial environmental conditions, as they produce in the organism a condition of enhanced or diminished activity.

A favourable environment promoting enhanced activity produces the affect of *exhilaration* (or gladness) ; one leading to reduced activity leads to the affect of *ease* (or bliss).[102] The corresponding affects belonging to unfavourable environments are *uneasiness* (or distress), and *depression* (or sadness), respectively. Since we find these four ways of reacting to the environment amongst primitive organisms, we may speculate that if we could enter into their mental life we would find it very largely composed of these four modes of feeling ; exhilaration, ease, distress and depression .

A variety of affects have been developed in ourselves with our increasing complexity of consciousness, but underneath them we can discern the primitive modes of feeling

* We avoid the more usual word " pain " for the opposite of pleasure because this word is also used for an organic sensation such as toothache or a pin-prick. The organic sensation of pain is generally unpleasurable, hence the popular confusion of the two ideas under one word, but if it is mild in degree a pain may be indifferent or even pleasurable.

—pleasure and unpleasure in their active and relaxing modes. It has been pointed out by William James[7] that these feeling elements in consciousness are feelings of general bodily changes taking place in the viscera and blood supply. They are sensations of changes which are taking place inside the organism itself.

As we go up the animal scale, mental life becomes more complex as the environment becomes more complicated. It still goes on, however, in a manner not altogether different from that of the primitive scheme sketched above. There is still recognition of stimuli from the outside world (and sometimes from inside the organism) which demand action. There are *affective* reactions to stimuli which modify the responses of the organism to the stimuli. And there are the actual actions, whether volitional or impulsive, which are carried out by the organism in response to these stimuli.

One of the complications in more developed animal life is that the organism can not only react to actually present objects, but can also react to the thought of objects not actually present. The mental representations of these objects are what we call *images*, and in the existence of *images, words*, and what we call *imageless thoughts*, we reach entirely new levels of reaction. We shall discuss these things more fully in the next chapter. We may still remind ourselves of the principle with which we started this discussion. All these more developed mental processes have occurred in evolution through their survival value. The highest flights of intellectual thinking are made possible to us because the use of words enabled our ancestors to deal more effectively with their environment. Correct thinking about ultimate things, such as we may hope to attain by philosophy, was not the evolutionary purpose of our development of verbal thinking.

95. Sensation.—For giving us information about objects outside us we have a large number of nerve fibres ending in the skin or in special sense-organs such as the eyes, nose, etc. These are called the *exteroceptive* nerve fibres. It is probable that the one organ of sensation originally was the skin, and that the special sense organs are merely parts of the skin differentiated to respond to particular stimuli.

Some sensations are still given by the skin. These are heat, cold,* pain and touch. It has been discovered that these sensations are not given over the whole area of the skin. Heat and cold are sensations given only at certain numerous points of the skin known as heat- and cold-spots.† Touch is given by points at the root of all the hairs on the skin and at other points often thickly crowded together in such hairless areas of the skin as the tips of the fingers. Pain sensation is given from very much more numerous spots known as the pain-spots. These pain-spots seem to correspond to free nerve endings in the skin. Heat, cold and touch have special small end-organs in the skin in which their own nerve-fibres end. The end organs of touch are known, but those for heat and cold are still doubtful.

These are all the true skin sensations. There remain two kinds of exteroceptive sensation which do not belong

* It must be remembered that heat and cold are in no sense opposite sensations. As sensations, they are as different as heat and touch. It happens only that the physical stimuli producing them are opposite in character. They are, themselves, totally different sensations with totally different end-organs, found generally at different points on the skin.

† Head and Rivers distinguish also warmth—coolness as a separate pair of sensations from heat—cold.[63] These are not confined to spots but occur over the whole skin. Other observers, however, have not been satisfied that these sensations are different in kind from the heat and cold sensations.

to the skin at all, although they are liable to be confused with skin sensations. These are pressure and deep pain. Pressure is the sensation obtained from exteroceptive nerve-fibres in the muscles when the skin is pressed down on them. Deep pain is the sensation of pain obtained when this pressure is sufficiently increased. It can easily be shown that these sensations do not belong to the skin itself, for they can be obtained from an area of the body of which the skin has been rendered anaesthetic.

There remain the sensations which have special organs of their own. These organs are the eyes, nostrils, the tongue, the ear, and the vestibular apparatus (the semi-circular canals, etc., which are part of the structure of the ear). The normal eye is affected by the electro-magnetic vibrations we call light and gives sensations of white, black and various colours, which have sometimes been described as composed of three primary colour sensations (red, green and violet) sometimes as composed of four (red, yellow, green and blue).

The tongue is affected by chemical substances in solution and gives taste sensations of four clearly distinguishable kinds (sweet, salt, sour, and bitter), with two or three others (such as the alkaline and metallic tastes) whose claim to be considered as primary is doubtful. The internal membrane of the nostrils is affected by gases diffused in the air and gives rise to a variety of sensations of smell, which (unlike the tastes) do not admit of simple classification. Indeed the apparent complexities of the taste sensations can be shown to be entirely due to their fusion with smell sensations occuring at the same time. If the nose is plugged while we are drinking port, it will be found to taste merely sweet; the refined complexities of its flavour are smells, not tastes.

The ear is a sense-organ which is affected by vibrations

in the air and these produce sensations of sound. When the vibrations are regular (*i.e.* of simple harmonic form) the sounds produced are pure musical notes of pitch dependent on the frequency of the vibrations ; when the vibrations are irregular the sensation is that of noise.

We have, then, in all sensation three things : a physical disturbance (the *stimulus*), an end-organ at which that stimulus is received, and a consequent mental fact (the sensation). Of the relationship between the conscious fact of sensation and the chemical or physical changes taking place in the end-organ, the exteroceptive nerve fibres, and in that part of the brain with which they communicate, we can say nothing. We know no more than that we are immediately aware of sensation when a suitable stimulus strikes a sense organ. This is a fundamental fact in the science of mind which can be explained in terms of no other fact, and which could not be predicted from any physiological knowledge we have of the properties of living matter.*

In our normal use of the senses, each sense-organ is responding to only one kind of stimulus—the eye to light-waves, and the ear to sound-waves. These are the *adequate* stimuli for the sense-organ in question. But experiment shows that it is possible to produce a sensation in an end-organ by the use of another stimulus than the adequate one. The retina can, for example, be stimulated by pressure, and even an isolated cold-spot can be stimulated by a hot object. In this case, the sensation which appears is the one belonging to the end-organ, not the one belonging to the stimulus. Thus, pressure on the eye produces a sensation of light, and a hot object touching an isolated cold spot gives a sensation of cold. In other words, a

* This is called by Professor Spearman : " The Principle of the Apprehensibility of Experience." [105]

sensation gives direct information about the end-organ stimulated, not about the nature of the stimulus.

There are other nerve fibres in the body which give us information about the internal condition of our bodies. These are the *interoceptive* nerve-fibres. These are in action, for example, when we feel hunger or indigestion. They are of particular importance in the psychology of the emotions and the feelings of pleasure and pain, for it is probable that the feeling-part of all such experiences is a sensation of internal bodily changes—that for example, feeling afraid is (like feeling hungry) an experience largely composed of sensations of changes in one's internal organs communicated by the interoceptive nerve fibres.

There is a third class of sensory nerve-fibres called the *proprioceptive*. These give information about the positions of the limbs and about movements of muscles and joints.

It will be seen that there is no good foundation for the popular idea that the number of the senses is five. There are five sense-organs, if we count the skin as one, but these give rise to more than five sensations. The skin alone produces at least four distinct sensations. The sensations we have described are, however, the whole of the mental apparatus by which we get information about the external world. The mental representation of an outside object, which we call a *perception*, has as its framework the fusing together of a large number of sensations, often belonging to different end-organs.

96. Perception.—It will have been noticed that the illustrations given of sensations have been drawn from the conditions of laboratory experiment and not of real life. This fact suggests that there is an artificiality in the use of the term " sensation." This is in fact the case ; simple sensations do not occur in ordinary life. Actually we experience perceptions ; the simple sensation is a some-

what artificial abstraction of one element from the complex experience of perception.

We do not, for example, ever have a simple sensation of heat by the stimulation of a heat-spot. What happens if we are touched by a hot needle is that we feel a hot, pointed, hard object touching us. That is, we have sensations of heat, a touch of limited extent, and pressure, all fused together as a complex experience and all not recognised by the mind as sensations but regarded as signs of the thing which touched us. We can more truly say that we felt a hot needle than that we felt sensations of heat, etc.; this is, in fact, the form in which the experience came to us—not as a collection of sensations but as immediate knowledge of an object.

By a special redirection of attention away from the thought of the object and to the actual sensations, we may be able to analyse the experience into sensations of heat, touch and pressure; and the teaching of a student to make such a redirection of his attention from the thing experienced to the experience itself (the attitude of *introspection*) is the first step in initiating him into the methods of experimental psychology. It is important to remember, however, that the sensation is a product of the analysis of experience, it is not the experience itself. The primary elements in our experience of the outside world are *perceptions*. By a perception is meant the mental process of being aware of an external thing.

If we ask what there is in perception more than mere sensation, we find four elements.

(1) There is what we call the *intuition of a thing*. The perception comes to us with a meaning attached to it,—it means that we are experiencing an actual object. It is a better description of my actual experience to say that I see a typewriter than to say that I have the perception of a

typewriter. It is with actual realities that we seem to be coming in contact in our perceptual processes, and not with mere experiences of our own minds.

(2) This thing that we perceive is *recognised*. It is not merely an isolated experience. It is an experience related to previous ones of a similar kind. The use of a name for describing a thing given to us in perception implies recognition. I could not say that I see an apple unless I had had previous experiences into which my present perception fitted. The baby, on whose sense-organs outside objects are for the first time producing their effects, cannot be said to perceive these objects. He has merely a confused sensory complex, out of which he afterwards creates for himself perceptions by various groupings of sense impressions.

(3) The objects which we perceive appear to us to be located in a space outside us. We know that when we are looking at an object the sensation is produced within our own bodies. Yet the object itself is seen as outside us. No amount of mental effort can make us see the source of a visual impression on the retina itself. This is the reference of objects in space. By what psychological means this reference is made is a question which has been disputed in the past by Descartes, Berkeley, and other philosophers.

Modern experimental investigation has made it certain that this process is more complex than was guessed in the days when it was a matter of *a priori* discussion.* We will not discuss here what elements in experience go to make up our intuition of the distances of objects; we will only note that the reference of the object perceived to a position in space is an immediate property of perceptions.

(4) The sensations which form the core of a perception are supplemented by images. We are cognisant of more in an object that we perceive than is warranted by the

* See Professor Titchener's discussion of this question.[117]

actual sensations received. We say that we see a " round, brown, table," when our actual sensory experience is of an elliptical shape very little of which is brown ; proof-reading is rendered difficult by the tendency of the mind to perceive the word that should be there even when it has been incorrectly spelt ; Prof. Spearman has shown by the method of controlled introspection that many observers looking at one side of a match box are aware of the whole box, the side away as well as the side towards the observer.[105] All of these are examples of the making up of a whole perception by the adding of elements of imagery to the core of sensation on which the percept is founded.

This imagery is always present in perception ; indeed, if we carefully examine our perceptions we shall be surprised at the extent to which actually received sensation is supplemented by the activity of our own minds. A small basis of sensation is sufficient to enable us to fill up a whole perception by means of imagery. Generally the sensational basis is correctly interpreted, but sometimes it is not. When the added imaginal element does not belong correctly to the object we are perceiving, we have an " illusion," as when a coat hanging on a wall in semi-darkness gives rise to the apparent perception of a person standing there.* An illusion differs from an ordinary perception only in the fact that the imaginal element added to the sensational core is giving us incorrect instead of correct information about the object of the perception.

Full perception differs, therefore, from mere sensation in the following respects : (1) there is intuition of a thing

* In the description of such illusions, we find that the person experiencing them can often give details of the expression on the illusory face, as in the following example of William James : " the face itself was pale and beautiful, and the lower part swathed in the white band commonly worn by the nuns of Catholic orders."[27] There is something really added to the experience by imagery ; it is not merely an intellectual misinterpretation of insufficient sensory data.

which is (2) recognised and (3) located in space, and in the fact that (4) in full perception there is an addition of imagery to the sensational core.

97. The Gestalt Theory.—In the experimental psychology of the end of the last century, there was a tendency to forget that " sensation " was an artificial product of the analysis of the actual material of experience. There is now a reaction against this tendency, which has expressed itself in Germany in a school of psychological thought which rejects altogether the conception of sensation and says that the primary element of experience is what it calls the *Gestalt* or *form*. When we hear a bar of music, for example, we do not give an adequate account of our experience by describing the separate notes. What we actually experience is the *form* of the combination of the notes. The analysis of this combination into its separate notes destroys the character of the experience altogether. When we see adjacent strips of paper of different shades of grey, the experience we have is not of a comparison between the two sensations, but we have a single indivisible experience of the step between the two greys. Professor Köhler of Berlin performed what is regarded by advocates of the Gestalt theory as a crucial experiment to show that this is the case. Two greys, A and B, of which B is the lighter, are placed side by side, and an animal is trained to take food from B, it is then given a pair of greys, B and C, of which C is lighter than B. It is found that the animal goes, not to the grey B from which he has originally taken food, but to C. It is to the step between the greys, not to the sensation itself, that the animal reacts.[103]

The work of the upholders of this theory provides a valuable criticism of the exclusively analytical point of view which has been carried to an extreme by the behaviourists. Their point of view is, perhaps, not altogether a novel one in English psychology. The fact that sensation is an abstraction and not a primary element in experience has been frequently emphasised by psychologists in this country.* Much of their investigation, however, is certainly new, and contributes important experimental evidence of the inadequacy of the exclusively analytical point of view in pschology.

98. The Outside World.—The function of perception is to give us information about a world of real objects outside

* For example, by Professor J. Ward.[104]

us. The biological purpose of such knowledge is to enable us to behave in an effective way with respect to these real objects. Outside realities may be classified as objects, events, and relations between these. Two of the most important of these relations are those of space and time. Our actual intuitions of space and time are, of course, products of our experience, but they are based on the fact that there are real physical relationships: (1) a system of relationships between objects, which we call " physical space " and (2) one between events which we call " physical time." Psychological space and psychological time are our subjective orderings of objects and events which are products of experience, and differ in some of their properties from physical space and time.

What we mean by speaking at all of *real* external things is that some of our mental processes are indications of the necessity for adaptive behaviour. If I have a perception of a chair in front of me, it means that I must walk round it if I wish to continue on my course. In other words, I have to adopt adaptive behaviour towards it. The necessity for adopting adaptive reactions when we have the experience of perception gives the meaning which is attached to the word " real." The feeling of the necessity for adaptive behaviour in the presence of a real object may be called the " feeling of reality." In certain pathological states this feeling is lost, and there results a mal-adaptation to the environment.

The question of the difference between a percept and a mental image is one which has often been discussed. One's first tendency to say that a percept is more vivid or more distinct than an image is contradicted by the observation that in a darkened room a good visualiser may produce an image of a ship which is more vivid than a chair faintly seen in the darkness, and that a visual image may be more clear

and distinct than the perception of an object seen in a fog. Yet under these conditions there is no tendency to confuse a perception with an image. A vivid and distinct mental image remains lacking in some quality possessed by a dim or confused perception. The essential difference between them is that the " reality feeling " or " tendency to react " is absent from images and is present in perception. It is only in morbid conditions that adaptive reactions are adopted towards one's own imaginal constructions. These are conditions in which the power of adapting oneself to one's environment is, to some extent, lost.

CHAPTER XIII.

Imagery and Thought.

99. Imagery.—The mental processes we have discussed so far have been primarily concerned with the outside world. Their biological function has clearly been to enable the organism to deal with the immediately present environmental situation. Their bodily organ has been the exteroceptive nerve fibres; their result has been knowledge of outside things. But we have seen that, even in our perception of things, part of our total experience is supplied, not by the things themselves, but from our own minds.

Very few lines are necessary to make a recognisable portrait of a person, and, if regarded analytically, these lines may be seen to be quite inadequate to represent a human face. But, if these are skilfully placed, the mind of the person observing the lines takes no account of what has been left out, but receives a perception of the face by making up from its own previous experience the inadequacies of the actually presented object.

This element in experience, originating from within the mind itself and not from the external world (or, from the physiological point of view, excited *centrally* and not *peripherally*) is called *imagery*. While imagery occupies a relatively subsidiary position when we are engaged in actual action, there are other times at which it is the dominant element in our mental processes. These conditions are of two quite distinct kinds: first, when we are thinking

out a problem, and secondly, when we have lost interest in the demands of our environment and are merely idly dreaming. Imagery is, in fact, the most easily recognisable constituent of any of the processes we ordinarily call *thinking*.

Imagery can apparently belong to the domain of any of the sense organs. When the sense organs are stimulated by an external object we have perception; when, in thought, we revive perceptions we have previously experienced we have an image. Thus, we can see "with our mind's eye" a picture of a scene not now actually present before us; we can hear "with the mind's ear" music or noises which we heard at other times; or we can sit in our chair and have the feeling of making the movements of swimming. These are examples of *visual*, *auditory*, and *kinaesthetic imagery* respectively.

The position of imagery belonging to other sense organs is less clear. Many people can image fairly clearly smells and tastes, others find they cannot. It is not usual to find vivid imagery of touch or pain sensations or of emotions. But it is probable that there is imagery of these kinds as well.

About the status of kinaesthetic imagery we cannot be certain There is a good deal of evidence for the view that when we image a movement we are actually making small movements of the muscles of which we are imagining large movements. It is possible that we are actually feeling these small movements when we have what we call kinaesthetic imagery. In that case kinaesthetic imagery is really of the nature of sensation, not of imagery.

100. Imaginal Types.—One of the difficulties in the way of psychological investigation of imagery has been the very large individual differences in imagery. Galton was the first person by means of a systematic enquiry to show how great these individual differences were.[88] By sending out a questionnaire to a large number of people asking them to

image their own breakfast tables and to answer questions about the colour, the brightness, and the clearness of the objects they could see on them, he found that some denied that they had any such capacity at all, and these believed that no other person had. Others understood his question quite clearly and were able to perform the necessary operation and to answer his questions about it. Similar individual differences were found to exist in the power of mentally representing sounds and movements.

Galton divided his subjects into types possessing predominant *visual, auditory,* and *motor* (or *kinaesthetic*) imagery. These he called *visiles, audiles* and *motiles* respectively. Later investigation has shown that matters were not quite as simple as Galton supposed, but the main fact established by Galton remains uncontradicted. This is the fact that there are enormous individual differences in the range, vividness, and clearness of imagery possessed by different persons, so that some persons have, for example, no capacity for visual representation at all, while others have visual images of vividness comparable with that of actual perceptions.

Galton emphasised the different tasks for which different equipments of imagery fitted their possessors. He pointed out that a person with vivid visual imagery might be able to perform such a feat as the memorisation of a long speech by imaging its actual appearance on the paper on which it was written, or to play games of chess blindfold. Differences in literary styles have also been attributed to differences in equipment of imagery. The use of visual material in poetic production (as, for example, in Swinburne), or the use of visual metaphor in philosophical abstract writings, have been taken as evidence that their authors belonged to the visile type. Concreteness and a distrust for merely abstract thinking have been supposed to

be characteristic of the person whose thought processes largely consist of visual images.

It is probable that there is much that is true and important in these views of the effect of imaginal type on the products of thought, but it must be admitted that so far the work done on them has not been of a scientifically very satisfactory kind. It has advanced little beyond Galton's original and brilliant but unverified speculations. What is needed now to give Galton's speculations a solid scientific foundation is an investigation of how far, for example, the powers and peculiarities attributed to the visual thinker are found amongst actually living people to be correlated with the extent to which these appear to possess predominant visual imagery when measured in other ways. In fact, the experimental work which has been done has tended not to confirm such dependence of particular mental powers on particular kinds of imagery as had been predicted.

A good example of failure of the mental ability to show its expected dependence on the use of imagery is the following experiment which was carried out by Betts.[106] He asked his subjects to suppose that a wooden cube painted red on the outside was cut into twenty-seven cubes, and to say how many of these smaller cubes would have paint on three faces, how many would have paint on two faces, and how many would have no paint on them at all. Afterwards, he questioned them in order to find out what imagery they had used in solving the problem.

This is the kind of task which one might expect to find could be solved only by the use of visual imagery. This experimenter found, however, that 35 per cent. of his subjects reached the solution without the use of imagery, and that these made as good records in accuracy and speed as did those who reported the presence of imagery. This result suggested that the imagery even with those subjects who reported its presence was an incident rather than a necessary factor in the obtaining of the solution.* Similar experi-

* This result is in line with Galton's own observations that many geometers did not use visual imagery in their work.

ments have been made by Dr. Carey, who worked out mathematically the correlations between the performance of tasks which have been supposed to be dependent on the presence of visual imagery, and the actual presence of such imagery.[107] The correlations were found to be extremely low (·13 and ·06 in two series of experiments).

It would be a rash conclusion to draw from such experiments that no particular tasks are made possible by the possession of a particular kind of imagery which would be impossible without it. They give a warning, however, of the danger of assuming that imagery must be used in particular tasks without experimental justification of this assumption. Further experimental work may serve to make more clear what tasks visual and other imagery do perform in thought.

101. Verbal Imagery.—It has been found necessary to make a distinction between what are called *concrete* and *verbal images*. Concrete imagery consists of pictures of things seen, revivals of sounds heard, and so on. This imagery may belong to a different sense from that used by the same person when thinking in words (when words occur in thought they occur, of course, as images). The person who has vivid and predominant concrete visual imagery may use kinaesthetic imagery when thinking in words. That is to say, his thoughts of words may be mental representations of the movements of tongue and larynx which would be necessary to pronounce those words.*

The functions of words are twofold. First, to provide a system of symbols communicable from one person to another. We might do our own thinking fairly satisfactorily in concrete imagery, but if we had not words we could make only very clumsy attempts to communicate ideas to each other. Secondly, to provide a vehicle in which our own thinking can be carried on in a manner

* It is possible that these kinaesthetic images are really the sensations of small movements of the vocal apparatus, as maintained by Watson.[45] We shall for convenience use the term *kinaesthetic imagery* for these mental presentations without prejudging the question of whether they are really of the nature of imagery or of sensation.

more precise and better adapted to the solving of problems requiring precision of thought than is possible with concrete images. This function of words will be considered more fully when we come to discuss conceptual thought.

It is a curious instance of the terminological inadequacy of which a writer can be guilty in the interests of an oversimplified mechanistic theory that Watson insists on using the name "language habits" for the human use of language. The phrase is misleading and inaccurate; in effective use of language for thought or communication we do not find the rigidity characteristic of habit, but plasticity and adaptation to the particular situation. Sometimes, indeed, in human speech, we do meet with what may properly be called "habits" in language. Examples are to be found in the enunciation of platitudes, and in the tedious repetition of stock phrases or changeless anecdotes. These are "language habits," but it is important to notice that they do not have any useful function in effective thinking and intelligent action, as does our ordinary plastic use of words. Language is useful (for other than the most superficial ends of social communion) just so far as the people using it are not bringing into play any "language habits."

102. Experimental Investigation of the Thought Processes.—We now come to the question of whether we have given an exhaustive account of the contents of thought when we have described sensations, concrete images, and images of words. This is a question which can be decided in one way only, by careful introspective examination of the thought processes.

The examination and exact description of thought processes is not a matter as easy as it may at first sight appear, and it was not until the beginning of the present century that such observations began to be made in a way which made it possible to give a reasonably certain answer to this question. The method used was that the subject was asked to solve a simple problem, to make a judgment, to grasp the meaning of a sentence or to answer a question, and

immediately after his answer was given he was required to report all that had passed through his mind during the few seconds between the posing of the problem and the finding of the answer. These operations were repeated again and again with the same subjects, until the task of reporting their mental processes which was so difficult at first became a relatively easy one.

It might have been found that in this class of experiments different subjects gave different replies, and that the detailed reports of their mental processes were dependent on the psychological theories they happened to hold. In this case, the severe criticism of experiments of this kind which was dealt out by the earlier experimental psychologists, such as Wundt, would have been justified. But as a matter of fact this was not the case. Results were given of consistency comparable with that of the earlier quantitative psycho-physical experiments, and we now have in such works as those of Marbe, Bühler, T. V. Moore,[108] and Aveling[109] descriptions of thought processes which by their fulness of detail have opened out a new field in descriptive psychology.

103. Imageless Thought.—One of the most important results which emerged from these experiments on thought processes was that a description of the sensations and images (verbal and concrete) did not complete the observable contents of the mind. There were other elements in the processes of thought which, since they were thoughts and yet were not images, were called *imageless thoughts*. For example, when a subject is given the task of responding with its opposite when he is shown a word, he is in a condition of mental tension which might be expressed in the words : " opposite to be called out when word is exposed." As a matter of fact, however, this attitude may not be actually in consciousness as a form of words or even as an

image. It is simply the awareness that a particular problem has been set which the subject understands and could put into words if required. It is a mental fact which must be expressed by a new word. The word used in German is *Aufgabe*, which may be expressed in English as *consciousness of a problem*.

More important, however, is another kind of imageless thought which is called in German *Bewusstheit*, in English an *awareness*. If we use a noun, let us say *horse*, it carries as its meaning indication of a class of objects (a particular kind of four-legged animal) with a certain amount of knowledge that we possess about them—that they are used for drawing carts, have manes and tails, and so on. This body of knowledge is what we call the *meaning* of the word "horse," but these experiments soon prove that this meaning can be present in the mind without the word "horse," or the image of a horse, occurring at all. Similarly the meaning of a word denoting a relation, let us say "higher," may be conveyed in the mind by the image of the word or by an image of two objects, one of which is above the other, but it may also occur as a thought without either verbal or concrete image accompanying it. Such imageless thoughts are what is meant by an *awareness*. They are imageless presentations of a knowledge-content.*

An image occurs in the mind when some interference with the train of thought takes place, when there is doubt or hesitation about the thing thought of, or when we de-

* We have already (p. 55) used the term *image function* for the capacity to react to a non-present perception, even though no image is present to introspection. It is possible that the actual mental content in an imageless awareness is the cognition of a complex of image functions on the margin of consciousness, any of which would develop into an introspectible image if it were attended to.

liberately stop the train of thought in order to examine what is thought of. But careful observation proves conclusively that words and concrete images are not necessary as vehicles of meanings.

104. Meaning.—The function of images (concrete and verbal) in our own thought is to carry meanings. The function of spoken words in our communications with each other is similarly to convey meanings. We have seen that meanings may occur in our own thinking without being supported by any image or word, but images and words (or, indeed, any other mental contents) do not occur in our minds except with meanings attached. We will use the word *idea* for any mental process carrying a meaning, whether that mental process be a concrete image, the image of a word, or an imageless thought.

Words have, as we have seen, an advantage over images even in our own thinking. An image is not a convenient vehicle for carrying the meaning of a class of objects. A mental picture is a perfectly satisfactory vehicle of the meaning of my own dog, but how are we satisfactorily to have a concrete image which shall carry the meaning of dogs in general? Historically, there have been two views on this problem. Some said that we could form a *generic image* of a dog which had none of the particular qualities of individual dogs, but represented just dogs in general. Others said that this was impossible; that any image of a dog must be of either a brown dog or a black dog, of a large dog or a small dog, that, in short, it must be a picture of a particular dog.

This is probably one of the many disputes in the history of philosophy which depend on individual differences in imaginal type. The person with what Galton would call good visual imagery has mental pictures so vivid and accurate in their details that they can be pictures only of

particular objects. Others whose visual imagery is of such a vague and schematic kind that they are unable to form a detailed picture of anything, have no difficulty in forming an image vague enough to be called an image of a dog in general, and not of a particular dog.

Moreover, the whole dispute is rendered rather unimportant psychologically by the fact that a particular image may carry a general meaning. A vivid visualiser does form a picture of a particular dog to carry the meaning of the class of objects *dogs*. Dr. Aveling, however, has shown that this is not generally the case.[109] Amongst his subjects the idea of a particular object generally occurred as a concrete image, while the meaning of a class of objects generally occurred as an imageless thought. In any case, it is clear that the word " dog " is a more satisfactory vehicle for carrying the meaning of the class of dogs than any concrete image.

As, moreover, we go further from actual experiencable particulars, the value of words as vehicles of thought increases. It is difficult to see how a visual image could satisfactorily carry the meaning belonging to the word " instinct." Any use of a visual image for conveying this meaning would be liable to lead to confused and inaccurate thinking, while such a word as " entity " could not be given a concrete formulation at all.

More important, however, than the gain in clarity and precision in our own thinking which results from the use of words instead of concrete images as vehicles of meaning, is the gain which results from the fact that we can use them for intercourse with other persons. For the understanding of this use, it is important to examine the relationship between the word and its meaning. The simplest kind of meaning which a word can bear is some object, event, or relation in the outside world. This kind of meaning we

will call *reference*, and the outside external thing to which a word refers we will call its *referent*.*

The function of concrete images and words in thought is, however, no doubt an important one, even although meanings can pass through the mind not attached to an image. The function of an image may be to provide a stable foundation for a meaning which the thinker desires to retain in consciousness. Thus, Dr. Aveling says : " Thought is perpetually in process of becoming, in which process it passes beyond itself. It is unstable. The image is a relatively stable formation ; and as long as it is present in consciousness its conceptual element will also tend to remain."[109]

Moreover, in our thinking, we often want not merely to reach conclusions, but to know whether the conclusions reached are justified. Conclusions may be reached by the passage through consciousness of imageless thoughts, but the test of logic can only be applied to a series of thoughts which has been expressed in words. Verbal thinking is, therefore, used when we wish to be careful of the validity of our thought processes.

Finally, it is possible that thoughts were originally carried by words or images, even though in the process of individual development they have later grown independent of them. An initial dependence of thoughts on words is, for example, suggested by the autobiography of Helen Keller who, blind and deaf from a very early age, never had the use or understanding of words until they were communicated to her by the patient tapping on the palm of her hand by a teacher of the blind and deaf.[110] She describes her feelings when the meaning of a word dawned on her for the first time. She speaks of the word awakening her soul, giving it light, hope, joy, and setting it free. Something very definitely new clearly entered into her mind at this time, her language suggests that words meant for her not merely new vehicles for old thoughts, but the possibility of thinking new thoughts altogether. Her initiation into the use of words seems to have meant the beginning of clear conceptual thoughts. The meanings which may afterwards have been independent of words only became possible to her mind when words came to carry them.

It should be noted that the very definiteness and fixity of the meanings carried by words produces a tendency to falsification in the description of phenomena which must be carried out by their

* Following Ogden and Richards.[111]

means. We find it difficult to recognise the differences in phenomena we describe by the same word, or to see the continuity between things which are called by different names. The child finds it difficult to make a distinction between, let us say, " scarlet " and " crimson " as long as he brings both of these colours under the more general word "red." Later, when as an adult he possesses an increased number of colour names, he thinks of the colours as distinct things. If he recognises the difference between scarlet and crimson, but has no intermediate colour name, he will cognise an object as either scarlet or crimson, and not consider them as arbitrarily chosen points on a scale of colour which is absolutely continuous from a red with a slight admixture of yellow to one with a slight admixture of blue.

The falsification which results from the artificial appearance of discreteness given to continuously varying phenomena by the application to them of words (which by their very nature must be distinct and separable) is a particularly grave danger to psychology. There are no sharp divisions in nature ; we make divisions when we try to describe phenomena in words. The words " sane " and " insane " ; " intelligent " and " backward " ; " good memory " and " bad memory " ; are pairs of words which in popular speech stand for distinct and separable conditions, although psychological research shows that there is absolutely continuous gradation between them.

Psychologists, too, have been guilty of originating new distinctions of the same kind when they have classified people into types in respect of particular functions : " sanguine " and " bilious," and the " traditional," " emotional," etc., types of religious person, are examples of such artificial distinctions.* Sometimes artificial distinctions of this kind emerge by using for the discovery of a mental capacity a test of the hit-or-miss variety (one in which the subject must pass or fail, but which gives no measurement of the gradation of quality in different persons' performances). The result is the same as if we measured everyone's height by means of a fixed measuring rod five feet six inches long, and called all those persons " tall " who exceeded its length and those " short " who failed to

* There is, of course, a valid justification for speaking of " types " when a graphical representation of the incidence of a function shows a dumb-bell form, but there is no evidence that this is the case in the examples mentioned above.

attain it. On the basis of such experimental results one might group men into a " short " and a " tall " type, although a graded method of measurement would have shown that their heights lay approximately on a *normal* curve (with the densest distribution of individual heights about the mean). More often, however, the source of such appearance of discontinuity where there is actually continuity is simply in the use of words. It has already been suggested* that our names for emotions are discrete names for a continuously varying series of sensations of visceral disturbances.

This is a source of error in description which is always present, for if we are to describe phenomena we must describe them in words, and if we use words they must have sharply distinguished meanings. Our only remedy is to watch carefully for this source of error when we attempt to draw conclusions from classifications.

If reference to external things and statements of relations between them or of the occurrence of external events were the only uses to which words or sentences were put, the psychology of meaning would be a fairly simple problem.† But we soon discover that words or sentences having the same reference may differ very much in meaning, because the form of words used expresses something besides a reference. It may express, for example, an emotional attitude towards the object or event referred to. The words *firm* and *obstinate*, *brave* and *foolhardy*, *thrifty* and *mean*, for example, are pairs of words generally used to refer to the same qualities of character, but in each pair the first expresses commendation, the second condemnation of that trait. Even when using the same word (let us say, *clever*), the intonation of it may express attitudes of approval or severe disapproval. Ogden and Richards[111] distinguish five ways in which language is used :

* p. 103.

† Sentences and phrases, rather than words, must, of course, be regarded as the units conveying meaning in ordinary speech. We shall generally speak of the meanings of single words because these present the same problems in a simpler form.

(1) Symbolisation of reference.

(2) The expression of the speaker's attitude to the listener. (As, for example, when the avoidance of slang or commonplace words expresses respect to the listener, while the use of those words would express familiarity).

(3) The expression of an attitude towards the referent. (Examples have already been given of words used in this way).

(4) The promotion of effects intended.

(5) Support of reference. (Indication of the degree of difficulty in recalling experience referred to).

Of these four uses of language, in addition to simple indication* of referents, the expression of an attitude to the referent is unquestionably very much the most important. In fact, one of our prime difficulties in constructing a suitable terminology for psychology is to use words which merely indicate mental facts without expressing also attitudes of approval or disapproval. If we take by chance six words in psychology, let us say, *character, will, passion, instinct, intelligence, intellect,* we shall find that as we examine each one that its connotations are partly ethical judgments of approval and disapproval, quite irrelevant to the work we want the words to perform in a strictly scientific psychology. Our success in constructing such a descriptive psychology depends entirely on our abstracting the meanings of our words from such attitudes, and so using words simply as indicators of mental facts.

Our difficulty is rendered greater by the fact that, in the world outside, words tend to accumulate more and more the meanings of approval and disapproval in addition to their mere function of

* It seems better to avoid the use of symbolisation for this relation. The word *symbol* is generally used for such a relation as that between a cross and voluntarily accepted poverty, or (in Freud's theory of dreams) between the dream image of a house and the human body.

symbolisation. Politicians and the writers of leading articles in newspapers, whose use of language is primarily to foster sentiments and not to attain adequate description, use words with this expression of attitude as the most important element in their meanings. Indeed, one could construct a reasonably adequate political speech by merely collecting all the words expressive of disapproval and applying them to one's political opponents, and of the words expressing approval and applying them to one's own party. In the construction of such a speech one need only do so much indication of actual events as is necessary to provide a stream of language in which these words could be used.

Our ideal in science and logic is to use words so that they symbolise merely objects, events, relations, or concepts, and express no mental attitudes. Our second ideal is to use words which mean exactly the same thing to everyone using them. Neither of these ideals is completely attainable. Words used in scientific treatises are approximately devoid, to the scientific reader, of expressions of attitudes. They are not, however, for the general reader who picks up the scientific work, and much of the misunderstanding of modern psychological work is due to the fact that words used by the writer with an approximately scientific meaning are read by the general reader and understood with all their popular meaning of expression of attitude.

But even apart from this source of difference of meaning between the user of a word and the hearer of it, there is a source of individual difference in meaning in the mere fact that the user and the hearer of a word have had different individual experiences from which their meanings have been built up. Even when I use the word *dog*, its meaning for me is not quite the same as it is for my reader because my experience of individual dogs has been different from his.

This difference in common nouns is clearly of no practical importance, but when I use such words as *capitalism, re-*

ligion, communism, or *morality,* it is unlikely that they mean even approximately the same thing for different readers. If the speaker is allowed time to explain what he means by one of these words, he may be able to convey this meaning very nearly to his hearers, but when they are used simply as individual words in a continuous flow of speech, the user of them has no opportunity for such elaboration, and the common assumption that the meaning of them to a speaker and to his different hearers is the same is quite certainly wrong.

As an example of the problems of meaning, we may take a report by the *Times* of the conclusion of a speech on divorce by Lord Hugh Cecil : " The one thing, as it seems to me, that Christians are bound, as Christians, to resist, is any proposal to call that marriage which, according to the revelation of Christ, is adultery." This is quoted by Messrs. Ogden and Richards[106] as an example of the fact that men of learning and sincerity are lamentably at the mercy of forms of speech. Actually it is a recognition by the speaker of the fact that language may serve the purpose of expressing an attitude towards the referent as well as that of merely symbolising it. The referent of the words " marriage " and " adultery ' in Lord Hugh Cecil's speech is the same—" the cohabitation of divorced persons." The use of the one word would signify an attitude of social approval of such cohabitation, the other of social disapproval. The contention of the speaker is that Christians must resist the use of a word expressing social approval of a condition of which he believes that Christ sanctioned the use of a word expressing social disapproval. Whatever we may think of its contention, we must admit that the speech shows accurate appreciation of this aspect of the psychology of meaning.

105. Language as a Social Function.—All language has in part a social aim, for at least one of its objects is the communication of ideas from one person to another. But no one who has carefully observed himself or other people in conversation can make the mistake of supposing that the communication of ideas is the sole use of language in

speech. In ordinary conversation, particularly between people not well acquainted, it is quite obvious that the speakers are driven by a necessity to talk to each other which is almost independent of the ideas communicated. So subordinate are these, in fact, that the meanings conveyed are often as well known to the hearer as to the speaker.

The logician who supposed that the only function of language was the communication of ideas by the indication of referents, would be puzzled if he heard one man, meeting another in the street, tell him that it was a fine day. For this use of language in which the social function predominates and the conveyance of meaning is altogether subordinate, Professor Malinowski suggests the term *phatic communion*.[111] Perhaps, as Mr. Trotter suggests, one object of such phatic communion between strangers is the recognition of whether both belong to the same social group.[88] Observation of intonation and pronunciation decide whether one is to treat the stranger as an equal or to remain aloof from him. But probably this is not its only function. The mere establishment of social relationship, which takes place by speech and is impeded by silence, is probably the important function of phatic communion.

106. Imagery in Memory and Imagination.—Images may fulfil either of two functions in thought : they may stand for past experiences or they may have a prospective meaning (*i.e.* they may be images of a situation which is thought of as occurring in the future). These are their uses in *memory* and *imagination* respectively. Images are certainly not the only points of contact of the mind with its past experience. A motor habit, for example, may have a very similar relationship to the past, and memory images and certain motor habits are confused together in the ordinary use of the word " memory." When we have formed the laryngeal habit of repeating a series of nonsense syllables,

or the dates of the kings of England, we say that we " remember " them, using exactly the same word as we would if we could recall their appearance by means of an image.

A certain amount of mystery envelopes the images of the *imagination* (*i.e.* images used as in constructing *castles in the air*) if we are dominated by the idea that an image is always the *copy* of past perceptions. If this is taken to mean that the stuff of all images is taken from past perceptions (with much blending of different perceptions, obliteration of details, and falsification of reference), this statement is undoubtedly true. If it is taken to mean, however, that an image is a memory-image in virtue of the fact that it is a copy of some past perception, it is undoubtedly false.

A true memory image may be by no means an exact copy of a past perception ; in fact, it is certain that it is always inaccurate and incomplete. Its inaccuracy, however, leaves it none the less a memory image. It is a memory-image in virtue of the fact that its function in thought is to *mean* a past experience. Similarly, an image which *means* a situation or object which is thought of as belonging to the future is an image of the *imagination*, although it may be no less like past perceptions than a true memory image. The difference between these two kinds of imagery is a difference in their function, not a difference in the material from which they have been made up.

This difference in function is at the bottom of the distinction made in popular speech, and in the *faculty psychology* between the *memory* and the *imagination*. We will discuss in a later chapter the reason why modern psychology no longer uses the conceptions of faculties, but prefers to describe the different forms of experience—such as memory-images and phantasies.*

* cf. p. 241.

107. Forgetting.—The communication with our past provided by persistence of motor habits and the power of revival of sensory images is not a permanent one. The power of recalling both images and chains of motor habits passes away in the course of time, and this passing away is known as *forgetting*. There is no evidence for the popular idea that all memories are retained for ever "subconsciously." There is, on the contrary, every reason for supposing that many memories are obliterated completely. The slow fading of memories which takes place through their slight interest and through the lapse of time is known as *oblivescence*.*

In addition to this, there is probably an active process of expulsion of painful memories from the mind by *repression*. Some incidents of a painful kind, like the incident of River's claustrophobic patient and the dog,† are completely obliterated from the mind within a short time of their occurrence, but retain their power of influencing conduct. Repression (like oblivescence) is not a process under direct voluntary control. There is no evidence that all forgetting is of the nature of repression, although this has sometimes been maintained. Both oblivescence and repression must be retained as accounts of the two methods by which mental content passes from consciousness.

108. Conceptual Thinking.—With the exception of proper names, words do not mean particular objects. The meanings they bear are the product of a certain working up by the mind of its experience of particulars. The word "dog," for example, is a name for a whole class of animals, its meaning could be gathered from no single experience, but by the grouping together of a large number of experiences. The name given to all those meanings, which have not as their referent a particular object of experience is *concept*. A concept may, as we have seen, be carried by a word, a concrete image (generally, but not always, a confused or

* The course of oblivescence was shown by Ebbinghaus (using memorised nonsense-syllables as his material) to be rapid at first, and then progressively slower. A graphical representation of this course is known as the "curve of forgetting."

† cf. p. 185.

generic image) or it may occur in consciousness as an image-less thought.

Different accounts of the way in which concepts are formed will be found to be given by different writers. Without discussing the merits or demerits of alternative accounts, we will follow that of Professor Spearman.[105] He considers that there are three modes of formation of concepts, which he calls *disintegration, confusion* and *free eduction. Disintegration* is the process of separating one element in perception. The concepts of *sweetness, squareness, hunger* are all derived by giving names to one part of a series of complex presentations. We have, for example, no perceptions of squareness except as parts of a large number of particular perceptions which have other sensory qualities as well. We get the concept of squareness by the disintegration of perceptions of square objects and isolating the single quality of squareness.

Confusion is the bringing together under one class name of a number of individuals in spite of their individual differences. This process is particularly obvious in the forming of a concept of a class. In Aveling's experimental work on the consciousness of the universal, he made successive exhibitions of pictures which could be divided into several classes, the pictures of each single class having under them the same nonsense word.[109] The object was to investigate the process by which different individual pictures belonging to the same class were grouped together and became attached to the word representing that class.*

So far as the idea of any one series was carried by an image, this image was not found necessarily to be of the common constituent of all the pictures of that class (as would be supposed by the theory of the generic image); it

* For example, one series showed a variety of conic sections, another a variety of receptacles for liquids.

was rather an image of the individual fragments of all the particular pictures. The process by which the concept was formed was confusion of the individuals, not a reduction of them to a highest common factor.

Spearman's third way of forming a concept is by *free eduction*. If a concept and a relation are known, the mind can pass at once to a new concept which bears the given relation to the first. For example, with experience of man and a knowledge of the relationship between successive stages in evolutionary progress, one can pass to the conception of superman. Similarly, the concept of a relation can be arrived at from the knowledge of two other concepts between which the relation would hold.* This method of concept formation makes possible the formation of concepts which are not formed from any previous perceptions. Thus, one method of arriving at the concept of God (the cosmological method) is as that which bears to the world as a whole the relation of cause.

More than one of these operations is very often applied to the same concept. For example, such a concept as squareness is obviously not obtained merely by disintegrating particular percepts, but by the confusion of the products of such disintegration of many different perceptions of square objects.

109. Conception on the Level of Behaviour.—The use of conception in thought is that it enables us to think about all objects of the same class; but the power to react to all members of the same class clearly develops at a lower level of mental evolution than the power to form concepts. We may consider, for example, the following experiments by Professor Lloyd Morgan on chicks.

To some chicks he threw cinnabar larvae, distasteful caterpillars,

* These are known by Professor Spearman as the noegenetic principles of the *education of correlates* and the *education of relations* respectively.[105]

conspicuous by alternate rings of black and golden yellow. "They were seized at once, but dropped uninjured; the chicks wiped their bills—a sign of distaste—and seldom touched the caterpillars a second time. The cinnabar larvae were then removed, and thrown in again towards the close of day. Some of the chicks tried them once, but they were soon left. The next day the young birds were given brown loopers and green cabbage-moth caterpillars. These were approached with some suspicion, but presently one chick ran off with a looper, and was followed by others, one of which stole and ate it. In a few minutes all the caterpillars were cleared off. Later in the day they were given some more of these edible caterpillars, which were eaten freely; and then some cinnabar larvae. One chick ran, but checked himself, and, without touching the caterpillar, wiped his bill—a memory of the nasty taste being apparently suggested by association at sight of the yellow-and-black caterpillar. Another seized one, and dropped it at once. A third subsequently approached a cinnabar as it crawled along, gave the danger note, and ran off. Then I threw in more edible caterpillars, which again were eaten freely. The chicks had thus learnt to discriminate by sight between the nice and the nasty caterpillars."[56]

The following experiment was made with another group of young chicks. "Strips of orange and black paper were pasted beneath glass slips, and on them meal moistened with quinine was placed. On other plain slips meal moistened with water was provided. The young birds soon learnt to avoid the bitter meal, and then would not touch plain meal if it were offered on the banded slip. And these birds, save in two instances, refused to touch cinnabar caterpillars which were new to their experience. . . . I have also found that young birds who had learnt to avoid cinnabar caterpillars left wasps untouched. Such observations must be repeated and extended . . . they afford evidence that black and orange banding, irrespective of particular form, may constitute a guiding generic feature in the conscious situation."[114]

The chicks had thus developed a particular way of reacting towards a class of objects distinguished by alternate black and yellow strips. This black and yellow had been disintegrated from other perceptual elements, for black and orange banding was responded to irrespective of other elements in the perception (for example, form), and all objects with this *black-orange banding* quality were refused. The chicks' behaviour was, in fact, just that which would have resulted from the formation of a concept of a *black-orange banded*

class of objects which were not good to eat. Unquestionably, however, the chicks' mental development was not such that a concept occurred as a recognisable mental entity. They had merely developed in their behaviour a *concept function*. The concept function (like probably the image function)* is prior in the history of mental development to the formation of the concept itself.

110. Phantasy Thinking.—We have already described one kind of thinking, in which images (concrete or verbal) and imageless thoughts pass through the mind under conscious direction with a consciously chosen purpose. The purpose may be to find out the best way of opening a puzzle-box, to solve a mathematical problem, or to decide in conversation what to say next; all such problems are decided by consciously controlled processes of thought.

Sharply opposed to this is the kind of thinking which we do in conditions when we have lost interest in the environment and its problems, and indulge in day-dreaming or reverie. In these conditions, the conscious control of the processes of thought is taken off, and the thoughts are left to follow each other as they will. The first form of thinking we may call *controlled thinking*, the second *phantasy thinking*. The characteristic features of phantasy thinking are its relative detachment from the environment and from any tendency to result in action, the absence of voluntary control over the course of thought, and the tendency to a relative predominance of concrete over verbal imagery in the actual content of thought.† The first of these three

* cf. p. 210.

† It should be noticed that there is no more than a tendency for concrete imagery to predominate in phantasy thinking. Some not very careful systematisers have distinguished two kinds of thinking: *directed* and *undirected* thinking, of which the former is in words, the latter in pictures.[161] It would be simple if this were so, but, unfortunately, we can phantasy in words or do hard directed thinking in mental pictures.

characters is of fundamental importance if we are to understand the nature of phantasy thinking.

This brings us to the consideration of a second function of imagery. If we thought only of the use of imagery in directed thinking, we might say that its function was to enable the organism to react to non-present situations, *i.e.* to consider the past when acting in the present, and to make plans for the future. The activity of day-dreaming, however, reveals a function of imagery which, though less important than the one we have already described, is of value in enabling the human organism to adapt itself to its environment.

Its main function seems to be compensatory. We can live in a smoky industrial town and save ourselves from the depressing effects of our surroundings by indulging in dreams of green fields and open country. We can be employed in a monotonous job with no prospect of advancement, and yet be saved from the hopelessness that such a situation might engender by indulging in dreams of future greatness. It is probable that a man could not live so happily (and, therefore, so effectively) under the unnatural and depressing conditions in which he often finds himself if he had not in phantasy the power of escaping from them and from their depressing influence.

111. **Day-Dreaming.**—It is clear that in controlled thinking images and words do not follow each other merely in accordance with the laws of association. There is selection and control in which ideas relevant to the situation in hand are allowed a place in consciousness, while irrelevant ideas are shut out.

It might be supposed that in day-dreaming, in which this conscious control is taken off, the laws of association would alone be found to be operative, and that the succession of thoughts would be merely determined by the fact

that each thought was associated with the one immediately before it by their previous contiguity either in space or time.* But observation very soon shows that the thoughts of the reverie, no less than the thoughts of controlled thinking, are determined by an aim, although this aim is not one that is voluntarily pursued. The aim of day-dreams appears to be that of compensation for reality. The deprivations which we suffer from environmental circumstances—the desires unsatisfied, the ambitions unfulfilled, and the intentions which have not been carried out—receive a phantasy satisfaction in the formation of day-dreams. In the terminology of Freud, day-dreams are wish-fulfilments.†

Varendonck has shown in observations of his own day-dreams before sleeping, that, when the mind has a " wish " unsatisfied, the course of the day-dream will lead round to the fulfilment of that wish, whatever may have been its starting point, *i.e.* one cannot avoid a particular line of day-dreaming by deliberately starting with a thought which is irrelevant.[112] This means that the course of phantasy thinking is determined by its end, and not by the thoughts started from. If the " association " account of day-dreaming were true, one should get a different reverie by starting with a different thought.

* Trains of thought which do approximate to these conditions are used in the process of psycho-analysis and are called *free-associations*, but voluntary effort must be used in this case to inhibit selection and control.

† Freud uses the word " wish " for any kind of impulse to behaviour whether consciously recognised or not. His theory of day-dreams is in its essence the same as his important and original theory of the nature of the dreams of sleep (with which I do not propose to deal). He supposes the difference between them to be that the dreams of sleep are concerned with wishes which have suffered a greater amount of repression.

Day dreaming probably goes on in the minds of all persons. When we are occupied in action, such day-dreams as we have are on the margin of consciousness and are not attended to. It is only when our concern with our environment relaxes that they become an important feature in our mental content. Adaptation to reality is lost if phantasy assumes a more prominent position than this. The condition in which it does so is a state which Dr. Jung describes as *introversion** Its most extreme form is the condition of insanity known as *dementia praecox.*

112. The Ideal.—Not all thinking of the phantasy kind, however, is mere dreaming without effect on behaviour. The word *ideal* is used for a phantasy of ourselves as we would be, if this phantasy is such as to influence our conduct. It should be clear that the day-dream and the ideal are essentially alike in their psychological nature, but the difference between them is that the ideal is a phantasy which takes sufficient account of the limitations of opportunity and environment to be able to act as a stimulus to action.

A medical student, for example, may have a phantasy of himself as a famous orator moving crowds by his eloquence, or he may have a phantasy of himself as a famous and successful surgeon. Both alike are phantasies, and both alike compensate for the incompleteness of his present situation by a phantasied success. But the orator phantasy can have no useful outcome in behaviour (so long as he is pursuing his present course) while the surgeon phantasy can act as a stimulus to his harder study. His orator phantasy we should call a *day-dream,* his surgeon phantasy an *ideal.*

The carrying out of a course of preparation for an occupation, which preparation is arduous and unsatisfactory in

* Cf. p. 112.

itself, is no doubt very largely rendered possible by the possession of a more or less clearly formulated ideal. The ideal of oneself as a moral being is a stimulus to moral action, and so far as this is true one may say with McDougall that the stimulus to moral action comes from within the system of the self-regarding sentiment.

It should be clear, however, that the day-dream and the ideal are not psychologically different. An ideal may be a compensation for present deficiences, and it may be as extravagant from the point of view of our present situation as any day-dream. No sharp line can be drawn between the day-dream and the ideal, but if a phantasy is used as a stimulus to action it is called an *ideal*, if not it is called a *day-dream*.

An ideal is, of course, not necessarily one which leads to a socially desirable kind of behaviour. Many people are dominated by the ideal of being " men of the world " or of moving in the best circles, and in the pursuit of such ideals may go through as arduous a course of endeavour as if their ideals were socially valuable. The word " knut," for example, a few years ago was expressive of an ideal which was unquestionably the moving force in the behaviour of many young men, and led to a socially worthless end-product. The ideals which will be chosen by a particular person will depend partly on his innate tendencies, partly on the deficiencies which are compensated for, and partly on the kind of person he sees socially esteemed.

Examples of the first influence in the choice of ideals are to be found in the pugnacious boy choosing the ideal of the life of a soldier or of a pirate. This, however, is not the only way in which his innate disposition may determine his ideals, for (as Bovet has pointed out) excessive timidity or physical weakness in a boy may lead him to adopt the same ideals.* The forces of social approval

* These ideals may continue with him, for many generals have been conspicuous in childhood by their weakness and timidity, and have probably had their vocation determined for them by the tendency to compensate for such weakness

not only initiate ideals but make selections amongst those already formed. The growing boy, for example, finds that the vocation of pirate is not one which carries the esteem of older persons, while the vocation of soldier does, so for this reason such pugnacious ideals as he has will finally express themselves in the formation of a soldier ideal rather than of a pirate ideal.

Dr. J. A. Hadfield quotes the following as an example of what he calls a phantasy as distinct from an ideal : " A Government official who regularly had tea in a fried-fish shop did so to gratify the feeling that he was very unassuming ; but unconsciously it was to gratify his pleasure in imagining people saying, " just fancy *him* in *here* ! " There seems, however, no reason for not calling this an ideal. It leads, it is true, to conduct of a socially not very valuable kind, and it is an attitude which is a compensation for an unconscious superiority, but whether we consider conduct to be socially valuable or not cannot be made the basis for discriminating between ideals and other phantasies,* and there is every reason for supposing that ideals are very generally rooted in similar compensations. Different psychologists might differ as to whether the humility of St. Francis led to a socially valuable end-product in behaviour, but they would hardly hesitate to describe his pursuit of humility as the pursuit of an ideal.

113. Thought Processes and the Association of Ideas.— The explanation of the train of thought in terms of the laws of association is given by James Mill as follows : [59]

" Our ideas spring up, or exist in the order in which the sensations existed, of which they are the copies.

This is the general law of the " Association of Ideas ; " . . .

Of those sensations which occurred synchronically, the ideas also spring up synchronically. I have seen a violin, and heard the tones of the violin synchronically. If I think of the tones of the violin, the visible appearance of the violin at the same time occurs to me. I have seen the sun, and the sky in which it is placed, synchronically. If I think of the one, I think of the other at the same time . . .

* This question has already been discussed in connection with *sublimation*, (cf. p. 85n.)

Thus again, I have smelt a rose, and looked at, and handled a rose, synchronically; accordingly the name rose suggests to me all those ideas synchronically; and this combination of those simple ideas is called my idea of the rose . . .

As the ideas of the sensations which occurred synchronically, rise synchronically, so the ideas of the sensations which occurred successively, rise successively.

. . . the Lord's Prayer, for example, committed to memory. In learning the passage, we repeat it; that is, we pronounce the words, in successive order, from the beginning to the end. The order of the sensations is successive. When we proceed to repeat the passage, the ideas of the words also rise in succession, the preceding always suggesting the succeeding, and no other. *Our* suggests *Father*, *Father* suggests *which*, *which* suggests *art*; and so on, to the end." (Chap. III.).

Mill gives an example of the process of thought as follows:

"I see a horse: that is a sensation. Immediately I think of his master: that is an idea. The idea of his master makes me think of his office; he is a minister of state: that is another idea. The idea of a minister of state makes me think of public affairs; and I am led into a train of political ideas; when I am summoned to dinner. This is a new sensation, followed by the idea of dinner, and of the company with whom I am to partake it. . . ." (Chap. III.).

This, however, is *free association* and not *thought*. Two minutes introspection should convince anyone that his trains of thought are not mere chains of free association from his last sensation, which are interrupted by new trains of association supplied by his next sensation. Controlled thinking is directed and dominated by the necessity of solving environmental problems. Even phantasy think-

ing is not so simple as Mill's formula would lead us to suppose. In this the directing force is not supplied voluntarily, but it is none the less a real one, it is the construction of a phantasy—of self-glorification, of the gratification of desires belonging to the reproductive system, or whatever else the end of the phantasy may be. The idea which succeeds our last idea in both forms of thinking is not determined merely by the mechanical rules of association. The truth is that many succeeding ideas are made available by association with the last idea, and of these the one is selected which is relevant to the end of our thinking (dealing with reality in controlled thinking, with the construction of a phantasy in uncontrolled thinking).

In justice to the theory of the associationists, one must recognise that Hobbes, who first developed the theory that the train of thought was determined by association, was not guilty of this confusion between thinking and free association. He says: " mental discourse is of two sorts. The first is *unguided, without design,* and inconstant; . . . the second is more constant; as being regulated by some desire and design. . . . And because the end, by the greatness of the impression, comes often to mind, in case our thoughts begin to wander, they are quickly again reduced into the way." [82] (Chap. III.).

The association of ideas is probably a perfectly valid principle for the explanation of the succession of thoughts, but it is only a part of the truth It explains what we may call the habitual part of our thought—those fixed successive and synchronous connections in thought which are products of past experience, amongst which selection is made in the process of thinking. At the same time, the contents of consciousness at any one time, cannot, as was pointed out by William James, be represented by reference to rigidly separable and distinct entities called " ideas,"

and an entirely false simplification of the processes of thought results if we attempt so to represent it. Moreover, a multitude of new thoughts are associated in various ways with the contents of the mind at any one moment. Of these, the mental content of the next moment is selected by the practical purpose of the thought. Thinking always has an aim, and normally only those thoughts emerge into consciousness which are of service to this aim. The selection is not itself a process carried on consciously. In controlled thinking, the aim is adopted voluntarily, but much of the selection takes place below the threshold of consciousness.

Let us suppose, for example, that we try to solve the problem : " Prince is to Princess as King is to . . ." We answer at once " Queen." Why ? Because the idea of King has become associated with the idea of Queen in the classical way of contiguity in space and time ? Undoubtedly this is part of the answer ; if the correct reply to the problem had no associations with what had gone before (as would be approximately the case if the problem had been " 153 is to 927 as 34 is to . . .") no immediate answer could have been given. But the idea of King is also associated with the ideas of Crown, England, Throne, Palace, etc. These ideas probably did not occur in consciousness at all in the solving of the problem. The mental attitude of solving this problem was given by the opening words of it, and then the sifting out of the ideas associated with King was performed without the co-operation of consciousness.

CHAPTER XIV.

Conflict and Volition.

114. Conflict Between Impulses.—If the environment surrounding an organism were so simple in its demands on the organism that at any one moment only one behaviour tendency was called into action, instinctive behaviour would be fairly simple and predictable. This, however, is very often not the case, and the different elements in a complex situation will set into operation the tendencies of different instincts, sentiments, and habit-systems, which may lead to incompatible movements. This is the condition known as *conflict*. Such conflicts are, of course, more common in human than in animal life, because our environmental conditions are much more complex.

Simple conflicts between the behaviour of different instinctive systems may, however, be observed amongst animals. Inquisitive animals such as cows or deer will often come as near as they dare to an intruder in their fields, looking intently at him, but with bodies alert for flight if he should make an unexpected movement—their behaviour being obviously a compromise between the incompatible behaviour dictated by their instinct of curiosity and by their instinct of flight. A conflict between his instinct of submission and his instinct of flight may be seen in the case of the imperfectly trained dog who hears his owner's whistle but is afraid of being punished or fastened to the lead. He comes close, and one can see the

alternate or simultaneous movements of his limbs calculated to take him towards or away from his owner, neither of these impulses being able sufficiently to take control of his motor apparatus to make him take either course of action to the exclusion of the other, so he remains at a short distance from his owner with conflict portrayed by every muscle of his body.

A speaker at the meeting of the British Association in 1923 charged Professor McDougall's classification of the instincts with being "crude," and one example of this crudity which he brought forward was the distinguishing of the pair of instincts of "assertion" and "submission," which he objected "ought to cancel each other out." If the speaker had remembered the first time he addressed a public audience and had psychologised about it, he could hardly have failed to recognise that he found himself the seat of two behaviour-tendencies dictating opposite courses of behaviour, which showed no inclination to cancel each other out. These, probably, set up a painful conflict which showed itself in embarrassment as with a self assertive manner and a quavering voice he carried out his unaccustomed behaviour.

115. Conflict on the Physiological Level.—The competition of mutually incompatible impulses on the physiological level was studied by Sherrington, using "antagonistic" reflexes in a spinal dog.[16] The "scratch reflex" can be elicited by stimulating any part of a saddle-shaped area on the dog's back. If this is done on the left side of the dog's body, scratching movements are made with the left foot. A stimulation of the right foot which would normally produce an extension of the left foot, will cut short the rhythmical flexions of the scratch reflex. There is interference between the two reflexes, for this extensor reflex requires steady excitation of the extensor neurones of the left knee and steady inhibition of the flexor neurones, while the scratch reflex requires rhythmical excitation of the extensor neurones. This interference produces inhibition of the

scratch reflex. The extensor reflex could be similarly inhibited by the scratch reflex.

What does not happen is a simultaneous appearance of both reflexes resulting in a movement which is a compromise between the two. Such a compromise would clearly not be adaptive, for the movement would attain the end of neither reflex. If the dog were threatened with injury to the right foot while he was scratching a flea with his left, he would either put his left foot down to bear the weight of his body while he withdrew his right foot (the purpose of the extensor reflex following a stimulation of the other foot), or he could go on scratching his flea by keeping his right foot still. A compromise would be useless, for an incomplete extension of the left foot accompanied by an incomplete scratch would neither injure his flea nor save him from falling over.

116. The Resolution of Conflicts.—We may distinguish three main ways of dealing with conflicts (with indefinite gradations between them). (1) Two incompatible impulses may both occupy the mind together leading to action which is rendered ineffective by their mutual interference. (2) The action to which two impulses lead may be a compromise between the behaviour dictated by each, *i.e.* it may be behaviour which attains the end of each impulse, although probably less effectively than if either impulse were acting alone. (3) One impulse may be translated into action while the other is not (the impulse sacrificed is said to be *inhibited* or *suppressed*).

117. Conflict in Thought.—On the level of actual action two incompatible behaviour systems cannot usefully find expression simultaneously. The illustration we have already given, of the dog torn by the conflict between the impulse to obey his master's whistle and to run away, is an example of two incompatible behaviour-systems taking

possession of the muscles at the same time. But such a condition is only one of ineffective action. It attains the end of neither system. The condition is a more common one when the two impulses both exist in thought alone. We then have a condition known as *doubt*.*

A condition of doubt tends to pass into a condition of *belief* (in which one of the competing opinions is adhered to while the other is rejected) for two reasons. First, the condition of doubt is itself an unpleasant one, and the mind tends to pass spontaneously into a condition of belief in order to relieve itself from the unpleasure of doubt. Secondly, the demands of action necessitate the following out of the behaviour belonging to one opinion or the other. The doubt about whether one is a liberal or a conservative may persist as long as these two opinions are merely intellectual, but when an election comes, one must vote on one side or the other. To allow both opinions to find equal expression in one's voting would be to abandon action altogether.†

When, for either of these reasons, the mind passes from doubt to belief, it is usual for the intellectual case for the rejected opinion to pass from the mind altogether. One compensates by a feeling of subjective certainty about the opinions one embraces for the objective uncertainty of their truth. Subjective certainty or the refusal to see both sides of a case is the response of our minds to the demands of action. Its compensatory function is shown

* Doubt, of course, may be between two purely intellectual opinions which have no outcome in action. These, however, are rare. Most of our opinions have implications in behaviour. It is only such opinions as have behaviour implications that we are now discussing (*e.g.* political or religious opinions).

† The deliberate acceptance as a guide to action of an objectively uncertain body of opinions is the attitude of *faith*.

by the fact that when cherished beliefs begin to be undermined, our immediate response is often an increased strength of our apparent certainty of them. Immediately before a conversion the convert is often most bitterly antagonistic to the cause he is about to embrace.

The peculiarity of conflict in thought is a possibility of the continued retention in thought of both of two opinions leading to incompatible behaviour. As soon as these opinions must be translated into action, one or other of them must be sacrificed unless we are content for our action to be ineffective. It is for this reason that men of thought tend to be ineffective in action, and that men of action tend to be intolerant in thought.

118. Sustained and Incidental Conflicts.—The word *conflict* is used in two senses in psychology, and these two senses are not always kept distinct. One speaks of a *conflict* when a person has a mental disposition whose behaviour is incompatible with some other mental disposition. For example, a soldier in battle possesses the self-preservative system of instincts on the one side and on the other his loyalty to his regiment (and probably his instinct of pugnacity); tending the one to make him run away, the other to make him fight. We also speak of *conflict* when at any instant two incompatible impulses are both activated, as, for example, when the same soldier is suddenly made to feel the impulse of escape by the bursting of a shell close to him while he is going somewhere on duty.

These are clearly two quite distinct phenomena—a condition of conflict and an incident of conflict. The condition of conflict is a permanent incompatibility between two dispositions, which is leading to continual recurrences of momentary conflicts of the second order. I shall distinguish these as *sustained* and *incidental conflicts*. *Sustained conflicts* are like wars of the mind, in which the

incidental conflicts are the individual battles. Incidental conflicts are solved every time we make a volitional action.

Sustained conflicts are what is generally meant by the word *conflict* in psycho-analytic writings. A certain number of sustained conflicts exist, of course, in all human life. They become serious when the conflict is of such a nature that, in order to escape the pain of continual incidental conflicts, the mind makes some new adjustment towards the major dispositions from which the sustained conflict arises. Such a new adjustment may be the suppression of one of these dispositions with its subsequent deflection or repression. If the deflection is a socially desirable one, such a new adjustment of the mind is a satisfactory way of dealing with the conflict.

The psycho-neuroses arise, according to the theory of Professor Freud, by a new adjustment of mind which is unsatisfactory[2] (*i.e.* which results in conduct which is ineffective in dealing with environmental problems). Freud considers that the fundamental sustained conflict from which the psycho-neurotic conditions arise is the conflict between the impulses of what he calls " sex " and " Ego." Rivers endorses this general view of the origin of the psycho-neuroses in unsatisfactory adjustments arising through sustained conflicts between the major dispositions; but considers that in the war neuroses, at least, the conflict was between the instincts of self-preservation and the gregarious instincts.[8] Freud considered that, for example, a hysterical symptom is a compromise formation, *i.e.* a mode of behaviour which satisfies to some extent both the demands of the sex instinct and of the mental forces repressing the sex instinct, in which the behaviour dictated by both is represented but in which the adaptation is an unsatisfactory one.

The symptoms known as shell-shock in warfare were found to be of a hysterical nature, and were considered by Rivers to be an unconscious adaptation to the incompatible demands of the gregarious and self-preservation systems of instincts. This adaptation was made by the development of a symptom which unfitted the soldier for action, and so saved him from danger, but in a way which did not involve carrying out explicit behaviour of an unsocial kind (as running away).

Rivers wrote : " Among the most frequent results of shock and strain in war are paralyses, often accompanied by contractures and anaesthesias. The paralysis may attack almost any part of the body, but paralysis of speech is especially frequent, while the anaesthesias may affect not only the skin, but also the special senses of sight and hearing, and less frequently of taste and smell. All these occurrences have the common feature that they unfit their subject for further participation in warfare, and thus form a solution of the conflict between the instinctive tendencies connected with danger and the various controlling factors which may be subsumed under the general heading of duty." [28]

These are examples of sustained conflicts of such severity that they have produced a new adaptation towards the environment which is regarded as a mental disease because it is an adaptation of an ineffective kind. There are, however, incompatible systems of dispositions in all of us producing sustained conflicts. The moral conflict, for example, is the sustained conflict between certain elements of our self-preservative and sexual instinctive systems on the one hand, and a group of tendencies to socially desirable conduct on the other. Individual moral decisions are battles in this sustained conflict.

It is improbable that the difference between the psycho-neurotic of peace-time and the normal person is that the circumstances of the psycho-neurotic produce more violent conflicts than those of the normal person. It seems more probable that he has innate

tendencies to make adaptations of an ineffective kind. If he is cured of a psycho-neurosis by removing one conflict he is likely to form another round the nucleus of another conflict.

The normal person modifies the severity of his sustained conflicts partly by bringing them under systems of adaptation to the world as a whole. Such systems are, for example, his religion, his moral principles, or any other attitude towards the world as a whole which serves the same function as religion. The particular mode of adaptation known as the religious one will be discussed in Chapter XX.

119. Incidental Conflicts.—The problems of incidental conflicts are the problems of *volition* or of *the will.* Volitional action is an important part of human psychology, but it is not one which can be treated as a separate department. A volition is not a new creation of the mind at the moment of decision. It is a choice between impulses. When a man is faced by a situation different impulses arise called out by different instincts, habits, or sentiments. He makes his choice between these impulses and carries out the course of action dictated by one of them. That is a *volition* or, as the earlier psychologists would have called it, an *act of the will.* Normally, the decision is made by the intervention of a process of thought, often carried in verbal terms. When we were discussing instinct modification by thought processes we were really discussing the psychology of will.

120. Faculties.—There are certain words denoting psychological conceptions common in popular speech which we no longer find of value in psychology. These are words standing for what are called mental faculties—the *will,* the *memory,* the *imagination,* and so on. Although these words are firmly rooted in ordinary speech and popular thinking, it will be seen that they do not correspond with any ob-

servable psychological entities. The actual observable psychological phenomena connected with what are called the *imagination* and the *memory* are, for example, mainly *images*.

Images sometimes carry as their meaning reference to past events; sometimes their meaning is prospective, as when we build castles in the air or consider future courses of action. It is practically convenient to group together images which have their reference to the past as "memories"; and it is also practically convenient to group under the same name certain motor habits, although these are psychologically quite a distinct class of phenomena. So men come to use the word *memory* for all these activities of mind connected with the recall of past experience. Similarly, it is practically useful to group together all the mental activities, prospective in their function, under the name of *imagination*. But these words *memory* and *imagination*, practically valuable though they are, are theoretically dangerous. The word *memory*, for example, carries the implication that the processes of recall are all bound together as one part of the mind, the faculty of memory. They suggest that we could speak meaningfully of improving one's memory apart from improving other mental faculties (just as one can develop the muscles of one's leg without developing those of one's arm) or of one's memory deteriorating independently of other faculties.

Now we must be quite clear that it is possible that the *memory*, the *imagination*, etc., are faculties in this sense. It is possible, for example, that the improvement or deterioration of mental imagery used in the recall of past experience is accompanied necessarily by a corresponding improvement or deterioration of the motor-habit method of recalling past experience and not by a corresponding improvement or deterioration of images whose function is

prospective.* But the evidence is very much against the faculties being mental units in any sense at all. It may be taken as established that the words denoting faculties are practical conveniences whose theoretical implications are dangerously misleading.

121. The Will.—*The will* is a faculty term. The actually observed phenomena are volitions, just as the actually observed facts of memory are memory-images and motor-habits. This must be understood if we are to understand the charge commonly made against modern psychologists of neglecting the will. The word " will " is bound to take a less important place in modern works on psychology than was once customary because we have given up the faculty way of thinking, so in our psychology we prefer to describe *volitions* rather than *the will*. The mere fact, however, that the word *will* does not occur very much in a modern psychological work, does not mean that its author is neglecting or denying any of the essential facts which an earlier writer would have described in his chapter on *the will*.

We must distinguish carefully between this apparent neglect, which is only due to a change in terminology, and an actual neglect which really means that the author is minimising the place of volition in human conduct. The psychologist who represents human action as determined by mechanical interaction between dispositions, is really mini-

* This is, in very simple form, the Hart-Spearman method of demonstrating the existence or non-existence of mental faculties.[115] (cf. p. 308). Professor Spearman himself was satisfied by the examination of his own correlations that mental faculties did not exist. Dr.T. V. Moore, however, has obtained figures by the same method which suggest that faculties may be distinguished.[116] He, however, is not satisfied that his results are significant, and is inclined to attribute them to the specific nature of the tests used.

mising the function of volition, and is open to the charge that, in the interests of simplicity, he is neglecting an essential factor in human conduct.

The necessity for volitional action arises when any impulse to behaviour is opposed by another impulse to incompatible behaviour. This happens, for example, when we are lying in bed in the morning, and the enjoyment of our comfort tends to make us continue in bed while our habit of rising at 7.30, the knowledge of the work we have to do, and the thought of the breakfast which will be cold if we are late for it, all dictate the incompatible behaviour of rising. The conflict is solved by a volitional action—by the conscious adoption of one course of behaviour and inhibition of the other. Both behaviour tendencies may belong to the system of some instinct or habit, or one (or both) may come from a system of ideas.*

The difficulty in the explanation of volitional action lies in the fact that of two impulses, it is often the one which appears the weaker that is voluntarily adopted. This difficulty appears greatest in the theory of psychological hedonism. If we accept the theory that that action is always adopted, which is more pleasurable to the person performing it, there is a real difficulty in explaining why, on a cold morning, we abandon the highly pleasurable repose in bed for the extremely unpleasurable discomfort of rising and dressing.

* Titchener[117] would distinguish between "selective action," in which a choice must be made between two impulses, and "volitional action," in which the choice is between an impulse and the action dictated by an idea. The distinction seems to be a somewhat artificial one, for most tendencies to action have an impulsive element and a connection with an ideal system. I shall use the word impulse for all tendencies to action, whether originated by an instinct, or a habit, or from a system of ideas.

It is clear to introspection that of two courses we are adopting the one which has less pleasure attached to it. We may say, in the interests of the theory of hedonism, that the unpleasure attached to the self-reproach which we should feel if we stayed in bed outweighs the pleasure derived from our bodily comfort, and that the course of getting up is really the more pleasurable one although it certainly does not appear so to introspection. Now it is possible to explain all volitional action on these lines, and the explanation is difficult to refute, but it is clear that if we accept this sort of explanation, the pleasure-pain theory of conduct ceases to have any value for predicting behaviour. For we have merely said that the action which has been carried out is the more pleasurable because it is the one which has been carried out. As an explanatory principle it reduces itself to the form of a mere tautology—the one of two competing motives which will be voluntarily chosen is the one which is voluntarily chosen.

Many similar statements about volitional action are similarly tautological. We may take as an example Professor Titchener's statement: "*it is always the strongest impulse that wins*; though . . . it is not necessarily the impulse that looks the strongest to psychological observation.[117] It is necessary to be clear about the fact that this impressive statement means very little. Suppose that we were to say that when two weights are suspended over a pulley, the heavier will fall while the lighter will rise. This is a meaningful proposition only because we have a method of distinguishing which is lighter and which heavier, apart from the observation of their behaviour on the pulley (the heavier will, for example, weigh more if placed on a spring balance, and it will attain less velocity than the other when both are acted on by the same force). But it is clear that if we had no way of saying which was heavier except by observing which went downwards when they were suspended over a pulley, there would be no meaning in the statement that the heavier went down. We might, indeed, use this property as a definition of the sense in which we were going to use the word "heavy," but the

statement would give us no new information about the weights. Now it is clear that we have no independent way of saying which is the stronger impulse. It is not the impulse with the greater amount of pleasure attached to it, and it is not the one which appears stronger to introspective observation. So the statement that the strongest impulse always wins merely reduces to the form that the impulse that wins always wins, which is clearly not a very illuminating proposition for the understanding of the psychology of volition.

We may turn to a different treatment of volition, that of William James.[27] A propensity such as staying in bed, he says, may be stronger than the ideal impulse (to get up and do one's business) which opposes it. In a volitional action something is added to the weaker ideal impulse which makes it outweigh the propensity. He puts this in algebraic form. Let P equal the propensity, I the ideal impulse, and E the effort (what is added to the ideal impulse by the act of volition).

$$\text{Then} \quad P > I$$

$$\text{but} \quad I + E > P$$

This formulation is, James says, how the mechanism of volition appears at first sight. He does not appear to have regarded this algebra very seriously The effort which is added on the side of the ideal impulse is, he considers, an act of attention to a difficult object, and the holding of it fast before the mind. We overcome the resistance to getting up in the morning by a voluntary holding before our minds of the idea of getting up, and it is, he says, a mere physiological incident that when it is thus attended to, the immediate motor consequence of getting up should ensue.

McDougall, in his *Social Psychology*, accepts James's general statement of the problem, but considers that the E which makes the ideal impulse outweigh the propensity is an impulse aroused within the system of the self-

regarding sentiment (such as the thought of the injury that would be done to our idea of ourselves if we were overcome by such indolence). It will be necessary to discuss later the place of the self-regarding sentiment in the determination of conduct. For the present, we must notice the criticism of all these formulations in terms of "strong" and "weak" impulses, that the strength and weakness of impulses can in no wise be measured except by observing which of a pair of competing impulses finds expression in action. James's algebraical formula and McDougall's use of it give the problem of volition a quantitative form for which there is no justification. The attraction of the formulation of the hedonists and of Titchener lie in the fact that they present the process of volition as a mechanical one. At present, we have no justification for representing the process as mechanical. The safest way of stating the problem, and the one making the minimum of assumption, is to regard the selection between impulses which takes place in volition as a selection *sui generis*, for which there is at present no justification for resorting to mechanical analogies.

We have already seen that William James describes the act of volition as a giving of concentrated attention to the more difficult side of a choice, while McDougall describes it as a throwing into the scales of an impulse belonging to the self-regarding sentiment. We may consider whether these are exhaustive accounts of the process by which volition takes place by comparing them with the ways in which other people have reported that they perform acts of will.

Professor Dickenson describes the way in which he decides whether to go home to lunch or to go to a restaurant; "I mentally explore the consequences or implications of my going home. I recall the apple pie in the pantry, whereupon my strong apple pie seeking response joins its energy to the others which are trying to take me home."[55]

Marcus Aurelius Antoninus writes: "when you find an unwillingness to rise early in the morning, make this short speech to yourself:

I am getting up now to do the business of a man: and am I out of humour for going about what I was made for, and for the sake of which I was sent into the world? Was I then designed for nothing but to doze and to keep warm beneath the counterpane? . . . Is not action the end of our being?" [42]

Thus Dickenson makes his decision by throwing his apple-pie seeking response on to the side of the impulse that finally wins, while Antoninus would have one throw in one's sentiment for the purpose of the universe as a whole. Both of these appear to be general descriptions of the way in which a volitional decision can be made. Even Dickenson's is a genuine volitional decision if the thought of the apple-pie is used as a determinant to action by consciously and deliberately bringing it before the mind. It would be possible to multiply illustrations of volitional decision, but these must suffice.

It will be seen that there is no reason for restricting volitional decision to a decision in which the final determinant to action is an impulse belonging to the self-regarding sentiment. A genuinely common feature of all these volitional actions is that the action was determined by the intervention of a thought process. A volitional action is a decision between conflicting impulses in which the impulses are not allowed to fight it out automatically amongst themselves, but in which thought processes actively intervene and often lead to a different issue in action than would result if the decision had been automatic. We have already discussed such actions in Chapter IV., when dealing with the fourth mode of instinct modification.

122. Volition and Character.—A more satisfactory view of the essential nature of volitional action is reached by Prof. McDougall in his more recent book *An Outline of Psychology*, in which he abandons the algebraic method of representing the nature of volitional action in favour of the formula of "will is character in action."* Essentially what happens when we deliberate and volitional action is

* Even in this book I think McDougall attaches too much importance to the self-regarding sentiment. It is the character as a whole that is involved in volitional action, and the self-regarding sentiment is one part of it only.

the outcome, is that the impulses about which we deliberate are brought into relation with the whole system of conduct tendencies which we have called *character*. The volitional action is an expression of the character as a whole, whilst the impulsive action is expressive of one element only in the character. The function, then, of the higher thought processes (which we saw to be an essential element in in volitional action) is to bring the whole organisation of tendencies which we called *character* to bear on the situation in hand.

CHAPTER XV.

The Psychology of Morality.

123. The Moral Sentiments.—Everyone agrees in regarding some lines of conduct as *good* and others as *bad*; and, on the whole, social approval is bestowed on the person who carries out *good* conduct and disapproval on those whose conduct is *bad*. About the question of exactly what behaviour is good and what bad, different societies and different individuals have had different opinions; but all societies and individuals agree in the distinction itself.

We need not, for the moment discuss which particular kinds of behaviour ought to be regarded as good and which as bad; what makes conduct good or bad; or whether there are absolute and universal standards of goodness and badness. These are all questions of ethics, and a consideration of them would take us away from the path of a psychological study of morality. All that is necessary is to note as a fact that every individual feels that he *ought* to do some things and *ought not* to do others, and that when he does what he feels he ought to do believes that he is behaving morally, and when he does what he thinks he ought not to do that he is behaving immorally. It is the sentiments which have been built round particular kinds of conduct, distinguished by the feelings of *ought* and *ought not*, that are the moral sentiments.

We mean then by *moral sentiments* the sentiments which are built round particular kinds of behaviour; the senti-

ments which result in approval of moral kinds of behaviour in ourselves or other people, and disapproval of immoral kinds. It is necessary to be clear about the fact that we do not mean every kind of sentiment from which moral behaviour can spring. Care for our parents, for example, may spring from the sentiment of love for them and not from the sentiment of approval for filial behaviour. Nothing but confusion could result from applying the term moral sentiment to every sentiment which leads to behaviour of moral value. For every sentiment in some situations probably does lead to moral behaviour. If, on the other hand, we use moral sentiment in the more restricted sense, we must recognise that the moral sentiments are not the only roots of moral behaviour.*

124. Social Approval and Disapproval.—There is no doubt that primitively moral behaviour is behaviour of which there is social approval, and that the development of the moral sentiments in the individual results from his acceptance when he is a child of the point of view of the grown-up people who tell him that this line of conduct is good, but that is naughty. Finally he feels the same emotions of approval and disapproval towards certain lines of conduct as other people; he becomes part of the social unit which approves or disapproves.

Moral approval and disapproval, however, are only one kind of social approval and disapproval. We disapprove of a person having smallpox or a physical disfigurement, but unless he has deliberately exposed himself to infection or to disfigurement, the feeling of disapproval is a different

* Kant's teaching on morality amounted to the ascription of moral value only to conduct which proceeded from the moral sentiments. Against this view most men would agree with Schiller that it is better to care for our parents because we love them than because we believe it to be a virtuous course of action.

one, and one which does not produce the reaction of shame in him. Moreover, there are particular conditions which a line of conduct must fulfil to arouse the emotions of moral approval and disapproval. We feel social disapproval of a person who has killed another only when he has not done it accidentally or in a state of automatism. In these different attitudes towards different kinds of behaviour and different conditions of the same behaviour lies the meaning of the word *responsibility*.

Moral approval or disapproval is felt for a man's acts when he is " responsible " for them. It would probably be a more correct psychological account of this distinction if we said that what we mean by a man being *responsible* for his acts is that we morally approve or disapprove of them. The condition under which we ascribe responsibility is that the act has been carried out consciously by the man performing it, and with the conscious intention of attaining the end he has attained.

The conditions under which responsibility is ascribed for conduct differ in different ages and different countries. Westermarck points out, for example, that in some codes of law, punishment is administered (and therefore presumably moral disapproval is felt) for an accidental killing as well as for an intentional one.[118] Although the line between the actions for which a man is and is not held responsible is drawn in a different position by different societies and at different times, yet its correct position always seems clear to the people of any one society at any one time. Modern psycho-pathology, however, makes us doubt the finality of the criteria popularly accepted as limiting responsibility. It is possible, for example, that certain impulses carried out consciously and with clear intention may be genuinely uncontrollable. The opposite difficulty is raised by impulses which are carried out automatically but in response to an unconscious wish. If a person in a state of automatism commits a crime he is not held to be responsible; yet that crime, let us say murder, may be the result of an unconscious wish to kill the murdered person. Moreover, it is possible that punishment may be to some

extent effective as a deterrent even from actions for which the person committing them cannot be held fully responsible.

These are difficulties in the rational justification of the ascription of responsibility and of the practical application of this idea in legal punishment. They suggest that there is no sharp line (as popularly supposed) between responsible and irresponsible behaviour, but a continuous gradation between them. But the conception of responsibility as an account of social attitudes is in no way altered by these observations. It is a fact that moral disapproval and approval are felt in connection with some courses of action and not with others.* An increased general knowledge of psycho-pathology would probably alter the line of demarcation between the actions for which a man was held responsible, and those for which he was not. Such a change has, of course, taken place within historical times. Maniacs were at one time treated like criminals, and no doubt people felt the same kind of social disapproval of madness as they did of crime. Now we feel the same kind of disapproval of madness as we do of bodily disease. A change has taken place here in the position of the line drawn between responsibility and irresponsibility.

125. The Social Determination of Morality.—There can be little doubt that in primitive society moral behaviour is the behaviour required by society. Similarly, in the upbringing of a child, his moral ideas are implanted by his parents or teachers who tell him that certain kinds of behaviour are wrong and others right. But the impulsion to moral behaviour does not appear in consciousness as a response to social requirements. The feeling is that I *ought* to do this and *ought not* to to that; and these feelings of *ought* and *ought not* may finally conflict with actual social requirements.

A considerable amount of mystery is made by some ethical writers about the fact that the characteristic of

* Although reflection makes less clear the demarcation between actions for which approval and disapproval are felt, most people do not reflect sufficiently to cause any lack of sharpness in the outlines of social moral judgment.

moral behaviour is the feeling of *ought* and *ought not*, and these writers say, therefore, that it is incorrect to speak of the moral responses as having been evolved from social requirements. The way in which the moral approval and disapproval of society are felt as if the distinction had been generated in the individual's own mind is not, however, peculiar to the moral feelings, but is part of the wider phenomenon of *suggestion*. Precisely a similar transference of social requirements into apparently self-generated feelings is to be found in such things as "good form." Our reaction against wearing a white tie with a dinner jacket is felt as an autogenic requirement as clearly as are any moral requirements. We should feel shame if we did it ourselves and we feel disapproval of another person who does it. The requirement to wear a black tie with a dinner jacket is, however, recognised as a mere social convention and not as a moral requirement, because it does not appear to us to be rationally grounded when we reflect on it.

Social requirements which have no rationally justifiable end* (which we may call *conventions*) and true moral requirements grade into each other in a continuous series, and there are lines of conduct which we would find it difficult to put into either class. Peculiarities of dress, such as we have mentioned, clearly belong to the "convention" class; while such actions as picking other people's pockets clearly belong to the moral class. But what are we to say to such actions as smoking a cigar in church? Some people would regard this as a highly unconventional action; others would regard it as morally wrong. Towards all these actions we feel strong disapproval. We are prevented from committing any of them primarily by our sensitiveness to the disapproval of other people. But this does not appear

* That is to say, no rationally justifiable end other than that of providing uniformity within a social group.

to introspection to be our reason for not doing them. To introspection we feel alike that we *ought not* to wear a white tie with our dinner jackets, and that we *ought not* to pick people's pockets.

We will not discuss the ethical question of what is the sufficient reason for discriminating between the moral-immoral type of actions and other actions to which the compulsive feelings of *ought* and *ought not* are attached. This is a question for the science of ethics, and it is one which we cannot discuss here. Different criteria have, in fact, been used by different people. It suffices for our purpose to recognise that there is a class of actions socially disapproved which also men regard as morally wrong, whatever may be the exact grounds on which they decide that they are morally wrong. It is with this class solely that we shall be concerned.

126. Moral Action and the Self-Regarding Sentiment.—We have already seen that the stimulus to moral action may be what we have called an *ideal*, *i.e.* the idea which a man has formed of what he would like to be. If he fails in the action directed towards his ideal he feels a loss of self-esteem, while his opinion of himself grows better the more nearly his conduct approximates to the conduct prescribed by his ideal. So far as a man's ideal is a stimulus to moral action instead of his sensitiveness to social approval and disapproval, it may be said that his moral conduct is determined by his self-regarding sentiment.

The organisation of moral conduct within the system of the self-regarding sentiment obviously makes it possible to attain a certain independence of social requirements. The *ideal* is, of course, itself very largely a social product; the ideal adopted will normally be one that is socially approved. Once it is adopted, however, action carried out in the following of the ideal may be in defiance of social requirements.

The ability to follow an ideal in face of strong social disapproval has always been a mark of character which wins men's admiration.* We admire those early Christians who suffered death rather than serve in the Roman army.

McDougall regards this organisation of moral conduct within the self-regarding sentiment as the highest form of morality, and considers that a moral character is impossible to one lacking a strongly developed self-regarding sentiment. He says, for example, " to lose the respect of others is only the first step on this path of disintegration of character. So long as a man still believes in himself and is capable of shame and of resenting an insult, his case is not hopeless. But, as soon as the man says " I'm a rotter " and does not care who knows it, he is beyond the power of human aid." [26]

This theory seems somewhat inadequate. In different words, " I'm a rotter " is just what has been said by the greatest of saints, and they have been pleased to publish it so that all men should know. They have regarded the organisation of moral conduct within the sentiment of self-regard as a stage in moral development which they had to supersede. A destruction of the self-regarding sentiment as complete as that of McDougall's " beachcomber of the magic isles of the Pacific " has been regarded by them as an essential step in the formation of the highest type of character.

They have found the safest source of moral conduct within the system of the religious sentiment, not of the sentiment of self-regard.† They have done right not because it would increase their self-esteem, but because they felt that it would be pleasing to God.

* Except, of course, from those men who are part of the social environment which is defied.

† This is true of the saints of other religions as well as those of Christianity.[44]

127. Motive.—The word " motive " is one which is used in popular speech and by lawyers with a meaning the legitimacy of which becomes doubtful when we reflect on it. When we enquire what was a man's " motive " for a particular action, we are inclined to assume that there is one and only one mental condition of his action, such that if this mental condition were absent the action would not have taken place. It is obvious that there is sometimes one determinant of action which assumes such a position of dominant importance. When a man's house is burgled, we may say that the burglar's motive was robbery, for, had the expectation of finding silver not been present, the burglarious entry would not have taken place.

More often, however, there are a variety of conditions determining a particular action, no one of which occupies such a unique position. If I give a penny to a beggar my companion may consider that the motive of my action was sympathy undeterred by the thought of the bad effects of promiscuous charity. I myself may consider that my motive was to register a protest against the economic theories of my companion. Possibly also my pocket was at that time overloaded with coppers.

No doubt all these various factors came into the determination of my conduct. I should certainly have given nothing if coppers had not been available, quite possibly I should have given nothing if I had not been with somebody whose dogmatic condemnation of promiscuous charity had aroused an attitude of contra-suggestion. But probably neither of these circumstances would have been sufficient to make me act if pity had not to some extent been aroused. Undoubtedly also there were other determinants of my action—impulses aroused within the self-regarding sentiment and of the moral sentiments.

It would be a barren dispute to discuss which of all these

was the motive of my action; it was the interaction of all of these (and perhaps even of other elements in my personality) which produced the action.* I had no one motive.

If we wish to give a more precise meaning to the word motive we must consider it as an element in deliberation. Deliberation is the condition of conflict between various impulses, which normally results in a volitional action.† In deliberation various impulses come into consciousness and various ends are thought of. If one, or a system of more than one, of these impulses is selected as a result of deliberation, we may call that selected impulse the *motive.*

We do not ordinarily speak of *motive* in purely impulsive action. If a man is insulted and, immediately, without thought or reflection, gives way to the impulse to strike, we cannot properly say that that impulse was a motive to his action. It is only if he has deliberated upon how to injure the person who has insulted him and has decided on some course of action calculated to injure him, that we can say that the motive of his subsequent action is his desire to injure the person who has insulted him.

There are two other words which it will be well to distinguish from motive if we are to think clearly on this subject—*intention* and *incentive.* An *intention* is the external change which a volitional action is designed to bring about. An *incentive* is a condition in the environment which suffices to bring about a certain kind of action.

* A volitional action is, as we have seen, the response of the character as a whole to a situation.

† In order to avoid the errors of such psychology as that of Bentham and James Mill, we must remember that not all action is the result of deliberation. We shall then be saved from the absurdities of the search for "motives" to account for such instinctive actions as a mother suckling her child, or a man assaulting his enemy.

The doctrine of Bentham and James Mill with respect to human motives consisted essentially in the doctrine that the only *incentives* to action were pleasure and pain. This was a doctrine with which modern psychologists disagree, for it seems clear that the situations calling out instinctive responses do so directly and not through the attraction of the pleasure to be attained or the organism's aversion from the pain to be avoided. An even more questionable doctrine, however, is the doctrine that the desire for pleasure and the desire to escape pain are the only human *motives*. This amounts to the statement that in deliberation the impulse to action which will be consciously embraced will always be that of seeking pleasure or avoiding pain. That this is untrue seems apparent to introspection.

128. Summary.—Moral conduct is one class of conduct which is carried out originally in response to expressions of social approval and disapproval. The psychological roots of moral conduct may be (1) sensitiveness to social requirements; (2) moral sentiments, the feeling of admiration for some lines of conduct and of aversion from others; (3) the self-regarding sentiment, when an ideal is followed (even in defiance of social disapproval); (4) some form of religious sentiment.

Kant would regard action undertaken in response to the moral sentiments as the highest form of moral action. McDougall would regard action undertaken in response to the self-regarding sentiment as the highest type of moral action. These seem to be little more than individual preferences. It is important for social harmony that the individual's moral behaviour should not be too far removed from the standard of the social group in which he lives, but for effective reforming action a certain independence of social standards is necessary. This independence can be attained by the formation of moral sentiments, or by the organisation of moral conduct within the self-regarding sentiment, but it can also be attained by its organisation within the religious sentiment.

CHAPTER XVI.

The Psychology of Economic Value.—I.

129. Desire.—Desire is a feeling condition of unrest which is directed towards the attainment of an end represented in consciousness. The mental representation of the end of desire may be a concrete image or a form of words. The difference between a desire and a mere impulse is that this clear mental representation of an end is absent in an impulse. Desire differs from the emotions in the fact that it is prospective in its direction—*i.e.* its feeling refers to something which is to be attained in the future, and not to something in the present situation. Mr. Shand, therefore, speaks of desire as a prospective emotional system.[30]

The behaviour associated with the affective state of desire is a persistent seeking reaction. When we desire something, we experience a tendency to adopt behaviour for the acquirement of that object, and this behaviour ordinarily only ceases when the desired end is attained. A behaviour tendency to attain an end may, of course, exist without any clear mental representation. Thus the organic condition of hunger and of thirst can exist and may be felt by consciousness without an actual mental representation of the food or the drink which should satisfy them. This, however, is a mere craving, and cannot properly be called desire. Desire for food or drink arises only when hunger or thirst is accompanied by the thought of the objects which will satisfy them.

The normal conditions under which desire arises is that an impulse in some direction meets with obstruction. When this obstruction causes unrest, accompanied by a more or less clear knowledge of the condition under which that unrest could be removed, we have desire. The biological function of desire is to reinforce and to make more persistent the seeking reaction of the obstructed impulse. When we experience desire, our mental unrest (and consequently our seeking behaviour) becomes greater when the representation of the desired object recurs to our thought. We may contrast the persistence with which a man strives to attain his ends with the ease with which, let us say, his dog allows an object, eagerly sought after, to escape him after his efforts to attain it have been once or twice thwarted.

130. Desire and Economic Value.—The interest of the psychology of desire to the student of economics lies in its bearing on the production of economic values. The psychological basis of value may be described from the point of view of introspection or from that of the student of behaviour. The object of value is one which people desire, and it is one towards which they adopt the behaviour which has been described as a "positive" or a "seeking reaction."*

Similarly, negative values (or what have been called "disutilities") are attributed to articles about which we tend to feel repugnance and from which we adopt an avoiding reaction.

The process of exchange can be expressed very roughly by describing it as an interchange between individuals of those articles which they desire less strongly for those they desire more strongly. Demand and price are economic facts which are rooted in the psychological facts of the strength of people's desires for different articles.

* cf. p. 189.

The value of an article for a particular individual is measurable by the amount of effort that he is willing to make to attain the desired object, or (indirectly) by the number of other values that he is willing to give in exchange for it. Such a value of a particular object for a particular individual may be called an *individual* or a *personal value.** Its varying individual values for different persons are the most elementary facts which underlie the price of an article.

Dibblee, in an otherwise acute analysis of the relationship between value and desire, states that the value of an object is the result of a desire for it having been met by an inability to satisfy it. Thus, water has no value in exchange in our country, because although we " desire " water, there is no difficulty in getting as much as we want. This use of the word " desire," however, seems to be a psychological error, for desire itself only arises when an impulse is thwarted and its intensity varies with the completeness of that thwarting. Because we can get all the water we can possibly use with negligible effort, we do not desire it. Inability to satisfy an impulse directed towards an object produces both desire and value.

While desire can be the result of the thwarting of any impulse, we are mainly interested in desires springing from behaviour tendencies which can be satisfied by the attainment of some object. To such tendencies we may give the name of *wants*. We must then say not that value is attached to an object when a desire for it is unsatisfied, but that when a want is unsatisfied we both attach a personal value to its object and we desire it.

This is, in fact, the sense in which the word " want " is commonly used by economists. It is important to notice that a want is not itself a psychological experience. It is

* Dibblee uses the term *simple value*.[166]

only the hypothetical disposition which must be assumed to exist in an individual in order to account for the springing up of particular desires.* When a want receives immediate and unfailing satisfaction, we are not conscious of the existence of that want at all. It is only when satisfaction is denied, so that desire arises, that we are conscious of the existence of the want. When a want is unsatisfied in this way, there springs up desire for an object which can satisfy it, and value is attached to that object. A personal value of an object and a person's desire for it are merely the same fact looked at from different points of view.

131. The Possibility of Quantitative Expression of Desires, Wants, etc.—The differences between individual things that we discuss in psychology, economics, or in any other science, can have any one of three possible relations to the conception of quantity. Things may have intensive differences which can be given an exact numerical form. People's incomes or the number of heads of cattle that they possess clearly belong to this class. There are also

* The same word "want" is sometimes used for the permanent tendency underlying an individual's demand for a particular commodity, and also for a transitory condition underlying his demand for it at any particular moment. I shall use the word "want" in the first only of these senses, and when it is necessary to describe the second condition, the word "craving" will be used. The fact that a person will always desire and try to obtain tobacco when his supply of it falls below a certain level is described by saying that he has a "want" for tobacco. The fact that at the present moment he has this desire and behaviour is described by saying that he has, at this moment, a "craving" for tobacco. This is not quite the same thing as saying that he has a desire for it, for a desire is merely the conscious concomitant of a present craving, and a craving may not be accompanied by a conscious desire. A craving and a desire will, however, be found to accompany one another so generally that the distinction between them is very commonly neglected.

differences which, although they are differences of intensity, cannot be measured exactly. Two emotions of anger felt by the same person at different times, or a man's social position, belong to this group. Of two objects of this class, we may say that one is greater or less than another, but the question of how much greater is meaningless. Lastly, things may have only differences of quality which are not differences of intensity (or quantity) at all. The differences between the primary colours belong to this last class.

If we wish to think clearly and accurately on the psychology of economic behaviour it is important to keep these distinctions clearly in mind. Nothing but error and confusion of thought can result from an attempt to treat unmeasurable intensive differences as if they were measurable, or to treat differences which are not intensive at all as if they were.

Consideration of the matter will show us that the desires of any one individual belong to the second class (of things whose differences are intensive but not measurable) while wants (as we have defined them) belong to the class of things about which we can make no quantitative statements at all.

First of all we may consider the case of desires. When we make quantitative statements about desires (*i.e.* when we use the words "greater" and "less" in comparing desires), our meaning is perfectly clear, so long as we are talking of one individual. First of all he has differences in the intensity of his various desires, which he can recognise by introspection. At a moment when he is desiring more than one thing, he can tell us by introspection alone which of these desires are strong and which are weak. Secondly, we can discover by the study of his behaviour that he uses very different amounts of effort to attain the different objects of his desires, and that at any moment he will direct

his endeavours towards attaining one object of his desires rather than another.

The really important fact that makes quantitative statements about desires reasonable and useful is the observation that on the whole the introspective arrangement of his desires corresponds to the arrangement we should make by studying his varying amounts of effort and his preferences. That is to say, it is true on the whole that the things for which his desires appear to his own introspection to be the strongest are the things for the attainment of which he puts out most effort, and are the things which he will prefer to attain rather than the objects of his introspectively weaker desires.

This, it should be noticed, is true on the whole. A very little study of our own desires will convince us that there is not sufficient ground for saying that the correspondence is exact.

This means that the desires of a single individual are things between which we can make quantitative comparisons. Is it also true that we can make exact quantitative statements about desires, and say that one desire is so much greater than another, and thus put the strength of desires in exact arithmetical form? Clearly not on introspective grounds. On introspective grounds alone we can attach no meaning whatever to the statement that our desire for a certain book is, let us say, seven times as great as our desire at the same moment for a loaf of bread.

We can, however, make much more exact quantitative statements about the amount of effort we are willing to make to attain different objects of desire. The thing which is capable of precise arithmetical expression is the *price* that we are willing to pay for the object of our desire. I may at the same time pay 3s. 6d. for a book and 6d. for a loaf of bread. Between these two there is an exact arithmetical relationship, one is seven times as great as the other.

Now it is certainly true that the reason I bought a loaf of bread was because I desired it, and similarly my desire for the book made me buy that. Can we not say that these prices are indirect measures of the strength of the two desires, and that my desire for the book was seven times as great as my desire for the loaf of bread?

The answer is that we might do this if the strength of desire for different articles were the only factor determining the price we paid for them. Quite clearly, however, it is not. Let us suppose that a man is buying a horse at a fair. The reason that he is making efforts and is willing to part with money in order to buy the horse is that he desires it. If we ask him, he will be able to give us a rough idea as to whether his desire for it is weak or whether it is strong, and, other things being equal, we can predict that if his desire is strong he will pay a bigger price for the horse than he would otherwise. But a large number of other factors will influence the price he finally pays. Such factors are, for example, the persuasiveness of the seller, the suggestibility of the buyer, the buyer's dispassionate judgment of the horse's value, and even such remote factors as the state of his health and the influence on his spirits of the weather.

But, it might be argued, we are merely enumerating different factors which influence the strength of the buyer's desire for the horse and so influence indirectly his valuation of it. The persuasiveness of the seller merely makes the buyer desire the horse more strongly, and similarly the buyer's dispassionate judgment of how much the horse is worth increases or decreases his desire for it. In all these cases, it might be supposed that the buyer's desire alone determined the price he was willing to pay for the horse, although this desire might be dependent on many external influences. If this were the case, it would remain true that

the buyer's valuation of the horse is an indirect measure of his desire for it.

This argument would be perfectly sound if, as a matter of psychological fact, it were always true that these factors only altered the price the buyer was willing to pay for the horse by altering the strength of his desire for it. Certainly they may act in this way, but it is also clear that they may not.

The persuasiveness of the seller, for example, may indeed be directed towards increasing the buyer's desire. He does this by enumerating the good points of the horse, by saying that she is a good bargain, and so on. But it is possible to influence by suggestion a course of action as well as an affective state. The seller's persuasion may take the form of a bullying assertiveness under the influence of which the buyer's desire remains unaltered while the amount of money he parts with is increased.

The more indefinite influence of the buyer's health and spirits may also affect the price he will pay directly and not through their influence on his desire for the horse. A man may, indeed, desire things less strongly because he is ill or depressed, but also he may desire something as strongly as when he is in health, but find himself less inclined to make efforts to attain the desired object.

A purely dispassionate (non-affective) judgment of the animal's value will also quite certainly be a factor in determining the price the buyer will pay. This judgment, also, may lower (or raise) the price he will pay without affecting his desire. We are none of us willing to pay high prices for things which we desire strongly if we are accustomed to pay much lower prices for them. We may desire a cup of tea very strongly on a walk on a hot day, but if we were offered one at a wayside cottage for half a crown we should certainly refuse it.

The truth is that the buyer's desire is one factor only in the total situation determining the price he is willing to pay. If all other factors remain equal the price he will pay will vary with the strength of his desire, and we should be perfectly justified in calling that price the indirect measure of his desire. But, as we have seen, all other factors in the total situation may vary independently of the buyer's desire. We could then only make price a measure of desire if we included in "desire" the influence of every factor determining the price. This, however, is to use the word "desire" so widely that it is robbed of all useful significance, and it is a use of the word which no psychologist could tolerate.

To psychology "desire" has a perfectly definite meaning. It is an affective condition recognisable to introspection, which leads towards the behaviour of seeking to acquire an object. If the word "desire" is used in this sense, desire is clearly one factor and one factor only in the total situation which determines the price a buyer will pay for an article. It has intensive qualities, *i.e.* we can make quantitative statements about it, but it is not capable of exact measurement. It is price alone which is exactly measureable, and a price does not even indirectly measure a desire.*

* The error which we are here examining arises from a failure to distinguish between "desire" (the introspectible concomitant of seeking behaviour) and "craving" (the behaviour tendency itself). The intensity of desire is not exactly correlated with the strength of seeking behaviour (or valuation); craving is exactly correlated with the strength of seeking behaviour, but only because we made it so by definition. We may be thorough-going behaviourists and treat only of cravings in the psychology of demand; or we may be thorough-going introspectionists and treat only of desires. On the other hand, we may retain both the mental and the behaviour conceptions. What we must avoid is confusion between them.

When we begin to try to apply quantitative conceptions to wants we find that the matter is much less clear. We can compare the strengths of different desires, both because we notice by introspection that they appear to differ in strength, and because we observe that we are willing to use correspondingly different amounts of effort to attain the ends of different desires. We cannot make a similar comparison between different intensities of wants. It is true that different wants give rise to desires of different intensities, but the intensity of the desire springing from a want does not depend only on the nature of that want, but also on the extent to which it is unsatisfied.

An intensive term is, however, commonly used of wants when we speak of their "urgency." Wants are classified in accordance with their "urgency" into: "necessaries," "comforts" and "luxuries." This basis of classification is clearly well-founded in actual properties of different classes of wants, but we shall find it misleading in most of its implications, and our psychology of desire will probably be truer if we are very sparing in our use of the conception of the urgency of wants.

The actual property of wants which underlies this grouping of them into necessaries, comforts and luxuries, is the varying strength of the desire for their different commodities when the amount an individual possesses is nothing at all. A necessary is an article (like food) for which the craving will take precedence over cravings for articles of either of the other classes if the individual possesses none of it at all. A comfort is similarly supposed to be preferred to a luxury if the individual making the choice possesses nothing of either.

The case of the individual who possesses nothing of the articles belonging to the classes under consideration, is, however, of purely theoretical interest. The classification

of wants according to their urgency ceases to have any significance whatever as soon as we turn to the actual conditions under which economic demand is generated. A person living in poverty has desires for articles belonging to the classes of comforts and of luxuries as well as for necessaries, and in fact purchases them long before he has so many necessaries that his desire for these vanishes altogether. If he has a small amount to spend, the particular kinds of article he spends it on will be determined by the amounts of different commodities he already has, and will not be predictable by knowledge of whether the articles in questions are necessaries, comforts, or luxuries. The grading of wants according to their " urgency " is, therefore, without much meaning except for the limiting case of the man who possesses nothing at all.

We cannot then say that an individual's want for one article is in general stronger or weaker than his want of another article. What we can say is that in a given situation (when he possesses given quantities of both) he will prefer one or the other. No quantitative relationships hold between wants in themselves, apart from the amount of the article in question already possessed by the individual. The classification of wants according to their urgency into necessaries, comforts and luxuries tells us nothing about the strength of desire for various articles in the practically important situation in which all wants are to some extent satisfied. We cannot, therefore, in general, make quantitative statements about the hypothetical permanent psycho-physical conditions determining the occurence of particular desires which we have called " wants," but only about those desires themselves.

The only thing in an economic transaction which is both quantitative and measurable is the price at which an exchange takes place. Much confusion arises in economic

thinking by the attempt to put into the psychological conditions behind an economic transaction the properties of quantitativeness and measurableness which belong only to the external transaction itself.

It is a plain fact that, other things being equal, a man will generally pay a higher price for the one of two articles for which his desire appears to introspection to be the stronger. But it is futile to see in price the measurement of desires, for many other factors than the strength of a man's desires for different articles determine the prices he will pay for them—habit, the persuasiveness of the salesman, his respect for the social estimate of what they are " worth," and so on. Nor have we any better right to see in preferences an indication that a man expects a greater " amount of satisfaction " from one article than another. " Amounts of satisfaction," " measurement of wants," and a good deal of what is written about " consumer's rent " must be put down as psychological fiction.

Even so careful a thinker as Professor Marshall, while he recognises the immeasurability of many quantitatively psychological phenomena, says : " if we find a man in doubt whether to spend a few pence on a cigar, or a cup of tea, or on riding home instead of walking home, then we may follow ordinary usage, and say that he expects from them equal pleasures " (p. 76).[171] If we wish our account of this doubt to be psychologically adequate, we must most certainly refuse to follow this usage.

132. Individual Valuations.—If we admit that wants are not expressible in quantitative terms at all, and that desire cannot be expressed in exact quantitative forms, we are faced by the problem of what use we can legitimately make of the conception of *individual valuation*. Writers on economics very commonly speak of an individual valuation as some price at which a person is willing to buy or sell an article, which is perfectly definite and expressible in numeri-

cal form, before the transaction takes place. If the individual concerned is a potential buyer of an article his individual valuation of it is the price above which he will not buy the article and below which he will buy it. If he is a seller, his valuation is the price below which he will not sell and above which he will. An economic transaction is supposed only to take place when the valuation of the buyer of an article is higher than the valuation of the seller.

Thus the valuation is a hypothetical disposition to acquire or retain an article which is expressible in numerical form, and whose conscious concomitant is the buyer's or seller's desire for that article. Our previous discussion should render us suspicious that any such conception is largely fictitious.

As an example of the use made of this conception of the individual valuation, we may take the following account of a case of isolated exchange as discussed by Professor Smart: "A peasant, *B*, wishes to buy a horse, and his circumstances are such that he puts the same estimate upon £60 as he does on the possession of a horse. His neighbour, *S*, has a horse which he values as worth £20. Here there will certainly be an exchange, as, at a price, say, of £40 both make a gain of £20 over the amount at which, in the worst case, they are willing to exchange. But if the exchangers act on the principle "better a small profit than no exchange" the price may be anything above £20, or under £60, and the actual figure is determined by the "higgling of the market." Here, then, the price will lie between a minimum of the seller's subjective valuation and a maximum of the buyer's subjective valuation." [172]

The assumption underlying this passage is that there is a definite quantitative valuation in the mind both of the buyer and of the seller. In other words, it is assumed that the desire of the buyer for the horse and the desire of the

seller for the horse can be expressed in an exact quantitative form. We are then left with the difficulty of accounting for the point between the personal valuation of the seller and the personal valuation of the buyer at which the exchange actually takes place.

Now it is clearly true that there is something in this conception of personal valuation, and it would be extremely difficult to give any adequate account of an economic transaction without making use of it. In any given isolated exchange, it will be found that if the buyer could only get the article required at a very high price, he would refuse to buy it. As the price is lowered his refusal becomes less positive, until finally a point is passed at which his refusal changes to a consent, and at a still lower price he will complete the bargain with increasing alacrity.

But is this point at which he is willing to buy one which is dependent only on the previous mental dispositions of the individual concerned? If not, the conception of an exactly measureable individual valuation before the transaction takes place is untenable.

Now it is quite possible that as a result of deliberation the buyer (or seller) has determined on a definite figure above (or below) which he will not go. Examination of our own minds, however, when we buy or sell will soon convince us that such deliberate acceptance of a figure is not the normal condition under which we transact business.* What is true is that if *B* means to buy a horse, there is (in any given set of circumstances) a certain probability that he will pay any given price for the horse.

* It could hardly be altogether the case in the transaction under discussion, for *B* has probably not seen the horse until the time at which the bargaining takes place. This being the case, his valuation of it must be very largely formed while the bargaining is in progress.

This probability is great for low prices and small for high prices. Without doubt, there is a price so low that under any circumstances *B* would certainly buy the horse at that price, and another price so high that under no circumstances would he buy the horse for that amount. Between these two prices there is, for every set of circumstances, a continuous curve of decreasing probabilities from one to zero that he will buy the horse at any given intermediate price. It is clearly misleading to speak of a unique value between these two limits, and to call it his "valuation" of the horse. The buyer's valuation, like the seller's valuation, is merely a range of varying probabilities of effecting the exchange at different prices, and the exact price at which the exchange takes place will depend on the action of all the factors which have already been mentioned as effective circumstances in the total situation.*

The individual valuation of an article, then, must be defined not as a single price above which an individual will certainly not buy it and below which he certainly will, but as the whole class of prices between the lowest one at which, under any circumstances, he would refuse the article and the highest price at which, under any circumstances, he would buy it. As a result of deliberation, this class of prices may be made very small, although it is doubtful whether even the most obstinate person who has made the most careful deliberation ever reduces it to a mathematical point.

133. Diminishing Valuation.—The different amounts of effort which a man will make in order to attain various articles (or the different prices he will pay for them) are very clearly a function of the quantity of each of the articles which he already has. A man with nineteen sacks of potatoes will make less effort to obtain a single additional

* p. 266.

one (and will pay a lower price for it) than will a man similarly circumstanced in other respects who has only one.

This is the fact of *diminishing valuation*. Every successive increment in a man's store of a commodity will in general be less highly valued by him than the last. The amount for which a man will exchange a single part of his total stock of any commodity is the *marginal value* to him of that part.* The principle of diminishing valuation can be put in the form that as a man's stock of a commodity increases his marginal valuation of any part of it will diminish. The marginal value of a single sack of potatoes to a man with nineteen sacks is less than it would be if he had only two. It is clearly the marginal value to him of a sack of potatoes (and not the total value of his whole stock of potatoes) that determines the price at which he will be willing to sell and to buy a sack of potatoes.

It is necessary to distinguish clearly between the fact that with nineteen sacks of potatoes a man desires a single sackful less than he would if he only had two, and the fact that a single sack is less serviceable to him if he already has the larger number. Both facts are true, and the first is to some extent dependent on the second. They remain, however, different facts, and the dependence is by no means complete.

The fact that the man with the larger stock of potatoes will desire an additional sack less than the man with the smaller stock is a psychological fact. This psychological fact may be called the fact of *diminishing valuation*. This diminishing valuation is in part (but not altogether) the result of an external non-psychological fact that a new sack of potatoes is less serviceable or useful to the man with the

* It should be borne in mind that a marginal valuation is really a class of possible prices, and not a single possible price.

larger stock. This external fact may be called the fact of *diminishing utility*.*

Now it is clear that so far as a man's desire for commodities is founded on a deliberate and correct estimate of their serviceableness to him, his valuation of them will vary with their utility to him. This will also be true if his desires are based on an instinctive craving which is regularly decreased in amount as its object is supplied to him. In both of these cases, diminishing valuation would always follow diminishing utility.

Our desires (and consequently our valuations) are not, however, always so founded. Probably, indeed, they never are completely. Every instinctive craving has an appetitive element which is not graded to the actual need of the individual for the commodity craved for, and which is not altogether under the domination of his deliberate calculation. So far as this appetitive element is dominant, there will be no diminishing valuation of things as his stocks of them are increased, although there is obvious diminishing utility. The miser values his ten thousandth sovereign no less than he did his hundredth, although its utility to him may have reached vanishing point.

Probably there is a similar appetitive element in the hoarding of wealth by all of us which makes our valuation of additional increments diminish less rapidly than their utility to us. The reluctance of a man earning two thousand pounds a year to spend 1s. 6d. on a taxi fare may be little less than that of a man earning £250 a year, although a calculation of the relative utility of 1s. 6d. to the two men would lead us to expect that the difference would be very large.

* This distinction is sometimes blurred by a vague use of the term "utility" for both the psychological fact of a man's desire for something and the external fact of its usefulness to him.

It must also be remembered that the relationship between desire for a commodity and the amount of it already possessed, is a function of the special conditions (physiological or external) under which cravings are set up. These are not only different for different cravings but different for different degrees of satisfaction of the same craving.

Let us consider, for example, the case of a man short of food. The condition of the man with no food at all is clearly no worse than that of the man with insufficient to maintain life, so the utility of increments of food which are not sufficient to maintain life is negligible, while the utility of the increment which is just sufficient to maintain life would be of inestimable utility. The principle of diminishing utility will not, therefore, apply to the increments of food up to the amount just necessary to maintain life.

Nor does the principle of diminishing valuation apply to similar cases. It happens to be a result of the physiological conditions of craving for food, that a small but insufficient amount of food stimulates the craving to the maximum. Persons who have carried out long fasts say that the intense desire for food disappears almost completely after the first few days. A man who is having no food at all, therefore, may be found to desire food less (and therefore to put a lower valuation on a given increment of food) than a man who is eating daily an amount insufficient to keep him alive. The curve showing the progress of the valuation of food as the amounts of it increase, will not, therefore, at its beginning show the decrease we should expect from the principle of diminishing valuation.

A differently shaped curve would be obtained for the valuation of water when the supply is insufficient, for the craving for drink has not a correspondingly low strength if the person in question has no water at all. Again, the curve

for alcoholic drinks is different from that for water, and does not show the sharp decline after thirst is quenched, which is characteristic of the curve of the desire for water.

The kinds of desire discussed above are, of course, of little economic importance. Their only purpose is to remind us of the danger of accepting the principle of diminishing valuation as a generalisation of the same order of rigidity as, let us say, Boyle's law of the diminishing volume of gases as their pressure is increased. It is true on the whole that, as the amount we have of any commodity is increased, our desire for and our valuation of any given further amount is decreased. This rate of decrease depends, however, on conditions, external or physiological, which differ for different commodities.

For some commodities it is probably not true at all. Probably the person acquiring a collection of old paintings shows no diminishing valuation of later pictures as his collection increases. There is no external reason for a diminishing valuation of successive pictures (for the utility of a single picture bears little relationship to the number he has) and there is no obvious physiological or psychological reason why his desire for a picture should be less when he already has a large number. The collecting of Great Auk's eggs has been instanced as an example of a want in which there would be increasing and not diminishing utility, for each additional egg added to the collector's hoard would increase the unique quality of his collection.*

Consideration of such cases as these have led economists

* We may also notice that in ordinary speech the word " collection " is reserved for a process of acquisition which is not graded to the needs of the individual acquiring. Thus we may collect birds' eggs, but the householder is not said to make a " collection " of coal when he lays in a large stock for the winter. If he lays in a stock out of all proportion to his needs, we may say derisively that he seems to be " collecting " it.

to make the distinction between *satiable* and *unsatiable* wants. We can make the same distinction in another way by distinguishing between cravings whose strength is graded to actual requirements and those cravings which are ungraded or appetitive. Probably every craving has a certain appetitive element, so that its strength is in part independent of the amount of the commodity already possessed. It should also be noticed that there is every possible intermediate stage between the graded and the purely appetitive craving, so that the sharpness of distinction implied by the contrast between satiable and unsatiable wants is somewhat misleading.

Professor Dickenson thinks that the principle of diminishing utility (or rather of diminishing valuation) could be deduced from Fechner's Law*. This states that the intensity of a sensation is not proportional to the strength of the stimulus producing it, but increases geometrically as the stimulus increases arithmetically. This means, for example, that if the strength of a stimulus is doubled the increment of sensation is the same as would result from increasing the stimulus from twice to four times, or from four times to eight times its original value.

If this law be taken in conjunction with the James-Lange theory that feelings are composed wholly of visceral sensations, Professor Dickenson maintains that the principle of diminishing valuation will follow. It should be clear that it does not. If the stimulus for a feeling of desire is a visceral change, then what follows from Fechner's Law is that successive increases of the visceral change will produce successively less and less increase in the feeling of desire. It does not follow that successively equal increments of the object wanted will cause equal or successively less increments of visceral change, which would also be a necessary premise for a deduction of the fact of diminishing valuation from Fechner's Law. That this is the case is evident from the observable fact of diminishing valuation, but we could not have predicted it merely by knowing Fechner's Law.

* He calls it indifferently "Weber's Law" and "The Weber-Fechner Law," but his context makes it clear that it is Fechner's Law that he means.

Before leaving the subject of diminishing valuation, we may notice a curiously persistent example of what has been called the "intellectualist fallacy." This is to be found in the common assumption that because a man's craving for a commodity decreases with decreasing usefulness to him of that commodity, this is necessarily the result of deliberate calculation of the commodity's usefulness to him.

This is quite certainly not always the case. Diminished craving with diminished usefulness is to be found in behaviour on a level far below that of reflective behaviour. It may, indeed, be a purely physiological effect. The full fed fowl ceases to peck at its corn, and there is every gradation of violence of effort for acquiring corn between the violence of the hungry fowl and the indifference of the satiated one. In other words, the behaviour of the fowl shows the phenomenon described in human behaviour as diminishing valuation. The fowl's strength of effort is graded to the physiological usefulness of an additional increment of corn to it. No one, however, would suggest that this gradation takes place because the fowl has calculated the usefulness to it of successive increments of corn as it becomes gradually replete.

Much human gradation of effort to utility is of exactly the same kind. In human beings, of course, processes of reflective thought interpose and may be the determining factors in deciding the valuation of a new increment of a commodity. An owner of motor transport, for example, deciding whether he would benefit by having an extra motor-lorry sufficiently to compensate for the expense, does so by processes of reflection. He does not allow himself to be guided by the strength of his craving for a new motor-lorry. It is equally true, however, that the housewife's valuation of an additional ¼-lb. of tea per week is

determined in a way much more like the purely physiological determination of the amount of corn after which the fowl stops pecking. The process involved is more complex because the demand of the housewife for tea is not determined simply by the strength of her craving for tea, but by a relationship between the strength of this craving and of her craving for its money equivalent (which means, in the end, her craving for the other things that money can buy). It may, however, be as little the product of deliberate calculation as the diminishing valuation of corn by the fowl.

The use of the language of deliberate calculation for conflicts in which only cravings come into play, is an example of " the intellectualist fallacy," and must be avoided if we wish to build our economics on a psychology which is not fanciful.

CHAPTER XVII.

The Psychology of Economic Value.—II.

134. Market Values.—The prices at which commodities are bought and sold in shops are obviously not arrived at by a process so simple as the interaction between the valuations of a single buyer and a single seller described in the last chapter. There are different forces, some external and some psychological, which produce the values at which common commodities are exchanged for their *market values.**

A psychological factor which is operative in determining the exchange values of commodities sold in open markets is still clearly the valuation of them by possible buyers. A commodity would not be sold at all unless a sufficient number of buyers valued it enough to make it possible for it to be placed on the market at a price which would insure a profit to the seller. Clearly, too, it is normally the marginal valuation of the buyer which determines the price he will pay for a commodity.

If I go into a shop to buy a pair of socks, the question of whether or not there is any possibility of a sale taking place will depend on whether the market price of the socks falls within the class of prices which correspond with my marginal valuation of the socks.† If more is demanded for the socks than the upper limit of my marginal valuation, I

* Or *exchange values.*

† cf. p. 275.

shall certainly not buy them, and if it falls below the lower limit of my marginal valuation I certainly shall buy them, and for the varying prices between the upper and lower limits of my valuation there will be varying probabilities that I will buy. Whether I shall buy or not depends (as we have already seen) on a variety of circumstances affecting my buying, such as the persuasiveness of the shop assistant and the effect on me of advertisements.

Let us suppose that the price of a pair of socks falls well below the point at which under given circumstances I should stop buying. I shall then go on replenishing my store of socks until the price at which they are offered falls at some point within my marginal valuation at which (under the given circumstances) I shall buy no more.

The only difference between this and the more usual account of the relationship between an individual's purchases of a commodity and his marginal valuation of it is that it is here recognised that the point at which I ceased to buy is not a fixed and definite one (depending only on my own internal disposition to buy) but is a variable one. We cannot say that a buyer ceases to buy at a fixed point of supply at which his marginal valuation is equal to the price asked, for this point is no more fixed before the actual transaction takes place than is the price at which a buyer will buy a horse. All that we can truly say is that a purchaser of socks will cease to buy them at some point which falls within the class of prices which is his marginal valuation of a pair of socks.

The indefiniteness of the point at which a buyer will cease to buy goods is an important factor in the psychology of market valuation, for it is the psychological factor which produces the well-known phenomenon that when the supply of an article is so great that the demand for it (at a price remunerative to the manufacturer) appears to be ex-

hausted, a further demand can be created by judicious advertising. The advertiser is controlling one of the conditions under which a buyer makes his purchases, and the effect of his operations is to make the buyer pay a price higher up in the scale of his marginal valuations, and so purchase a larger total quantity before the point is reached at which he ceases to buy.

The distinctive feature of buying such articles as socks is that there is more than one possible buyer and more than one possible seller. There is, in other words, competition between buyers and competition between sellers. What determines the lowest cost at which socks can be sold is not a psychological factor at all, but is the seller's costs of production (taking into account payment for raw materials, labour and administration, payment for use of capital, and return on the other sales). What determines the number which can be placed on the market is the marginal valuation of the whole class of buyers. This marginal valuation will obviously decrease as the supply of socks to the market is increased, because as each buyer buys a certain number of socks, his marginal valuation for a pair of socks will decrease. Pairs of socks can, therefore, only be placed on the market in such numbers that the marginal valuation of a pair of socks by buyers will not fall below the price at which it is economically possible to sell them.*

The fact that, as the supply of a product is increased,

* We are considering, of course, only the psychological and not the ethical aspect of demand. The fact that the price which a purchaser will pay for an article is determined mainly by the strength of his desire does not necessarily mean that this is the "just" price of that article. What has been said would remain true if we believed that the just price was determined in some other way, as, for example, by the amount of labour put into the production of the article, or if we believed that no very precise significance could be attached to the term "a just price."

the price at which that commodity can be sold decreases, is the *Law of Demand.* It will thus be seen that the psychological fact of diminishing valuation by individuals is the root of the Law of Demand. With the details of how prices are fixed we shall not be concerned here, because these are treated in the science of economics.

135. The Psychological Roots of Economic Value.—A common statement of the theory of the desires leading to economic values reduces them to the needs of the moment, and the need for accumulation for future security. Since no one can deny that the average individual's efforts are directed towards providing for his wife and family as well as for himself, it is generally recognised that the desires for momentary satisfaction and for accumulation for future security originate within the reproductive system of instincts as well as within the self-preservative system. Sometimes, however, this doctrine is stated in a form which suggests that economic motives are purely egoistic. I do not think, however, that this is more than mere looseness of expression.

Dibblee, however, recognises that 'human motives are more complicated than this analysis suggests, and he classifies the desires leading to values as desires for : (1) Life, (2) Foresight for Life, (3) Enjoyment.[166] In an even more comprehensive statement he says : " to psychology there is only one real purpose of Value, the completion of a blank in a man's puzzle-picture of contentment or ambition."

We may welcome a clear recognition of the fact that the desires for life and of foresight for life do not exhaust the desires which can be productive of economic values, while at the same time doubting whether enjoyment or " contentment or ambition " are adequate to express the whole of the desires which lead to values.

In our analysis of human instincts we saw reason for regarding the springs of action as something more than can possibly be expressed as desire for contentment or as ambition. Although these are undoubtedly sources of desires, may not other instincts be so too? Does not the instinct of curiosity give value to instruments for scientific research, and the instinct of pugnacity value to the instruments of warfare?

The truth seems to be that a desire may originate from any instinct or from any sentiment or even merely from a habit, and desires from any of these origins may be productive of economic values.

The behaviour of hoarding money or of obtaining land may certainly originate from the needs of the self-preservative or reproductive systems. This is the case when a man acquires wealth to satisfy his own immediate needs or those of his family, or when he accumulates capital to provide for their future security. But, as we have seen, there is every reason for supposing that there is also a tendency to accumulate wealth not limited by immediate needs or future security,* and to the instinctive tendency underlying this behaviour we have given the name of the "instinct of acquisition." This observation, if true, is an important one for economic theory, because it provides a system from which desire for wealth may spring, even when the needs of life and security have been satisfied.

The instinct of assertion also may originate desires resulting in economic values, when capital is acquired for the purpose of dominating other people. Probably the capital value of a large newspaper (which, unlike most investments, bears no relation to its revenue-producing capacity) arises very largely from its possibility of satisfying the instinct of assertion.

* cf. p. 136 ff.

The social instincts, moreover, can be productive of values, and of efforts to attain those values. Members of combatant nations sacrificed their lives and sometimes even their fortunes for their respective countries, not because they performed calculations which convinced them that such conduct was to their own advantage or to the advantage of their children, but because they had formed sentiments of loyalty to their country. These sentiments gave their country's welfare a value, and produced efforts for the attainment of that welfare in which their own more private values were sacrificed.*

We could, of course, multiply examples of values arising from desires originating from different instincts. One more example, however, may suffice. The values of fashionable articles of clothing and of certain kinds of jewelry clearly originate from desires originating within the instinct of primitive comradeship.† At a time when the wearing of a hat of a particular shape is fashionable amongst women, hats of this shape acquire a value through the desires of women to be dressed in accordance with the fashion. When this particular fashion passes away, the value of the articles conforming to it is very largely lost.

Desires productive of value, however, do not arise only from those dispositions which are part of the innate equipment of every man, but also from those dispositions which are peculiar to himself. In other words, values arise not only from the instincts but also from the sentiments. It is, as we have seen, impossible to draw a sharp line between instincts and sentiments, for sentiments are very generally instincts which have become specialised to one object.‡ If a man is a prospective purchaser of a larger house for the increasing needs of his children, it matters very little whether we say that his valuation of the new house arises

* cf. chap. X. † cf. p. 157. ‡ cf. p. 58.

from his parental instinct or from his sentiment of love for his children. Clearly both statements are true.

It is, however, practically important to distinguish between values resulting from desires which arise from instincts in their primitive generalised form and those resulting from desires for objects which arise from a disposition acquired in the life-time of the individual.

The desires for water and for meat belong, for example, to the first of these two classes, while a collector's desire for old china belongs clearly to the second. We may distinguish these two modes of origin of values by saying that the value of water and of meat come from desires originating from an instinct, while the desire of the collector arises from his sentiment for old china.*

An interesting and important group of the valuations arising from sentiments is to be found in the aesthetic and moral valuations. Such abstractions as cleanliness, beauty, order and justice may become the objects of sentiments and the instruments or institutions which promote these things thus acquire value.

It has already been noticed that values may be produced by desires arising from the instinct of pugnacity. It is equally true that the individual value of particular objects may be altered by a particular individual's sentiment of hatred. There is a grudging recognition of such elements of value by Dibblee, who speaks of combative and emulative elements in value. Hatred, it is true, may reduce values. The exchange value, for example, of a German manufactured article in England was reduced after the war by the unwillingness of English consumers to buy things manufactured by their enemies. But such sentiments may also increase values. The value of a knife or a revolver is

* While recognising, of course, that this sentiment is itself grounded in his instinct of acquisition.

increased for a person whose sentiment of hatred has led him to decide to commit murder, just as shells and high explosives acquire values for a combatant nation.*

The desire, however, which produces an economic value may arise neither from an instinct nor from a sentiment, but from a mere habit.† No careful student of human behaviour can fail to notice how frequently desires and values are generated by habits. This is particularly noticeable amongst old people, but is in no way confined to them. Objects which have been habitually used acquire a value to the individuals who have become habituated to them, which may be much greater than an outside observer would consider to be justified by their real utility.

* We may attempt, of course, to reduce values of this kind to the form of values for life or for security by assuming that men commit murder for such solid advantages as future security from the murdered or for present gain; and that nations engage in warfare for similar reasons. That this is sometimes true is not, of course, denied. So far as these are the true motives for murder and warfare, the value of knives and shells may be said to originate from desires for life or for security. It will hardly be denied, however, that in both murder and warfare, hatred between men and between nations is at least as important a factor as the desire for gain or for security.

† This distinction betweeen an instinct, a sentiment, and a habit may appear inconsistent with what was written in Chap. III., where I have pointed out that instincts form the foundation on which habits and sentiments are built. The inconsistency is, however, only apparent. It is true that there is no sentiment or habit which has not a foundation in instinct, and no human instinct which is not modified by becoming more or less specific in its objects and more or less overlaid with habit. This lesser or greater degree of modification is, however, of sufficient practical importance to justify the use of the word "instinct" for behaviour systems which have undergone little modification, the word "sentiment" for the product of an instinct which has become entirely specific in its object, and "habit" for a behaviour system which is mainly the result of the persistent tendency of a course of action frequently carried out to be repeated.

As an example, we may take the English habit of eating potatoes at dinner every day. Potatoes are not a physiologically necessary accompaniment to a meal, and their invariable appearance on the table is an English habit which surprises the inhabitants of other countries whose menus are more varied. Potatoes have not generally a high value in England because the craving for them is not met by any difficulty in obtaining them. When, however, during the war the supply of potatoes became short, although there was an ample supply of other vegetables which could have been used as substitutes, men were willing to make great efforts in order to continue their habitual menus, and, therefore, potatoes attained a high value. This was a value produced by a habit, for it was merely the habit of eating potatoes which made people continue to demand them instead of using other vegetables as substitutes.

Although the physiological basis of the desires for drugs is more complex than that of the above example, we have in the desire for drugs, too, a value which is mainly the result of the laws of habit. It is probable, moreover, that the economic value of most objects has in it an element which is due to habit. In order to obtain the articles to which we have become accustomed, we make efforts greater than would result from impartial calculation of their utility; and such articles, therefore, owe part of their value to desires originating from habits.

We have already seen that desires originating from the instinct of pugnacity or from a particular sentiment of hatred increase some values while they reduce others. A man desiring to commit murder will attach high value to a lethal weapon which would be valueless to his fellow-citizens, while his murderous desires may destroy the value for him of other objects, such as a prayer book or a concert ticket.

Similarly, desires arising from within any other system will reduce some values while enhancing others. A religious sentiment will reduce the value to its possessor of intoxicating liquors and of revolvers while it enhances his valuation of prayer books and of objects which may be used in the performance of good works.

We cannot divide desires into the classes of those which reduce and those which increase values, for every system from which desires spring will be found to increase some values and to reduce others. We can, of course, decide that some objects which men value are better deserving of their desire than others, and we may notice that some instincts and sentiments lead to these desires, while others reduce them and lead men to value other things less worthy of valuation. This, however, is an ethical judgment with which neither economics nor psychology is concerned. The desires for whisky and revolvers are psychological facts like the desires for prayer-books and hospital stores, and the consequent values of whisky and revolvers are economic facts no less than the values of prayer-books and hospital stores. Any discrimination between these classes of values is irrelevant from the point of view of a scientific psychology or economics.

136. The Psychological Inadequacy of Certain Popular Accounts of Human Behaviour.—In the earliest attempts that were made to provide an account of the motives which led to the sort of human behaviour that is of interest to the economist—such as buying, selling and earning one's living—writers were often content to explain human motives by means of a very simple formula. This formula generally took the form of stating that men only acted from self-interested motives, and that all human behaviour could be reduced to a seeking for pleasure and avoidance of pain. There was sometimes a grudging recognition of impulses,

such as those belonging to the sex and parental modes of behaviour, which were not self-interested. Often these too were reduced to the pain-pleasure formulation. There was rarely any recognition of socially directed impulses.

We have already discussed how inadequate is this account of human motivation.* If we accept the theory of the instincts, we must recognise that the sources of human behaviour (and of economic behaviour no less than other kinds) are to be sought for more widely than this kind of theory suggests.

It cannot be emphasised too strongly that the objection to this kind of theory is not that it is ethically unsatisfactory, but that it is psychologically wrong. If a man were, in fact, moved by self-interested motives only, or by the desire for pleasure and repugnance from pain, it would be the duty of economists to found their psychological theories on this fact whether or not it was repulsive to their moral sense.† The objection to the theory, however, is that, as a matter of psychological fact, it does not happen to be true.

Even Professor Marshall, when he is discussing the objections to the theory that in the choice between two actions a man will follow that course which yields him the greater pleasure, seems to consider it necessary only to deal with the moral objections to the identification of desiring a thing, and desiring a pleasure which that thing will bring.[171] The real objection is that this confusion is a psychological error. If I hit a man because I am angry with him, that is a totally different thing from hitting him because I expect pleasure from the effects of the blow.

* cf. p. 179.

† Many of the motives on which we are insisting (such as those derived from the instinct of pugnacity) are, of course, no more morally respectable than self-regarding motives.

It must be admitted that modern psychologists are sometimes guilty of expressions which suggest that their objection to psychological hedonism is an ethical (or aesthetic) one as, for example, when they describe it as " a libel on human nature." It should be clear, however, that this is not the real ground on which the psychologist objects to this theory. His objection is that it is not a true description of psychological facts. If it were true, the question of whether or not it was a pleasing picture of human nature would be irrelevant.

Economists are, of course, generally aware of the inadequacy of the older psychological foundations. We could hardly find a clearer recognition of the variety of the sources of human behaviour than is shown by the following extract from Professor Marshall, who describes the individual to be studied in economics as : " . . . a man of flesh and blood ; influenced by egoistic motives and shaping his business life to a great extent with reference to them ; but not above the frailties of vanity or recklessness, and not below the delight of doing his work well for its own sake, not below the delight in sacrificing himself for the good of his family, his neighbours, or his country, and not below the love of a virtuous life for its own sake." (p. 89)[171].

The discussion of economic questions is not, however, confined to economists, and those who have strong views on economic problems are more influenced by writers who are neither economists nor psychologists. If we turn to the correspondence columns of our newspapers we shall find over names of weight and authority repetitions of every economic fallacy which has been founded on an oversimplified psychology. Such statements are to be found as that " human nature never changes," that " man only acts from self-interested motives," and that ideal conditions, both of production and distribution of product and wealth, will follow from the play of self-interested behaviour on the part of employers, workers and consumers (if only all of these

have sufficient knowledge to know where their own interest really lies). These statements are not only treated by these writers as indisputable, but are dignified by the name of "economic laws," which are, apparently, supposed to have the rigidity of the laws of natural science.

That there are certain psychological limitations within which constructive economic changes must work, no one would, of course, dispute. These limits are determined by such facts as that it is easier to change external institutions than it is to change people's mental habits, that human instincts cannot be destroyed although their activity can be diverted to new ends, and that human activity of a socially desirable kind (such as that involved in the production of wealth) will only take place if social conditions are adapted to give adequate motives to such activity. These, however, are psychological propositions of a totally different order from the pseudo-psychological laws of popular economics, and do in fact hold out much more hope of beneficial constructive changes in our social system.

An example of the common assumption that in economic matters no social sentiments affect values is illustrated by a recent stockbrokers' circular on the loans to Germany and Russia. After pointing out that opinions on these loans in the newspapers had been given from a national standpoint and had tried to show how far the loans would affect our national industries, this circular says:—"With this we have no quarrel. It does, however, omit the most important factor. These loans will succeed or fail as they commend themselves to the individual investor. If they offer better security and a higher yield than can be obtained elsewhere, they will be over-subscribed, and vice versa. It is useless pretending otherwise, each individual looks to his own affairs, whether he be a trader, a workman—or an investor . . . Finally, we suggest that our clients should carefully examine the proposed loans on their true merits. Neither let political bias, nor national sentiment prevent you from obtaining a good investment—if one is obtainable."

This passage illustrates very well, first, the assumption that

nothing but self-interested motives will affect the subscription to the loan, and secondly, that nothing else ought to. Now unless the writers of this circular had been corrupted by the kind of psychology which we are criticising, it is difficult to see how they could have made a statement so at variance with the facts as that in the first paragraph. The individual investor to the loan to Germany was undoubtedly influenced in his subscription by the extent to which he had still existing the sentiment of hate against Germany which survived from the Great War. The rate of interest on the loan in order to secure adequate subscription, was, in fact, greater than would have been necessary had the loan been subscribed on its economic merits alone. This is a clear case of a sentiment of a totally different kind from the sort ordinarily admitted as an economic motive having a measurable effect on an economic value.

It must be admitted that the desires operative in the production of market values may be of just such a simple kind as is assumed by the kind of economic theorist we have been considering. It is indeed certain, as was recognised by Hume, that the desires of multitudes of men may be very much simpler than the desires of a single individual. Many of an individual's desires will be peculiar to himself, and will be cancelled out by the opposing desires of other persons, or swamped by other people's indifference to his particular desires. As a result, the large scale demands, which are operative in the production of market values, might conceivably be shown by economic statistics to have a simplicity which is quite absent from the desires of a single individual. It would be an absurd claim for the psychologist to pretend to be able to predict from his science what human desires will survive in the production of exchange values. This is a question which can only be settled inductively by an examination of economic statistics.

It is necessary, however, to protest against the common *a priori* assumption that the only motives which produce economic results are the desires for immediate goods and for future security. It is sometimes stated, for example,

that if accumulated capital could not be inherited, and so contribute to the security of a man's children, he would cease to accumulate capital. This statement is sometimes called an " economic law." It seems, however, generally to rest on no firmer basis than an over-simplified psychology.

The true method for the discovery of economic laws (and of the psychological facts on which they rest) must be an induction from observed facts of behaviour.* If observation over a large range of varied social conditions showed that capital accumulation grew progressively less as its contribution to future security diminished, and that it stopped altogether in a social system in which accumulated capital gave no security, we should have the material for a scientific induction of the psychological roots of capital accumulation. This, however, is a widely different method from the more common one of asserting that capital accumulation has stopped under these conditions because it obviously must have done so by " economic law."

At present, the contribution which the psychology of desire should make to economic theory is not that it should attempt to dictate to economists what in fact really are the desires productive of market values. It should, however, suggest that the economists' search for such desires should be made wider, and should include all the human instincts and all the possible human sentiments and habits. Economic experience alone, however, can decide which of these sources of desire are really operative in the production of market values.

137. Social Determination of Values.—While it is true that the demand for an article is determined by the interaction of a large number of individual valuations of that

* There are, of course, an increasing number of accurate studies by economists which can form the basis of sound inductions on human behaviour, but these are only a beginning.[176]

article, it is also clear that a market value is not the mere resultant of a number of personal valuations each acting separately. Every personal valuation of an article affects every other personal valuation of it, and the price at which the article can command a market is in part fixed by what we may call a " social valuation."

This explains the fact that articles of little utility can often command high prices if only it is generally agreed that they ought to be bought. Bad champagne, for example, can be sold at a much higher price than a white wine of another name and of much superior quality. This is not because individual desires, independently formed as a result of individual judgments of utility, would in themselves lead the people possessing them to buy bad champagne in preference to other wines, but because there is a high social valuation of champagne.

The truth is that no human desires (except those springing from the most primitive and general impulses of hunger and thirst) do, in fact, grow up independently of the individual's social environment. Every individual desires those things that he hears other people speak of as desirable. In other words, his desires (like his opinions) are open to the influence of suggestion from the body of consumers. The demand for an article is not a mere resultant of a large number of independent desires, but is in part the product of the interaction of all these desires on each other.

Advertisers are aware of this fact when they try to induce consumers to obtain articles, not by describing their utility, but by suggesting that they are articles which other people value. This appeal may take the simplest possible form (as when an advertiser says that everybody is rushing to buy the articles he is advertising) or by the more obscure implications of such words as *élite* or *smart*, which are frequently applied to an article for the increase of its sales.

This fact that personal desires can be aroused (and that, therefore, personal valuations can be increased) by the suggestive effects of high social valuation, explain much that is otherwise puzzling in the demand for many kinds of luxury articles. If man were a non-gregarious animal it is improbable that he could be persuaded to pay 8s. 6d. for a dinner in an expensive restaurant, although the dinner is of exactly the same quality as one which he could obtain for less than half that price at a different kind of restaurant. The reason he does so is because the patronage of such places shows him that a large number of other people value at that price a dinner eaten under those conditions, and his own valuation of the dinner is increased by the influence on him of that social valuation.

CHAPTER XVIII.

INDIVIDUAL PSYCHOLOGY.

138. Individual Psychology.—Individual psychology is the study of the mental differences between individuals.* The fact that scientific methods can be used for studying individual differences as well as for studying the uniformities of different individuals was a fairly late discovery in the history of psychology. The foundation stone of the study of individual psychology was laid by Sir Francis Galton when he began to study the differences in different persons' imagery.[38] Since that time, however, individual psychology has assumed an importance which, on its practical side at least, is hardly less than that of general psychology.

The instrument used for the investigation of individual differences is known as the *mental test.* A mental test differs from a research experiment in psychology by the fact that, while its material and actual method of working may be the same, it is carried out with a totally different aim. In the research experiment a number of individuals are taken, and some function† is measured in order to discover what is its average value (and, possibly, how its different values are distributed). Exactly the same measurement may be carried out as a mental test, but in

* This term has also been appropriated by a school of mental therapy which has developed from psycho-analysis (that of Dr. Adler of Vienna)[46]. The sense in which I am using the term "individual psychology," is, however, that usually adopted.

† Let us say, for example, the ability to visualise distinctly.

this case the average value of the function is supposed to be known, and the object of our measurement is to find out whether the individual examined displays that function in a higher or lower degree than the average individual.

It will be seen that the use of a mental test always necessitates previous research work on the same material. It is first necessary to know what is the normal value of an ability before we can find out whether a particular individual has that ability in a less or greater degree than is normal This experimental work is called *establishing a norm* for that ability.

139. Mental Tests.—Three kinds of test are in common use.

(1) Tests for *specific mental functions*, such as Galton's tests for visual imagery. Any function that can be distinguished at all can be measured with more or less success in this way. It is easier to test for the existence of an image than it is, let us say, for a quality of character, but the more difficult task of distinguishing and measuring the more elusive qualities of character and temperament has been attempted, and no doubt will in time be successfully accomplished.

(2) *Vocational tests.* These are tests for groups of mental functions which are of importance in a particular vocation. The earliest of these was Münsterberg's famous investigation of the capacities of different tram drivers by a test which was designed to involve (as nearly as was possible under laboratory conditions) the same kinds of behaviour as were necessary to avoid traffic when driving a tram. The details of this test will be found in most of the works on industrial psychology.[119]

Vocational testing is of great practical importance, for it makes possible the establishment of efficient vocational guidance, and the elimination of the wasteful method by which a man discovers his unsuitability for a particular

kind of work only by actually starting on it and finding himself unable to carry it out efficiently. Vocational selection and guidance, however, belong purely to applied psychology, and will not, therefore, be dealt with here.

(3) Mental tests have also been used for the investigation of the *general ability* which is supposed to underlie all the particular abilities of an individual—*i.e.* the factor which is ordinarily known as *intelligence*. The investigation of intelligence is a matter of central importance for psychological theory, and will, therefore, be treated at greater length.

140. Intelligence Tests.—The word *intelligence* is used in ordinary speech to describe the differences in different individuals' capacity to deal effectively with a novel situation, to learn new material, and so on. Every teacher will willingly describe some of his children as more intelligent than others. This does not mean necessarily that they know more than the others, or even that they learn better, (for the intelligent child may be idle), but it means that they could learn more quickly than other children and more readily solve new problems.

Although the same word is used here as is used when we contrast *intelligent* with *instinctive* behaviour, it does not follow that the teacher speaking of the intelligence of his child means quite the same thing by that word as does the comparative psychologist. That there is a great deal in common between the two conceptions one may readily see by comparing the definitions which have been given.

Thus, William James characterises intelligent (as contrasted with instinctive) behaviour as " the pursuance of future ends and the choice of means for their attainment,"[27] while Binet says that he is attempting to measure in his intelligence tests : (*a*) the tendency to take and maintain a given direction, (*b*) the power of making adaptations for an end, and (*c*) self-criticism.[120]

The two conceptions of intelligence clearly have as common factors the general ideas of plasticity of behaviour and purposiveness. At the same time, the two conceptions have grown up in the face of two different kinds of problem, and their meanings are, therefore, necessarily not the same. The meaning of intelligence in comparative psychology is the plasticity of behaviour which contrasts with the mechanical behaviour of pure instinct. Its meaning in the history of mental tests is the general capacity which varies from individual to individual, and is measured in intelligence tests. It would probably, therefore, be better to avoid the use of the word *intelligence* in speaking of what is measured by these tests and to substitute some such term as " general ability."*

This conception of general ability was made precise only when Binet brought out his series of tests to be used in measuring the mental ability of school children.[121]† Binet's tests consisted in asking children to answer questions or perform tasks, and judging their mental ages by their success in a number of standardised questions of difficulty graded for different years. Thus, a child whose age was 6 might be found to be only able to perform tasks which should be possible to a child whose age was 4. This child, whose actual age was 6, would be then said to have a *mental age* of 4.‡

* Actually, of course, the word *intelligence* is too firmly grounded now for any alteration to be practicable.

† These tests have since been modified and the intelligence tester now has the choice of a very large number, of which the most important are the Stanford Revision of the Binet tests by Terman,[120] and the slightly altered form of the tests brought out by Professor Cyril Burt.[122]

‡ Or an *Intelligence Quotient* (I.Q.) of 67, which is obtained by dividing the mental age by the actual age, multiplying by 100, and expressing the answer by the nearest integer.

The object of the test was to measure neither information (which is measured in examinations) nor any single mental capacity. The practical difficulty in attaining this aim was the fact that every single question asked indicated either information obtained or a single mental capacity.

Thus the child of age 3 is asked to name a knife, a key, and a penny. We are obviously testing the information that he has received about the names of these articles. On the other hand, at age 8 he is asked to count backwards from 20 to 1, a task whose performance probably depends very largely on the possession of the single mental capacity of vivid visualisation.

These difficulties are got over by asking questions for information about things which the child of average intelligence would at that age have picked up by casual information, but which he would not have been taught in regular lessons. Thus, ability to name the three objects mentioned is a real test of intelligence at age 3, for an intelligent child of that age would have picked up the names of those objects while a backward child would not. The difficulty arising from the fact that individual tests measure particular mental abilities is got over by having a large number of tests of various kinds. These will all measure different mental capacities, and the blurred result which is obtained by averaging them all out may be taken as a measure of the general capacity underlying all these particular capacities.

It will thus be seen that in the Binet scale and other systems of intelligence tests based on it, the imperfections of individual tests are overcome by using a large number of tests and getting an average result. It has been found, however, that tests measuring the higher thought processes themselves appear more directly to measure intelligence, and, therefore, make it possible to construct an intelligence

scale which consists of one kind of test only. Examples of such tests are the *absurdity tests* suggested by Ballard,[123] and the *reasoning tests* of Burt.[142]

Since the death of Binet, there have been (in addition to the development of reasoning and allied intelligence tests) three important lines of development of mental tests which must be briefly mentioned. These are the use of : (*a*) *group tests of intelligence*, (*b*) *performance tests*, and (*c*) *tests of scholastic achievement*.

Group tests were devised to meet the need for intelligence tests which could be administered much more quickly than is possible with such individual tests as Binet's (in which at least an hour of the tester's time must be given up to obtaining an intelligence quotient for a single person). In such applications of intelligence tests as the testing of the whole American Army in the early days of their entry into the war, it was clearly necessary to have some method by which many persons could be tested in a short time. Tests have, therefore, been devised which can be administered to a large number of persons at one time by a single experimenter. These are *group tests*. Examples of group tests are : the American Army Tests and the Northumberland Mental Tests.[123]

Success in Binet's intelligence tests and in all scales modelled on his obviously depends largely on ability to understand and use language. This dependence is even greater in reasoning tests. This is not usually a serious objection to their use as measures of intelligence, for the requisite ability will not vary greatly from one child in normal circumstances to another, and such variations as there are will matter little, for amongst such children ability to understand and use language will be highly correlated with intelligence. There are, however, two cases in which their dependence on language is a serious limitation of the power of these tests to measure intelligence. These are : when we are testing people of other nationalities who are imperfectly familiar with the language in which the tests are carried out, and when we are testing children whose circumstances are such that they have not been able to acquire the requisite ability in the handling of words (*i.e.* when their linguistic deficiencies are not the result of deficient intelligence but of deficient opportunities). An example of the first class is the foreign immigrants into the United States ; of the second, the English children who grow up on canal barges. For testing these cases tests have been devised in which words are not used, and the subject is only

required to perform some task which is almost self-explanatory. These are *performance tests.*[187] An example of one such test is the *picture-completion test* in which the subject is required to fill gaps in a picture by choosing from amongst a number of blocks on which various objects are painted, of which only one is correct in any single gap. A complete scale of performance tests has been brought out in America.[188]

Achievement tests are not intelligence tests at all but are methods of trying to measure scholastic attainments by the technique of the mental test. It is clear that the intelligence quotient is not all we want to know about a child ; it is also necessary to know what use he has made of his intelligence. For this his *achievement quotient* is obtained, which is his scholastic age (as measured by an achievement test) divided by his mental age. A child with high intelligence quotient and low achievement quotient would thus be one of high innate ability who has made little use of it (either through idleness or lack of opportunity). The achievement test measures the same thing as the examination. It differs from the examination in using the technique of mental tests—a large number of short questions, and a rigidly standardised method of administering and marking. It is claimed that these achievement tests have many advantages over the older form of the examination, although it is not usually claimed that they can replace the old examination completely. These advantages are : speed of administering and marking (although the original construction of an achievement test is much more laborious than that of an examination), fairness to candidates by the elimination of the personal element in the examiner's assignment of marks, and their much higher reliability than that of the examination (which can be measured objectively by the correlation between two sets of marks given to the same group of candidates by different testings).[189]

141. Justification of Intelligence Tests.—When Binet first introduced his intelligence scale it was subjected to very severe criticism of the arm-chair variety. These criticisms might have proved to be justifiable. It is *a priori* possible that the somewhat artificial questions of Binet's scale would prove to measure nothing but a child's ability to pass intelligence tests.

By the recent development of mathematical methods of measuring correlation, which we owe to Professor Karl Pearson and to Professor Spearman, it is possible to prove without a doubt whether intelligence tests are measuring what we want to discover, and how accurately they are measuring it. A great deal of work of this kind has been done, particularly by Professor Burt, and intelligence tests have proved to be fully justified.[122]

A high correlation has been shown to exist between the intelligence of different children as estimated by different systems of approved tests. This shows that all systems of tests are measuring the same thing. A high correlation is also found to exist between the results of intelligence tests and the estimates of intelligence as formed by teachers. This shows that intelligence tests are measuring what the teacher means by intelligence. The results of intelligence tests, moreover, agree better amongst themselves than do the estimates of different teachers. This shows that the intelligence test is a better measure of what we are trying to get than the judgment of a teacher.

142. What is Intelligence? It is easier to show that intelligence tests are measuring something of importance which corresponds to what we call "intelligence" in ordinary speech than it is to give a precise statement of what this intelligence is. The intelligent person is a person who tends to show a good performance in a large number of different tasks. This may be because there is some general factor underlying his ability to do them all (as muscular strength is a general factor underlying one's ability to row, wrestle, box, and throw weights) or, on the other hand, the capacities to perform each mental task may be quite independent of each other, and the intelligent person may merely be the one who has a high average ability in different tasks.

The first of these explanations of intelligence is the theory of the *general factor* upheld by Professor Spearman.*[115 177] The second is a view which was upheld by Professor Thorndike.

Intermediate between these two theories is the theory of the existence of *faculties*.† For example, if memory and imagination were separate faculties, it would mean that persons who excelled in one kind of remembering would tend to excel in others, but would not tend to excel in a performance demanding only imagination. On the theory of a general factor, persons tending to excel in one kind of remembering would not only tend to excel in other kinds of remembering, but also in performances of a different kind, such as those involving imagining. On Thorndike's theory all of these would be equally independent.

It has been claimed by Professor Spearman that these three theories can be put to the test of mathematical proof. The conclusion he has drawn from his results is that the existence of a general factor underlying different performances is clearly proved, and that the existence of faculties is as clearly disproved. These results have, however, been disputed by Professor G. H. Thomson, who denies the validity of the method.[124 178]

* Spearman maintains that there is a general factor underlying the performance of different tasks, but does not suppose that this is identical with " intelligence " as ordinarily understood. He says : " the popular ' General Intelligence ' is being resolved into two parts : the one is, indeed, a deep underlying truth, the General Factor; but the other is a superposed mass of obscurity and error."[115]

† A more general way of stating this intermediate position is the assertion of the existence of " group factors," *i.e.* factors which many performances have in common, though not all. The faculty theory is one kind of group-factor theory, but there might be found to be group-factors which do not follow the lines of the old faculties, *e.g.* Professor Thorndike's later theory of three levels of performance which he calls : " sensitivity," " association," and " dissociation."

The question is of considerable theoretical importance, but it has little bearing on the practical side of intelligence testing. Writers who take different views on this question are agreed on the practical value of intelligence testing. That intelligence tests do measure innate ability, and that this measurement can be used to distinguish the capacities of children for acquiring knowledge, are empirical facts which cannot be influenced by the explanation we give to them. This measurement would be of equal usefulness whether what was being measured were a general factor or a sample of group factors.

The attempt to apply exact mathematical methods to the problems raised by mental tests is one which cannot be dealt with at all adequately in a short space. Since, however, it is a story of great importance in modern psychology, it seems better to deal with it briefly even at the cost of inadequacy and obscurity.

Professor Spearman's method of proving the existence of a general factor was essentially as follows.[177] A large number of children were tested in different performances (*e.g.* in ordinary school subjects). Every child tested was given marks indicating the excellence of his performance in each test. A correlation between different individuals' performances in every pair of tests was obtained.

These correlations were put down in tables, of which the following is one:

	Classics	French	English	Mathem.	Discrim.	Music
Classics	—	·83	·78	·70	·66	·63
French	·83	—	·67	·67	·65	·57
English	·78	·67	—	·64	·54	·51
Mathematics	·70	·67	·64	—	·45	·51
Discrimination	·66	·65	·54	·45	—	·40
Music	·63	·57	·51	·51	·40	—

Correlation is a method of measuring the tendency of two series to vary together. If the order of excellence in the performance of two tests by a large number of persons were exactly the same, the correlation would be 1. If the two orders were completely independent, the correlation would be 0. If ability in one performance went with inability in another, the correlation would be of some value between 0 and −1.

In the above table, for example, the figure ·83 at the top of the second column means that when all the children had been arranged in order of merit in Classics and in French, the agreement between these two orders was measured by the correlation coefficient ·83.

The fact of a positive correlation between any two performances is evidence that there is a common factor in both. The question at issue is whether this common factor is the same for all performances (*i e.* whether it is a *general factor*) or whether there are a large number of group factors which are common to a few tests, but not to all. Professor Spearman maintained that the existence of the general factor would be proved by the occurence of a certain relationship between the different correlations which he calls a " hierarchy." This means that the correlations between every test can be arranged (as above) so that every single correlation is greater than any to the right of it in the same row, or below it in the same column.*

Spearman himself carried out investigations both with school subjects and with laboratory tests (such as tests for discrimination of pitches, weights, etc.) and found that in all cases he obtained this hierarchical order. He concluded, therefore, that what he described as the " two-factor " theory was proved. This theory states that an individual's performance in any test is due partly to a factor common to all performances (the *general factor*, or *general ability*) and partly to a factor specific to the test itself.† The different

* After certain corrections have been made which are necessitated by the existence of irrelevant factors in the correlations obtained, and of sampling errors in the observed values of the performances. The hierarchy is not quite perfect in the example given because these corrections had not been applied to the figures.

† Professor Spearman does not deny the existence of " group factors." It is clear, for example, that a high correlation between performance in Greek grammar and Greek translation, would be in part a result of the fact that the material of each is Greek. A high correlation is similarly found between tests in which a subject is asked to cross out all the *e*'s in a piece of prose, and a test in which he crosses out all the *a*'s, the *n*'s, the *o*'s and the *s*'s. These are performances which will have underlying group factors, because they closely resemble one another. For the demonstration of the existence of general intelligence by the falling of correlation coefficients into hierarchial order, Spearman pools the result of such very similar tests (*i.e.* he treats them as a single test). He then finds that

different amounts of correlation obtained from various tests were simply the result of the different extent to which success in them was dependent on the general factor.

Other observers, however, reported that, using Professor Spearman's method, they did not obtain a hierarchial order and threw doubt on his two-factor theory.[180] Spearman, however, brought out a new method of judging the existence of a hierarchical order by measuring the correlation between the columns of correlation coefficients (using an additional correctional formula in order to allow for the effect of sampling errors in the correlation figures themselves).[115] He claimed that other people's work, published in refutation of his theory, really supported it, and, when tested by his new method, showed the existence of perfect hierarchial order.

Professor Thomson, however, has maintained that a perfect hierarchial order can be obtained amongst correlation coefficients in which there is no general factor, but only a large number of overlapping group factors (factors which are common to many of the tests, but none of which are common to all of them).*[178] He also denies the validity of the correctional formula, used by Hart and Spearman for proving the existence of a hierarchical order by calculating correlations between columns of correlation coefficients. He puts forward, in place of the two-factor theory, what he calls a "sampling theory of ability," in which he attributes the carrying out of any activity such as a mental test to a number of factors, these factors being a sample of all those which the individual has at his command.[124]

Professor Spearman has defended the use of his correctional formulae. He denies that the high intercolumnar correlations which he had claimed as evidence for the existence of a "general factor" can be explained (as Thomson supposed) by the improper increase of this correlation by the use of the correction. He also claims that in Thomson's experiments with dice, there was in reality a general factor, which was disguised only by being split up.[181]

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although group factors undoubtedly exist, their effects are very small. He does deny definitely that the group factors which are found are the old faculties (*i.e.* that memory, imagination, etc., are group factors).

* These coefficients were obtained artificially by an ingenious manner of throwing dice.

143. Formal Training.—The question of the existence of general intelligence or of the faculties has obviously bearing on the practical educational problem of the value of formal training. Under the influence of the faculty psychology, it was supposed that if children were exercised in, let us say, one branch of memory, the improvement in that single operation would be transferred as a corresponding improvement in any other kind of memory, or that repeated exercise of imagination would result in a general improvement of the faculty concerned.

Similarly, if there exists one single factor underlying all kinds of performance, as is maintained in the more modern theory of general intelligence, it might be hoped that training in one kind of mental operation would be followed by general improvements in all operations.*

The most modern aspects of this problem are discussed in the Board of Education Report on Psychological Tests.[175] It is pointed out that the early experiments, inspired by Professor Thorndike, were primarily concerned, not with mental testing, but with mental training and its transfer (*i.e.* with the old problem of the value of formal training). These early experiments were mainly negative in their results, and seemed to show no improvement in one operation resulting from training in an allied operation.

It may be suspected, however, that this was largely the result of the fact that psychologists had no adequate mathematical weapons for detecting relationships. It was

* This conclusion would not, of course, necessarily follow from the existence of a general factor, for the general factor might not be improvable by training. It is, in fact, agreed amongst the defenders of the general factor theory that such general transfer of training does not take place. Spearman says, for example, that variations of training, within normal limits, appear to have no influence on the general factor, but only on the specific ones.[115]

not until the exact mathematical methods of calculating correlations, originated by Galton and perfected by Professor Karl Pearson, were applied by Professor Spearman to psychological data that precise conclusions on such matters could be drawn. By the application of these new methods, the significance of the figures obtained by earlier experimenters on correlations between different abilities was found often to be quite different from that which the experimenters themselves had drawn from them.

At the same time as these more precise methods of measuring correlation made such problems open to attack on strictly scientific empirical lines, the centre of interest shifted from the problem of the efficacy of formal training to the question of in what way the initial performances of various tasks by different individuals were related to one another. In other words, experimenters were now trying to find out, not whether training in algebra would improve a boy's geometry, but whether a boy who was good at algebra also tended to be good in geometry. Whereas a satisfactory answer can now be given to the second question, the first still remains in doubt.

As examples of the experimental work which has been done on the value of formal training, we may take two sets of experiments which have been claimed by experimenters as pointing to opposite conclusions. These are the experiments of Ebert and Meumann[179] and of Sleight[176] on the transference of ability gained in one kind of remembering to other kinds of remembering.

In both of these sets of experiments a number of persons were tested in various forms of learning, such as the learning of dates, of nonsense syllables, of poetry, of prose, and so on. They were then given intensive practice in one kind of learning, and were retested in all the kinds of learning to find out whether improvement occurred only

in the kind of learning practised, or whether it also occurred in other kinds of learning as well.

The conclusion of Ebert and Meumann was that such transfer did in fact take place. They say : " There are no doubt related memory functions which can be perfected upon any material involving the use of memory, the development taking place proportionally to the degree of relationship between the practice and the test material."

Sleight makes some important criticisms of Meumann's method. He points out that Meumann used very few persons as subjects for his experiments, that he did not allow for the fact that the tests themselves provided training in the material tested, and that he did not use any method for discovering whether his figures which were supposed to indicate transfer were in fact significant.*

Sleight used a larger number of subjects and measured the effect of the training on the test material itself by having one group of subjects who did the tests only without any special training at all. His conclusion was that when allowance is made for the effect of training on the test material itself, and the probable error of the final results has been calculated, there remain no significant figures in the final test results showing improvement in the power of remembering other kinds of material than those on which the subjects had been trained.

Subjects, for example, who had practised learning in prose did not show any greater improvement in their power of learning poetry than those subjects who had had no training at all. He draws the conclusion, therefore, that there is no transfer of ability gained in one memorising process to another, unless the two have common elements. Even then transfer does not always take place. In any case, training in remembering one kind of material has an

* By the calculation of their probable errors.

enormously greater effect on subsequent ease of remembering that kind of material, than does training even in a closely related kind of material. This suggests (as Meumann himself believed) that the most economical way of training in any particular kind of memorising is to carry out training in that memorising process itself, and not in some different but related kind of memorising in the hope that transference will take place.*

It should be noted, however, that Sleight's observations do not justify us in denying that any transfer at all of training in unrelated memory material takes place. The fact that the probable error of measured improvement in memory functions different from those in which subjects have been trained is too large to attach any significance to that improvement, does not prove that no improvement has taken place. It merely leaves the question of whether or not there is any such improvement an open one. Sleight does show that if transfer takes place it is small in amount, but his results are inadequate to support the further conclusion that there is no transfer at all.

144. The Limits of the Growth of Intelligence.—It was very soon discovered that intelligence as measured by the intelligence tests did not go on growing indefinitely. The latest research on this question is by Mr. P. B. Ballard, who used absurdity tests for children of various ages. He found that the growth of intelligence was rapid at first and that it slowed down considerably at about the age of 12, and stopped completely at about 16. The intelligence of an adult is not greater than that of a child of 16 (and may, of course, be less). It is probable that the average age at which mental growth ceases is below 16, and that 16

*The bearing of this conclusion on the practice of pedagogy is obvious. No otherwise useless branch of study can be justified solely by its value as "formal training."

is approximately the highest age. If it is required, therefore, to calculate an intelligence quotient for an adult person, the mental age is divided by 16 instead of by the adult's actual age (*i.e.* for the purpose of calculating his I. Q., any adult's actual age is conventionally taken as 16).*

Professor G. H. Thomson suggests the possibility that this apparent stopping of the growth of intelligence at sixteen years of age may be due to the nature of the tests used.

He says: "It is impossible to make tests which are difficult enough to strain superior adult intelligence (as distinguished from judgment) and yet are confined to everyday situations common to educated and uneducated alike, if we except questions of a catchy or puzzle nature. If we could make such, or could measure in some other way, I think we would find intelligence growing far past 16 in the case of the superior. And they would cause the average also to continue with an upward tendency, if a slight one past that age."[181]

Perhaps this is true, but at present, as Professor Thomson admits, the evidence seems to point in the other direction.

145. Sociological Implications of the Results of Intelligence Testing.—The results of intelligence tests have important practical bearings. They show clearly that there are innate differences in intelligence between different persons, which fit different individuals for different tasks. There is no more equality in mental equipment than there is in bodily equipment.

This is not a very surprising finding. Only a few men have the muscular development necessary to be a first-rate navvy or prize fighter; and similarly few only have the

* This value is too high, for the average mental age of an adult is certainly considerably less than 16 years.

amount of intelligence necessary to make a first-rate business man or lawyer. In an ideal organisation of society, every man would be in an employment suited to his intelligence.* The person with an intelligence quotient of 80 to 90 would be neither happy nor efficient if he held an administrative or organising post which required an intelligence quotient of about 120. Similarly, a man with an intelligence quotient of 120 would be neither happily nor efficiently employed in manual labour.†

Misleading sociological conclusions are sometimes drawn from the results of mental testing. For example, an American writer says : " The civilised races of the World are biologically plunging downward," and quotes, as evidence of this, the fact that : " The army mental tests have shown that there are, roughly, forty-five million people in this country who have no sense. Their mental powers will never be greater than those of twelve year old children."[126] Dean Inge, in the *Edinburgh Review*, quotes the same facts as evidence for mental degeneration in civilised countries.[127]

* I do not wish to be supposed to be recommending that persons in an ideal state should be drafted to different classes of occupation on the results of intelligence tests. Many other factors besides intelligence make up fitness for a particular task. Both the work of a barrister and the work of a teacher demand high intelligence, but a man who would be a good barrister might be a very bad teacher and vice versa. The practical remedy for a bad distribution is rather facilitation of the process by which a boy of high intelligence but no social advantages can reach high administrative posts, and the prevention of persons of low intelligence but with initial social advantages occupying them. Intelligence tests will play a part in the first half of this programme, for they enable the intelligent boy to be identified while at school more accurately than he could by the old methods of teachers' judgments and examinations. The mere stress of competition will then result in the elimination of the unintelligent person from responsible posts.

† Results have been obtained, for example, in investigations of monotonous work, which seem to show that this kind of work may be done better by persons of low intelligence than by persons of greater intelligence.

Now, it is perfectly clear that the results of mental tests (whatever else they may prove) can never be evidence of mental degeneration, for we have no records of the intelligence of previous generations with which to compare them. The suggestion made by these writers is that the average intelligence is lower than one would expect, but really we have no data on which to base our expectations at all. Forty-five million people with intelligences less than those of twelve year old children sounds a very large number of unintelligent persons, but the fact is less impressive when we remember that the maximum intelligence for anyone by this method of measurement is only sixteen years, and that intelligence, as measured in this way, is no more than innate educability. When the first writer says " mental powers " instead of " intelligence," he is subtly falsifying the facts, for " mental powers " includes more than innate educability. The knowledge which comes from learning, and the wisdom gathered from experience are something more than innate intelligence and make up a great part of our " mental powers."

Intelligence is nothing more, indeed, than the innate capacity to acquire wisdom and knowledge, and it is really not very surprising that this capacity does not go on increasing after the ages of from twelve to sixteen.

What seems to be at the back of the minds of these writers on the results of mental tests is that there are more people of subnormal intelligence than of supernormal. This, however, is mere nonsense. Our only measure of the normal intelligence is found by taking the mean, or median* of all the intelligences measured. It is a clear necessity of mathematics that there are just as many people of more than median intelligence as there are of less than median intelligence.

It is interesting to enquire how far men are at present distributed to the occupations for which their equipment of intelligence fits them. This is not a problem which can be attacked directly, for we have not yet any reliable figures for the intelligence quotients of any large number of adults, nor, indeed, have we any very satisfactory means of testing the intelligences of adults of all ages. If, however, we assume that intelligence is hereditary and that its

* Which are, in fact, the same, for the curve of the distribution of intelligence is practically symmetrical.

amount is little affected by environmental conditions (an assumption which is probably nearly but not quite true); we can get a rough idea of the distribution of intelligence amongst men in different occupations by measuring the intelligence quotients of their children.* This was done recently in Northumberland.[129]

The cases examined were not numerous enough to enable us to draw any certain conclusions, but the figures showed a distribution of intelligence which was roughly what would have been anticipated. Men holding professional and administrative posts were found, on an average, to have children of the highest intelligence, while the average intelligence quotients of the children grew progressively lower through the less responsible occupations down to the lowest grades of manual labour.

A result obtained by the method of averages cannot, of course, shew that the position is altogether satisfactory from the point of view of social efficiency. Even if, on the average, persons holding professional and administrative posts have the highest intelligence, it remains possible that there are a considerable number of individual misfits (*i.e.* persons of low intelligence in administrative posts, and persons of high intelligence doing manual labour). These misfits would represent a serious loss of efficiency in the social organisation as a whole.

146. Personality.—The final achievement of individual psychology is the construction of a *psychogram*, or chart showing the amount of every measurable mental character-

* The intelligence of the mother is, of course, of equal importance with that of the father in its influence on the intelligence of the children. Since, however, the average of a large number of families is taken in the above investigation, the neglect of the intelligence of the mother will have no very serious effect on the reliability of the result.

istic of a particular individual. But even if the construction of psychograms reached a perfection not yet dreamed of, no psychogram would be an adequate mental portrait of an individual. He is more than the mere sum of a large number of characters. He is a bundle of memories, thoughts, behaviour-tendencies, etc., all bound together in a unity which is called *personality*. He is able to speak of this bundle as *I* and to say "*I* did this" or "*I* want that."

Some of his impulses belong only imperfectly to this unity of personality. When a man says "I felt an impulse to do a certain action but I resisted," the impulse is recognised as something to some extent outside the accepted system of tendencies which constitutes his personality. If the impulse is to conduct of a kind rejected by his personality as a whole because it is inconsistent with his moral ideals (*i.e.* if he thinks it morally wrong), he calls the impulse a *temptation*. If the impulse is recognised by him as belonging to a higher level of conduct than that accepted by his personality, he calls the impulse "the voice of his conscience."

147. **Dissociation.**—The unity of personality which we have described above may, however, be broken up. The mere existence in the normal person of impulses of the kind we have called *temptations* is evidence that the unity of personality is not complete; there are tendencies to behaviour which can originate within the psychophysical organism which are not accepted by the personality. A much greater degree of disintergration is, however, observable in pathological cases. In the phenomenon of *multiple personality*, for example, there appears to be within the same body more than one personality each with different memories, a different character, and different thoughts. These different personalities may be in control of the body at different times, but there is also evidence that one personality may continue to have an independent train of thought, while another personality is in control of the body.

Thus, Dr. Morton Prince's famous case of Miss Beauchamp showed,

at one stage of her career, two personalities which he called B I. and B IV., which alternated spontaneously, and a third mischievous personality whom he called " Sally," who sometimes had control of the body when B. I. and B. IV. were " absent," but also seemed to go on existing co-consciously when either of these was in possession. B. I. and B. IV. were parts only of the complete personality of Miss Beauchamp which had been split up at a certain stage of her life. Each was incomplete. B. I. was neuraesthenic, scrupulous and unhappy. B. IV. showed good health, but was completely egoistical and devoid of social and altruistic feelings. Neither of them had any memories in common, except those of the period of Miss Beauchamp's life before the splitting up took place. The original personality of Miss Beauchamp was got back by a combination of B. I. and B. IV., and a personality was then obtained possessing elements of character which each dissociated personality lacked, and possessing the memories of both B. I. and B. IV.

It is now believed that dissociation of personality is a phenomenon of repression. Any system of ideas banished from consciousness by repression is not destroyed but has in some sense an existence independent of consciousness. The condition known as a *fugue* is a dissociated condition in which only a very limited system of ideas has become dissociated. If the dissociated system is sufficiently complex, it may become organised into an independent system which is like the normal personality.

In the early days of the investigation of hypnotism, it was supposed that every one of us had a " subconscious personality " in addition to the personality of his ordinary waking consciousness. There is no reason for believing that this fantastic supposition is true. We all certainly have a large mental life which goes on below the threshold of consciousness, and if a part of this system is made to function independently and to have independent sensory experience (as it may if we are the subjects of hypnotic experiments), it may become organised in such a way as to give the appearance of a different personality from that of waking life, but under normal conditions this organisation never takes place. We have subconscious mental processes but no subconscious personality.

CHAPTER XIX.

The Psychology of Aesthetics.

148. Aesthetic Appreciation.—Many of the objects which surround us give us pleasure because they contribute to our comfort or to our well-being. There are others, however, from the perception of which we derive pleasure apparently quite distinct from any appreciation of their usefulness. These objects we call beautiful, pretty or agreeable. Similarly, objects whose perception gives us a corresponding experience of unpleasure are called ugly. Some of the objects which give us pleasure in this way are found in nature; these are such objects of natural beauty as mountains, trees, and green grass, or a beautiful human face. Others are deliberately produced by man for the purpose of giving pleasure to their beholders; these are works of art.

At least two restrictions must be made in the class of objects whose perception gives pleasure before we have a practically satisfactory definition of beautiful objects. We should not generally call a spiral mattress beautiful, for it is too clear to our own introspection that the pleasure we get from perceiving it is derived entirely from association with the thought of the comfort of lying on it. Nor do we call the pleasure derived from a shaving brush being drawn lightly over the back of the hand an experience of its beauty, although psychological experiments on pleasure show that this experience is a pleasurable one. The reason

why we do not call a spiral mattress beautiful is because such pleasure as we get from looking at it is recognisable to our introspection as due not to the form of the thing itself, but only to its pleasant associations with feelings of bodily comfort.

We cannot, indeed, go so far as to say that any object which gives us pleasure through its associations rather than by itself is not beautiful, for it is impossible to separate this source of pleasure in looking at a picture, or listening to music, from the pleasure one gets in other ways. It is when the sole pleasure is recognised as due to such associations that we cease to speak of *beauty*. The feeling of the shaving brush is merely a pleasant sensation whose pleasure is peculiarly evanescent. There must be some permanence in the pleasure we derive from an object before we are willing to call it beautiful.

There are further more disputable restrictions in the ordinary use of the word *beautiful*. The pleasure an unsophisticated person obtains by looking at a highly coloured picture such as one finds in the Christmas numbers of illustrated periodicals is as real as the pleasure that more "cultured" people can get by looking at an old master. Yet it is usual to reserve the word beautiful for the work of the old master, and at best to call the coloured print merely pretty. Exactly where the line between beautiful and other kinds of pleasurable objects must be drawn differs in different societies, at different times, and with different degrees of education. We will not dispute as to the exact range of objects to which the word *beautiful* can be properly applied, but we must at least divide off beautiful objects from such things as spiral mattresses and shaving brushes, which belong to the class of merely agreeable objects.

149. Nature of Beautiful Objects.—Since some objects are found to be beautiful while others are not, it is natural

that men should have examined the nature of beautiful objects to find one property common to them which they could call their *beauty*. But it is by no means certain that such a quest will lead to any discovery. When we use a word we are always inclined to attribute to that word a reality which may be greater than it really possesses. Certain objects give pleasure of a lasting kind to their beholders, and we call these beautiful objects. We go on to speak of the *beauty* possessed by these objects, but we are now using a form of words further from the actual observable facts. We know beautiful objects, but of beauty itself we have no experience. It is a word which may not correspond to any reality at all; beautiful objects may have nothing in common except their capacity to give pleasure to us when we look at them.

We can distinguish three main theories of the nature of beautiful objects:

(1) The first of these is the one which commends itself most naturally to the psychologist. It is the view that beautiful objects have no common property except their power of giving pleasure to their beholder. There is no property of the objects themselves which can be called their *beauty*. This is the hedonistic theory of the nature of the beautiful. It was clearly stated by David Hume in his essay "Of the Standard of Taste," in which he says: "Beauty is no quality in things themselves: It exists merely in the mind which contemplates them; and each mind perceives a different beauty."[131] This theory is worked out consistently in the light of modern psychology by Mr. H. R. Marshall[132]. It is clear that on such a theory there can be no fixed standard of beauty, for an object which is beautiful to one person may give no pleasure and, therefore, be unbeautiful to another. The sources of aesthetic pleasure may be varied, for many different factors

may combine in producing pleasure in the beholder of an object, and if the pleasure produced by any factor fulfils the conditions of being relatively permanent and not called out by such associations as the utility of the object contemplated, all alike will be entitled to be called appreciation of the beauty of the object.

(2) A view somewhat different from the above is the one which supposes that beautiful objects give their beholder a particular kind of pleasure which might be called "aesthetic pleasure." This seems to be a view which commends itself to artists more than to psychologists; an exposition of a theory of art-appreciation embodying this view may be found in a small book on art by Mr. T. H. Lyon.[143] It has the practical advantage over the last theory mentioned that it gives objects of art a unique position, different from that of other pleasure-giving objects, while it avoids the theoretical difficulties which result from making this unique quality a property of the objects rather than of the emotion of the observer. This theory, however, is not reconcilable with the principles of modern physiological psychology, for to it pleasure is simply a conscious feeling of a general bodily condition. All pleasures are in themselves of the same nature, differing only in intensity and duration. There is no difference as pleasure between the pleasures produced by eating an orange, by solving a mathematical problem, and by contemplating a work of art. The difference between pleasures is only the difference in the objects producing them.

(3) The last theory is that which regards beauty as a real property of the objects. It regards such expressions as "This picture possesses beauty" as an actual statement of fact, and not merely a misleading form of words. This is the realist theory of beauty which comes down from Plato. Probably it is the theory which would be elicited

from the ordinary person if he were questioned. Plato considered that there was an absolute beauty, of which beautiful objects in the world were a partial expression. The practical advantage of any realist theory of beauty is that it makes meaningful disputes as to whether an object is really beautiful or whether it only seems so to certain people. Its weakness lies in the fact that standards of beauty vary so much from person to person and from age to age that it is difficult to account for these variations if we deny that an object which is beautiful for one person or one age may not be so for another.

150. Natural Objects of Beauty and Art Products.—In the discussion which follows we shall generally be referring to the appreciation of beauty in works of art and not to appreciation of beauty in nature. The latter, indeed, has not attracted much attention from writers on the beautiful, probably because these have generally been more interested in the practical application of their theories to art production and criticism.

In the pleasure which we get from natural objects many different factors seem to enter. The free exercise of any of our instincts is pleasurable, and any object which calls out instinctive activity tends to give pleasure when we look at it. The pleasure we derive from the appearance of a mountain is not unconnected with the joy of climbing it. Any scene which has associations with pleasant incidents in our lives attains this same simple pleasure-giving quality. Apart from these, however, there is a pleasure in green foliage, running brooks, and sunshine, which is probably the primitive response of the organism to beneficial environmental conditions.

One of the most important objects of natural beauty is the human form. It cannot be doubted that the pleasure taken in the appearance of the human form is the result

of the appeal it makes to the instinct with a more powerful content of pleasure than any other—the sex instinct. The form most strongly appreciated as beautiful is almost invariably that of the opposite sex,* and the form most highly esteemed, at least by early painters, was the form most suited to be the sex-object. Indeed, Schopenhauer maintained that apart from sensual feeling there was nothing to admire in the outline of a woman's body, which appeared to him from the purely aesthetic point of view to be ugly.

In truth, the attitude which tries to abstract from the appreciation of feminine beauty all associations with the sexual relationship is a very artificial one, and one may doubt whether it has any claim to be called the purely aesthetic point of view. It seems more reasonable to regard pleasure-giving associations as part of the content of the beautiful, with as much right to be called aesthetic as any other part.

Those who appreciate the fundamental nature of the sex-instinct and its widespread symbolism will not doubt that sexual associations lie at the bottom of the beauty perceived in many other objects.† Indeed, it is not improbable that the pansexualists have attempted to explain all experience of beauty in this way. At least, we must recognise that much of the pleasure in works of art may be due to their unrecognised appeal to sex emotions.

* Homosexual men, however, find, as we might expect, the forms of their own sex beautiful, just as normal men find the forms of women beautiful.

† It will be remembered that the author of *The Road to Endor*, when he wished to impress his fellow prisoners with his power of telling secrets by the aid of spirits, deduced correctly from the fact that one of the onlookers had once referred to a thoroughly uninteresting piece of road as " spiffing " that the speaker must have had a love episode on that road.

151. Aesthetic Appreciation and Social Convention.—One thing which very much hampers the task of a person trying to form a consistent aesthetic theory is the fact that our appreciations of beautiful art objects are obviously largely determined for us by the society to which we belong. Gothic cathedrals which seemed beautiful to their builders, and seem beautiful to us now, were considered at best as inferior, at worst as ugly, by the architects of the Renaissance. The pictures of the early impressionists were considered to have no artistic merit at all by the contemporaries of their painters, but afterwards, when they had become socially recognised, they were sold for large sums of money, and people experienced genuine aesthetic pleasure in looking at them.

It is easy to say that aesthetic appreciation which follows social convention is not a genuine aesthetic experience, but there seems to be no solid reason for this statement. The pleasure enjoyed by people in looking at a painting in Venice, even though this pleasure would have been much less if they had not seen that it was starred in their Baedeker, is as genuine a pleasure as that of their more spontaneous appreciations. What seems to be true is that aesthetic appreciation is, in part, a social phenomenon, *i.e.* that the condition for the production of this pleasure is not merely that the objects looked at should have certain forms but also that these forms should be socially approved.

Of course, it is also true that people differ very much in the extent to which their aesthetic judgments are determined by social conventions, but this applies to all social influences. The fact remains that social approval of certain art forms is one of the conditions under which the aesthetic experience of the individual appears, and that in practice this factor cannot be isolated from the other factors productive of pleasure in works of art.

152. Sources of Aesthetic Enjoyment.—Different theories of what produces the enjoyment in works of art have been put forward by philosophers, from Aristotle who said that it was " order, symmetry, definiteness or determinateness " combined with " a certain magnitude " to Lipps who regards the essential factor in artistic enjoyment as what he calls *Einfühlung*.*[189]

These theories, however, we must leave to the aesthetician, and confine ourselves to a consideration of experimental work on this subject. This has been undertaken by Mr. Bullough,[134 135] Dr. C. S. Myers[136] and Prof. Valentine.[137] An interesting result which emerges from all practical work on the appreciation of artistic beauty is the variety of sources from which subjects report that their pleasure is derived.

Bullough used as his material single colours, and asked his subjects to report whether they liked them or not, and to give their reasons for their likes or dislikes.[134] He found that he had four types of reply. Some replies showed that their subjects were taking an intellectual and critical attitude towards the colours themselves. He called these the *objective type* of reply. Other replies spoke of the physiological effects of the colours, referring to them as stimulating, warming, etc. These were replies of the *physiological type.* Other subjects referred to associations with the colours, and liked or disliked colours, as they suggested to them pleasant or unpleasant things or situations—the *association type.* Lastly, there were replies of what Bullough calls the *character type.* These were replies of subjects who

* This is generally translated into English as *empathy*. It means the emotional placing of the observer himself in the observed object, producing the feelings he would have in the position of the object, *e.g.* the feeling of strain he would have if he were himself in the position of a column in an architectural work of art.

read feelings and human characteristics into the colours—speaking of them as jovial, energetic, and so on.

Bullough's experiments were made with the simplest material which can be made the subject of an aesthetic judgment at all—single colours and colours in pairs—but they have been repeated with more complex art material and the results have been, on the whole, to confirm Bullough's types. Prof. Valentine used pictures in one series of experiments, and Dr. Myers used music.*

Myers found that his replies, like those of Bullough, could be divided into different types in which the appreciation was attributed to different kinds of experience.[136] He called these by the same names as Bullough, except that he replaced the word "physiological" by "intrasubjective" and included in this class all reports of experiences which were sensory, emotional, or conative. He found that single subjects did not always give reports of the same type. Examples of what is meant by the different types of response may be taken most conveniently from Dr. Myer's paper since he used actual art material, so the judgments of his subjects are of the same kind as ordinary artistic judgments.

1. *Intra-subjective reports.*†

"That was lovely . . . Something lifting, raising you inside. Like what one gets in church."

* For reasons of convenience the music was given by a gramophone, but the subjects reported that the artificial conditions of the experiment did not interfere with their appreciation. In fact, one subject of highly artistic temperament said that the conditions were ideal for listening.

† An American experimenter has obtained results which suggest that all musical appreciation is accompanied by physiological effects that can be measured by suitable apparatus.[138] The electric current from the heart-muscles of subjects listening to music was measured by a string galvanometer, and the rate of the pulse, and the systolic and

" All through, very very sad. Sensations of something coming up from the abdomen and surging up to the head."

2. *Associations.*

" A cave, rocks, sea-waves . . . a sea-serpent poking its head out of the cave (suggested by the trombones), dancing spray, with the sun on it. I could draw the exact picture."

" The beginning reminded me of a stage, people coming on. It was trivial, theatrical."

3. *Objective reports.*

" I noticed the second horn was too loud . . . When the second tune came with the 'cellos, it didn't stand out enough."

" As always in Beethoven, one must notice the tremendous . . . contrasts, especially dynamic contrasts. His crescendoes always give me pleasure. Beethoven makes scale passages so much more interesting than, say, Liszt."

The same subject remarked, " To me music is never sad or joyful. I only get aesthetic impression."

diastolic blood-pressures were measured with a Tycos sphygmomanometer. Changes were noted in these functions whenever the persons studied were sensitive to the music played, but not when they were indifferent to it (*i.e.* persons who were affected by the music at all always showed measurable physiological effects.) Tchaikowski's Tragic Symphony was found to have a depressing effect on the functions measured, while the Toreador song from Carmen, and the National Emblem March played by Sousa's band stimulated the cardio-vascular system (except in the case of individuals who disliked these pieces of music, on whom it was found that they had depressing effects). This suggests that measurable visceral effects exist more widely than in the few individuals who mention them as the basis of their aesthetic judgments, and that even when not recognised they may exert an influence on these judgments. It would be interesting to apply these measurements to musical material less obviously stimulating and depressing than the three pieces chosen for this research, and to other forms of art material (paintings, architecture, etc.).

4. *Character Reports.*

" There is something sinister about it."

" A distinctly pathetic ring about it."

" The piece sounded cheerful in certain parts, but I felt in a contrary grain all the time." (Showing the independence of character and the intra-subjective attitudes).

The most obvious conclusion to be drawn from these experiments is that when different people are appreciating music or any other art material, they may have widely different sources of pleasure. Indeed, these differences are probably greater than the experiments reveal, for the subjects were only able to report their conscious sources of pleasure, and it is likely that the pleasure derived from art material is often of unconscious origin. When listening to music, the affect which appears in consciousness may often be due to associations which are shut off from consciousness by repression, and we may be deeply moved by art material of poor quality to which the conscious associations are of a trivial kind.

153. Development of Aesthetic Appreciation. If our prime interest were in the theory of aesthetics, we should ask ourselves at this stage which of the kinds of experience reported above are true aesthetic experience, and which are not. This question is discussed by Bullough.[184] He regards the character type of judgment as the one belonging to the highest form of aesthetic appreciation. In descending order, he grades the other types as follows : fused associations (imagery, etc., suggested by the art material but felt to be part of it and not as something extraneous to it), the objective type of report, non-fused associations, and lastly the pure physiological type, which he regards as having the lowest aesthetic value.

The question of what source of enjoyment of a work of art is the true aesthetic one, is not, of course, properly a

psychological problem at all. The point of interest to psychology is that the enjoyment of art has many different sources; to which of these sources we shall apply the word "aesthetic" is a question of considerable importance in a science of values, but of no importance at all to psychology.

We may note, however, that not all aestheticians would agree with the order of Bullough's hierarchy. To many, the objective attitude appears to be the aesthetic attitude *par excellence* (*e.g.* Mr. Lyon).[131] Bosanquet gives as his psychological definition of aesthetic enjoyment "Pleasure in the nature of a feeling or presentation, as distinct from pleasure in its momentary or expected stimulation of the organism."[139] In the terminology provided by Bullough's experiments, we may say that Bosanquet would include the character and objective attitude under the term "aesthetic enjoyment" (for in both of these, pleasure is taken in the nature of the presentation) but would exclude the physiological attitude. The defect of his definition is that it takes no account at all of the very important mental pictures and other images which are often called up by works of art, and form a considerable part of many people's pleasure in them. We have not fairly considered the problem of what is the aesthetic attitude unless we have considered the aesthetic respectability of associations.

As an example of what is meant by associations, we may take the following account by Mr. J. D. Rogers, quoted by Bosanquet.[139]

"Schumann's *In der Nacht* used to summon up before my imagination the picture of the moon struggling through the clouds on a wintry night—emerging and disappearing by turns; then for a while reigning "apparent queen" amid white fleecy clouds, which are not sufficient to intercept its light. During two moments even this silken veil is withdrawn, only to be succeeded by a bank of black clouds, for a long time impenetrable, at last penetrated at intervals a little more irregular and with a brightness a little wider and more

meteoric than before; finally—the light is put out and quenched by the storm.*

I learnt some years afterwards that Schumann also associated this piece with a picture, the idea of which occurred to him after he had written the entire set of *Fantasiestücke* to which it belongs. It was a picture portraying the story of Hero and Leander; his picture is not incompatible with mine, in his the clouds correspond to the waves, the moon to a swimmer, buried and stifled in their troughs or flashing and calling out from their crests. Where the moon triumphs in my story, in his there is a love scene on the shore, accompanied by the distant rippling of the waves; it seems almost as though

"The billows of cloud that around thee roll
Shall sleep in the light of a wondrous day."

But no; there comes the plunge back into waves blacker than before—tossings to and fro—cries from the swimmer and from the shore—and, finally, night wraps up everything."

There is, however, a question raised by the observation of the different kinds of experience found in the appreciation of works of art, which falls more within the province of psychology than the question of their aesthetic values. This is the question of the order in which these different ways of appreciation appear in the artistic development of an individual. The problem of the order of their aesthetic respectability would land us in much barren controversy of little psychological interest, but the order of their development is a problem to which there is a real answer to be discovered by psychological research.

Do we, for example, all begin by feeling the physiological effects of art products, and then proceed to some other way of appreciating them? Not sufficient work has yet been done on this problem to enable us to offer a solution with any confidence. We can do little more than guess from the

* These are "fused" associations, for the imagery is felt to belong to the art-content of the music and not to be extraneous to it. If the image suggested by the music had been of the companion with whom the writer had first heard it, this would have been a "non-fused" association.

indications which are given us by a few observations and experiments. It is not likely that we should find a simple answer applicable to all people.

It is probable that the artist himself tends to adopt the objective attitude towards works in the art he has practised. Dr. Myers noticed that one of his subjects who was a professional musician generally gave replies of this kind. This is probably even more true of the art critic ; indeed this attitude may be carried so far as to interfere with the pleasure derived from the art to which it is applied. Dr. Myers showed that associations were not found in his most unmusical subjects (those who listened to and cared for music least), or generally in the professional musician. The musician seemed to eliminate associations by the assumption of a critical, objective attitude. Highly musical persons were found to have fewer associations than the average person, for they listened to the music for its own meaning and beauty, not for the meaning and beauty derived from associations, but when this mode of aesthetic appreciation failed in the highly musical person, associations began to appear.

154. Mental Conditions of Art Production.—A work of art—a poem, picture, statue, or musical composition—generally belongs to the class of things we have already distinguished* as mental phantasies. These are creative imaginings, products of mental activity which serve the purpose of compensating for defects in the environment or providing a subjectively satisfactory solution of other mental conflicts. In addition to the question of what conditions a work of art must fulfil for it to be valuable as art (a question which we leave to the science of aesthetics), we must ask why an art product (whether good or bad) has come into being at all. These are two questions which

* p. 225. ff

must be kept absolutely distinct, for failure to distinguish between them has led to much confused thinking about the value of the psychological study of works of art. It is the second question alone with which we are here concerned.

The most superficial investigation of the lives of many great artists reveals peculiarly severe mental conflicts, due partly to the strength or to the unusual objects of their instinctive cravings, partly to unfortunate elements in their external conditions. These conflicts are so common that it is difficult to avoid the conclusion that they were causally connected with their artistic production. We may notice, for example, the homosexuality of Michael Angelo, the Don Juanism of Lord Byron, and the Platonic Don Juanism of Shelley. All three of these producers of works of art had peculiarities in their emotional constitution which made their normal satisfaction impossible without social disapproval, and, therefore, produced a condition of conflict. Even earlier than these peculiarities, we find abnormalities in the conditions of their childhood. Byron was on bad terms with his mother, while Shelley was persecuted by his school fellows at Eton, and carried over into his later life a hostility to all human conventions and to the God who was supposed to sanction them.

Similar conditions of conflict lie at the root of neurotic complaints, and amongst neurotics it is not unusual to find productions similar in form and content to those of artists, but without art value. Pictures may be drawn or poems written. The kind of conflict producing these products may be exactly the same as the kind producing the great works of art. Like the artist, the neurotic may feel that he is producing under an influence beyond his conscious control; in other words, his production may be from subconscious, not conscious, mental levels.

What makes the productions of Michael Angelo or Shelley

great works of art is not the fact that they are products of conflicts. It is because these workers have, through hard work, mastered the technique of their own particular art, and because they have an innate capacity which we cannot fully analyse but which is ordinarily called "talent."* Without talent and technical skill, the products of Michael Angelo and Shelley would have been as worthless as are most of the productions of psychoneurotics.

The relation between the content of artistic output and the mental conflicts of the artist may be illustrated by reference to Wagner.[140] After exercise of his sex-instinct on a low level in his youth, the reaction of his suppressed "higher nature" produced a longing for the highest form of love which he expressed in *Tannhäuser*. This highest form of love finds expression in an even more ethereal form, more remote from passion, in *Lohengrin*. Dissatisfaction with the conditions of his life, particularly with the social conventions which bound him to a wife he did not love, led him then to depict a natural being free from the constraints of modern social conventions. So in Siegfried we have a phantasy of all that Wagner himself would be.

A new element now enters his life in his love for a woman separated from him both by the barrier of his own dying wife and of her husband. The unhappiness of this love was expressed in *Tristran and Isolde* by the depiction of a pair of passionate and unhappy lovers similarly separated who were united only in death. This composition seems to have relieved the tension of the suppressed system which found expression in it, for in his next work—*The Mastersingers*—no more fundamental conflict in the author's own life seems to be expressed than his irritation against the critics who judged and condemned his music by conventional standards. Lastly, in the strange sexlessness of *Parsifal*, we have the composition of his calm old age when the storms of the sex life are past, and his dreams are of the redemption of men from lust and unhappiness.

However, it is clear that these details of Wagner's life give no explanation of why his compositions are great works of art. Through his technical skill and his talent (the acquired and innate bases of

* Undoubtedly, what we have already called "general intelligence" is one constituent of talent; unusual power of imaginal representation may often be another.

his art, respectively) he made out of the phantasy products of his conflicts music of wonderful beauty. His conflicts alone might have resulted in mere dreaming, in worthless art-products, or in psychoneurotic disease. Probably it is equally true that his talent might have been barren if conflicts and deprivations had not given him an urgent necessity for self-expression.

While peculiarly severe conflicts are so common amongst the producers of works of art as to make it certain that the connection between conflict of unusual severity and art production is not accidental, this relationship is not universal. Wordsworth had a life as free from conflict as most people, but was a prolific producer.* The deprivations of ordinary life may be sufficient to produce compensation in phantasy amongst people with no particular external or internal cause of mental disturbance.

Again, however, we may notice that this need for self-expression by phantasy construction in people whose lives are of average placidity is not confined to artists. Most young men have attempted to write poetry and fiction somewhere between the ages of 15-25. Generally it is without merit, and the absence of social approval of their work prevents them from going on with that kind of activity. If by chance it had shown a germ of talent they would have received the approval of other persons, and would have found that such writing could serve not merely as self-expression, but would bring in money and enable them to lead such lives as pleased them, instead of earning their living by the drudgery of less interesting kinds of work. They would have had a motive for attempting to improve their technique, and if their talent and intelligence were sufficient, would perhaps have become artists of greater or less renown.

* The one irregularity in his otherwise thoroughly socially ordered life seems to have been productive of no conflicts comparable with those of Shelley, Wagner or Byron.

Under the influence of psycho-analytic thought, enquiry into the childhood of artists has become a popular psychological pastime. It has been criticised on the ground that such investigation gives no information as to why these people produced great works of art. Of course it does not, but it may give a great deal of information about other things which are of interest to the psychologist, although they may be without interest to the student of art or aesthetics. The peculiarities of content of artistic productions are determined largely by the conflicts which have given rise to them. It is of interest to the psychologist to inquire why Byron created such figures as Manfred and Don Juan, even though such an inquiry explains nothing of the aesthetic value of these creations.

It would be well at this point to make an attempt to make our terminology clear. The term *phantasy* has already been explained (p. 225). By *phantasy product*, I mean the result of giving a phantasy concrete form, by writing it down, moulding it in clay, or representing it by lines drawn on paper. A *phantasy product* becomes an *art product* when this concrete representation is of value as art (because, for example, it gives other people pleasurable feelings or serves any other of the ends of art). The distinction between a phantasy product and an art product is not a psychological one, but it is of great practical importance, for the mere phantasy product is socially negligible. An art product may, of course, not be a phantasy product at all if it is a mere copying of nature.

In an art product we may distinguish the *material*, the *content* and the *form*. The *material* is the actual wood, stone, or paint from which it is made. The *content* is the system of ideas and feelings which the product is intended to convey; these ideas and feelings generally (but not always) possess sufficient coherence and unity for it to be possible to speak of them as a phantasy. The *form* is the arrangement of sense impressions of which the art product is made up.

If a work of art possesses *beauty* this beauty must be regarded as a quality of the art form (or, if we prefer to avoid a use of words which suggests the realist view of beauty, we may say that its beauty is the reaction of the observers to the art form). While admitting

that the beauty as understood by the aesthetician or the art-critic belongs to the art form and not to the art content, it must also be recognised as a psychological fact that the source of the appeal of works of art to the majority of those who enjoy them is their content much more than their form.

155. The Place of Conflict in the Appreciation of Art.—The attitude of a person appreciating an art product is not altogether unconnected with the conflict which gave rise to it. If we go to a performance of *Tristran and Isolde*, we do not merely appreciate the beauty of Wagner's music, we also live in the conflict which Wagner is depicting—feeling his passion and the pain of his deprivation, thus working out some of our own conflicts and giving a phantasy gratification to our deprivations, and obtaining mental relief of the same kind as did Wagner when he was composing it.

It is this obtaining of mental relief in the witnessing or hearing of tragic art products by the discharge of emotion belonging to repressed systems, that is apparently meant by Aristotle when he speaks of the function of tragedy as " through pity and fear effecting the proper purgation of these emotions," *δι' ἐλέου καὶ φόβου περαίνουσα τὴν τῶν τοιούτων παθημάτων κάθαρσιν.*[111]. The word *κάθαρσις* would seem to refer to the relief obtained by the discharge in consciously felt and expressed emotion of repressed conflicts of a painful character

It is probable that the universality of the appeal of great works of art depends on the fact that they are depicting conflicts and compensating for deprivations which exist in a measure in every man. In enjoying a work of art we are feeling with the artist and using the same phantasy material as he uses, because our deprivations are the same as his.

One may see this relationship between the enjoyment of an art product and the deprivations of the person enjoying it in a simple form in the shop-girl's enjoyment of romances and cinema films in which the heroine moves in circles of aristocracy and luxury. The identification between the

reader and the heroine is made yet more complete if the heroine is also portrayed as having been drawn from the working classes and elevated to her exalted position by a lucky marriage or accidental circumstance.

These considerations suggest that the pleasure theory of artistic appreciation is perhaps too narrow. While it is possible that the most developed attitude towards a work of art is the objective or critical attitude in which the subject of enjoyment is the form of the work of art, so that a person adopting this attitude may find pleasure in the form of a work of art even when its actual content is painful, we must recognise that this is not the stage at which most persons have arrived. The appreciation of tragedy is the crucial question for every hedonistic theory of art. For those whose enjoyment of the art form outweighs the unpleasure of painful content, enjoyment of tragedy presents no problems. We may say, if we like, of others, that the emotions of pity or horror are pleasurable when excited by objects which are known not to be real. Real sufferings, such as those depicted in a tragic work of art, would cause emotions which were acutely unpleasurable, but less intense excitement of these emotions by the unreal representations of a work of art is pleasurable.

This ability of a work of art to produce different (and sometimes much less painful) emotional reactions in the observer than would the same events in real life, is part of what Bullough calls its "psychical distance."[142] This distance is, on its negative side, a cutting out of the practical side of things and of our practical attitude to them, and a consequent elaboration of the experience on a new basis. Bullough regards "distancing" as one of the essential characteristics of the aesthetic consciousness.

The theory that tragic art products become pleasurable to the observer because they are art representations and not actual events breaks down, however, if we accept the

physiological theory of pleasure and unpleasure (or, indeed, if we use the words " pleasure " and " unpleasure " in any precise way at all). On the physiological theory, the sensation derived from the bodily condition of depressed functions is unpleasure, and if this condition occurs in connection with our appreciation of a work of art, no verbal juggling can make this experience into one of pleasure. In the experiment referred to above* the playing of Tchaikowski's Symphony was accompanied by the physiological condition of unpleasure, just as were the other pieces of music when the subject disliked them. Probably similar physiological measurement would show that most persons during the playing of the *Liebestod* in *Tristran and Isolde* were in the same physiological condition of unpleasure. Indeed, introspection without physiological measurement shows that unpleasure, not pleasure, is the dominant tone of affect in the experience of tragic works of art.

Why, in that case, do people seek such experiences? Apparently because they enable them to bring to the surface painful emotions connected with repressed conflicts, not because these experiences give them pleasure. The function of the work of art may be, and, no doubt, generally is, to give pleasure. This is, for example, true of works of art which, like the cheap romance, are simple wish-fulfilments. An art product may, however, serve the purpose of bringing into consciousness painful repressed material which produces painful emotion.† The fact that people

* p. 329n.

† It would be a great mistake to suppose that all phantasy production worthless as art is of the simple wish-fulfilment variety, while it is only art products posessing meritorious qualities of form that produce painful emotion. In a camp of fruit-pickers in 1914, the favourite song amongst the pickers was : " I'm lonely since my Mother died, My friends and comrades turn from me . . . "—a ditty

are acted on by a compulsion to put themselves in conditions under which this pain is produced is a simple psychological fact, which it is not necessary to rationalise by supposing that the experience sought is pleasurable. This is only a repetition of the hedonistic fallacy which we have already discussed.

Really what we have to explain about works of art is not why people take pleasure in them, but why they adopt the behaviour necessary to see or hear them (in the language of the behaviourists, why they react to them positively). It is the *appeal* of works of art, not their pleasure-giving qualities, that must be explained. The fallacy of hedonism lies, as we have seen, in the common-sense view (easily refuted by careful observation) that the object reacted to positively is necessarily a pleasure-giving object. Generally it is, but the work of art with painful content is an exception.

Bearing in mind this distinction, we must define the work of art as a product of human activity, which appeals to (or is reacted to positively by) a number of other persons, (distinguishing, however, the work of art from products such as the spring-mattress, which appeal through their usefulness or through extraneous pleasurable associations). We may leave to the science of aesthetics any exact discrimination between the appeal of works of art and other kinds of appeal of products of human activity. The point we must stress is that the awakening of positive reactions (or *appeal*)

which in its content, although not in its qualities of form, is allied to the Pathetic Symphony. On the other hand, products with merit as art may be of the wish-fulfilment kind. " I dreamed that as I wandered by the way, Bare winter suddenly was changed to Spring . . . " is an example. Of less value as art, but still certainly an art-product is Mrs. Browning's *Lady Geraldine*, which has actually the same content (with sex relationships reversed) as cheap romances.

must take the place of pleasure-production in most definitions of art.

156. Conclusions.—Introspection reveals many different reasons for an aesthetic judgment. To these we must probably add the unacknowledged influence of social approbation and disapprobation of works of art, and also the influence of unconscious associations. Experiment shows that pleasure in art-form as such is only one of the sources of pleasure in works of art, although this may be the most developed aesthetic attitude, and we may decide that it is the only one properly called " aesthetic."

The mental compulsion behind art production springs from conditions of conflict arising either from the deprivations forced on the artist by his external surroundings, by the strength of his own desires, or by the impossibility of their satisfaction in a way socially allowed. The conflicts from which an art-product arises impress themselves often on the content of the work of art, but they have nothing to do with its value as art. Technical skill and talent are necessary in the artist before his phantasy products can have value as art.

The art product will be appreciated by critics and others of high artistic taste for its excellence in form, but its wider appeal may be due to its success in dramatising the conflicts of large numbers of people. Part of the function of the artist is to supply phantasies to people with insufficient fertility of imagination to phantasy effectively for themselves, and phantasy products may serve this function very well with little merit as art.

CHAPTER XX.

The Psychology of Scientific and of Religious Development.

157. The Incentive to Scientific Discovery.—The method of the scientific discoverer is sufficiently like that of the artist to make a study of the differences between them a convenient point of departure for the investigation of the psychology of scientific development. The most obvious contrast between them lies in the difference between the material of their mental activities. The artist's product is the impression of the phantasy products of his own mind on the form of external objects. The scientist's activity is a regulated and methodical curiosity into the nature of external reality. In a certain respect, the interests of the artist and of the scientist are polar opposites. External reality is the dominant interest of the scientist, phantasy that of the artist. The scientist's activities are (in Jung's phrase) extraverted while the artist's are introverted. Abnormal activity of the *instinct of curiosity* may be said to be the characteristic feature of the scientific type of mind.

The popular idea of the scientific interest appears to be that it is directed towards controlling the environment rather than mere curiosity about it. Wireless telegraphy rather than the enunciation of the electromagnetic theory of light is generally regarded as the typical achievement of science. But, as a matter of fact, scientists themselves are generally much more interested in the theoretical bearing of

their investigations than in any practical application of them ; and we shall be justified in making a distinction between the *inventor*, whose interests are mainly practical, to whom increased control of the environment is the dominating incentive to activity, and the *scientist*, who is dominated by curiosity and whose main incentive to activity is unexplained phenomena in the external world. These pass into each other in insensible gradations. Leonardo da Vinci was, for example, both scientist and inventor ; Leibnitz, whose main interests were in science and philosophy, also invented a vessel to sail on land.

I shall take as my type of pure scientist one who had very little of the inventor in his constitution—Charles Darwin. Darwin is a good illustration of the scientist, for he certainly had in a very dominant form the scientifically enquiring type of mind, he made great advances in more than one kind of science, and he had as the central achievement of his life the formation of a scientific hypothesis which was a fairly complete whole and had important general bearings.

One strikes a point of similarity between artistic and scientific activity in the fact that both give an ideal satisfaction to the instinct of constructiveness. The finished work of art and the finished scientific hypothesis are alike things in which their originators feel satisfaction as constructions of their own minds and towards which they take much the same attitude as we do towards a box or table we have ourselves made. They satisfy the instinct of constructiveness on the ideal plane. Indeed, the difference between the mere curiosity of a child and the developed curiosity of the scientist is that the scientist is no longer interested in isolated facts, but in the grouping of these isolated facts into general conclusions.

Darwin, for example, tells of his surprise when he was

22 years of age that Sedgwick was not delighted when it was suggested that a tropical Volute shell had been found in an old gravel pit belonging to the glacial period. Sedgwick remarked that if it had really been embedded there, it would be the greatest misfortune to geology, as it would overthrow all that was known of the superficial deposits of the midland counties. Darwin writes: " I was then utterly astonished at Sedgwick not being delighted at so wonderful a fact as a tropical shell being found near the surface in the middle of England. Nothing before had ever made me thoroughly realise, though I had read various scientific books, that science consists of grouping facts so that general laws or conclusions may be drawn from them".[113] So, at the age of 22, Darwin had not yet passed beyond the disorganised curiosity of the child to the organised curiosity of the scientist (which is concerned not with the mere bringing out of new particular facts, but of organising those facts under general laws).

Later in his life, after he had constructed his theory of natural selection, the stability of this theory was more important to him than could have been a mere isolated incident like the finding of the shell at an unexpected level. He describes with a delightful frankness his emotional reaction to his own doubts of the theory in a letter written in April of 1860. " . . . I remember well the time when the thought of the eye made me cold all over, but I have got over this stage of the complaint, and now merely trifling particulars of structure often make me very uncomfortable. The sight of a feather in a peacock's tail, whenever I gaze at it, makes me sick ! . . . "[143]

Another incentive to scientific investigation is personal ambition. This is, of course, a motive common to all persons, but it is important to notice it shortly because it probably explains why scientific investigation rarely trans-

gresses very far the limits of what is popularly approved, and why it generally follows lines of practical utility. The scientist's own curiosity may lead him far from practical utility, but the approbation of his fellow men will only come if his line of research is not too remote from the interests of daily life. There have been, however, scientific investigators who seem to have been indifferent to the approval even of their scientific contemporaries. One such, for example, was Helmholtz. Even as unambitious a worker as Charles Darwin mentioned the strength of his desire for fame.*

This, however, is an incentive which is by no means peculiar to the scientist. Of more individual characters of the successful scientist we must distinguish, in addition to unusual strength of the instinct of curiosity, also an unusually high degree of general intelligence. This is the character which distinguishes the true scientific discoverer from the large number of persons who have strongly developed curiosity, but insufficient general intelligence for it to be usefully employed. We may take as an example such a person as James Smith, who spent a great part of his life in investigating the value of π.[111] By measuring in various ways the relationship between the area of a circle and its radius he maintained that π was exactly three and one-eighth, and maintained this view against all the eminent mathematicians of his day.

* Although Darwin frankly admitted his desire for fame as one of the incentives to his scientific work, he is an example of a scientist from whom the crude forms of self-assertion were strikingly absent. His generous acknowledgement of Wallace's part in putting forward the theory of natural selection, and his refusal to enter into controversy with those who criticised him (often with great bitterness and unfairness), is in striking contrast to the acrimonious disputes about priority which occurred in the lives of many scientific discoverers (as, for example, Newton).

Richness of imagination is another character which strikes us when we read the biographies of distinguished scientists. It is said of Charles Darwin that " it was as though he were charged with theorising power ready to flow into any channel on the slightest disturbance, so that no fact, however small, could avoid releasing a stream of theory, and thus the fact became magnified into importance. In this way it naturally happened that many untenable theories occurred to him ; . . . and so it happened that he was willing to test what would seem to most people not at all worth testing. These rather wild trials he called ' fool's experiments,' and enjoyed extremely." [143]

Poincaré describes how much of his discovery seemed to come by way of sudden illumination, which he ascribes to fruitful unconscious work following his conscious activity, and describes how some of his mathematical discoveries were made in this way.[146]

Francis Galton showed similar fertility of ideas, though much less under the domination of one central idea than either Darwin or Poincaré.[145] He experimented on every possible occasion. He made " composite photographs " by combining photographs of different people so as to retain the characteristics common to all, while eliminating the individual ones. He tried unsuccessfully to get photographs showing individual characteristics without the general ones by combining the negative photograph of one person with the positive photograph of another. He tried the effect of making his breathing volitional instead of semi-automatic by attending to each breath. He tried to enter into the feelings of a paranoiac by imagining that everyone he met in a walk in London was a spy. He tried to enter into the feelings of an idolater by developing a religious attitude towards the figure of Punch. He measured the degree of boredom of people in an audience at a lecture by measuring

with a stop-watch the number of times they fidgeted per minute.

Galton's guiding hypothesis (which has now by many persons been built into a system in which it takes a place somewhat resembling that of a religious dogma) was that *nature* is a much more important factor in producing individual differences than *nurture*, but his fertile brain led him into much experimentation that had no connection with this central hypothesis. His work is, therefore, a somewhat disorganised body of contributions to science.

Fertile imagination and active theorising are, however, of no particular value unless they are accompanied by the power of self-criticism. This power is in most persons largely automatic, *i.e.* wild hypotheses do not enter into consciousness at all. When we say that Darwin, Galton, etc., have fertile imaginations, we mean partly that this automatic functioning of the inhibition of unfamiliar or improbable suppositions is not very strong.* It is necessary, therefore, that such persons should have a technique of self-criticism in order to do the weeding out of hypotheses which would otherwise be done automatically.

Darwin describes his own method of making his self-criticism of his theories as rigid as possible. " I had, also, during many years followed a golden rule, namely, that whenever a published fact, a new observation or thought came across me, which was opposed to my general results,

* A characteristic method of utilising to the full this richness of hypothesis without allowing it to be impeded by the automatic action of self-criticism, resulted from Darwin's discovery that he wrote best if he began by writing a rough copy straight off without the slightest attention to style. He found himself unable to write with sufficient want of care if he used his best paper, and therefore he wrote on the backs of old proofs or manuscripts. The self-criticism came afterwards when he was going over this rough copy, and making a fair copy from it.

to make a memorandum of it without fail and at once ; for I had found by experience that such facts and thoughts were far more apt to escape from the memory than favourable ones. Owing to this habit, very few objections were raised against my views which I had not at least noticed and attempted to answer."[145]

Probably, like the artist, the scientist can only do really productive work when he has mastered a technique of scientific investigation which is different in every science. The card index of the anthropologist, and the experimental technique of the physicist or the physiologist are examples of the methods of work, one of which the scientific investigator must master. Without mastery of such methods, careful observation, high intelligence, fertility of imagination, and rigid self-criticism would all be inadequate to secure valuable scientific results.

158. Scientific Theory and Religion.—On another side, the constructions of scientific theory have a relation to the attitudes towards the world as a whole, of which we will take religion as a principal example, for a scientific hypothesis may embody a thought-out attitude towards the world. Mrs. Rhys Davids has pointed out the similarity, for example, between the attitude of primitive Buddism and the attitude towards the world resulting from an acceptance of the universality of rigid chains of cause and effect suggested by the physical sciences.[147] A modern expression of an attitude dictated by the physical sciences (remarkably similar in many respects to Hinayana Buddism) is embodied in Mr. Bertrand Russell's *A Free Man's Worship*.[148]

This integration of his hypotheses with his attitude to the world as a whole provides an additional reason for the scientist holding his hypotheses firmly, and resenting questioning of them, for they may embody an attitude which

has to him the practical and emotional significance of a religion. The difficulty which many of Darwin's contemporaries found in accepting his doctrine of natural selection was that it came in conflict with the doctrines which were already embodied in their religious attitude. Since his time, many theologians have built up a new attitude towards the world as a whole, embodying the ideas of evolution, progress, and so on. This doctrine is now a part of, instead of being alien to, the body of beliefs around which their religious adjustments are built.

159. Religion as a Mode of Adaptation.—The thing in life contrasting most sharply with the religious attitude is probably the attitude spoken of by William James as *healthy mindedness* or what Jung would call *complete extraversion.* This is the attitude of living unreflectively in the present, being happy over present pleasures, screaming at present pain, frightened at present dangers, and neither brooding over death or misfortune in the remote future nor feeling need for hope of future happiness, or for a theory of the world-process as a whole. This is presumably the way in which all animals lower than man live ; it is the only way possible before the powers of imagery and reflective thought are developed. In this condition neither religion nor anything corresponding to it is necessary or possible.

In sharp contrast with the above attitude are those more or less deliberate adjustments by thought and by feeling to the world as a whole, of which *religion* is typical. The attitude of living merely in the present is one which becomes inadequate as increasing self-consciousness and power of reflection make thoughts of the future, and of other parts of the world-process than that immediately present, become sufficiently real and charged with sufficient power over our happiness for it to be necessary to adopt some attitude towards them.

The legend of the beginning of the reflective life of Gautama Buddha is the story of the passage of man from the attitude of living in the present to the realisation of the necessity for adopting some attitude towards the world as a whole. It will be remembered that Gautama is supposed to have spent the early part of his life living happily in a palace protected from contact with all external things which could have forced on his attention the reflective attitude. Then, when outside one day, he met with a miserable beggar, an old man, a corpse, and a holy hermit, and he realised that, however protected his present life might be, the end of it would be misery, old age, and death. Misery, old age, and death had become, through this contact, realities to him such that he could be satisfied with no attitude towards life which did not take them into account. So he left his palace and his later history is the story of how he made his adjustment.

Probably we see a pathetic record of the first dawning of this realisation in the minds of primitive man in the ochre-covered bodies of his buried corpses. Once they are realised, these emotionally disturbing elements in life (which make a simple adjustment to the present impossible) are met by adopting some attitude towards the world and towards the process of life as a whole. The adjustment in thought may be by phantastic legends of the cosmic process, or by metaphysical or ethical theories. On the emotional side it may be joyful acquiescence, angry rebellion, or indifferent acceptance. On the practical or behaviour side, it is some such course of behaviour as a systematised religious cult or action in accordance with some moral theory.

Every mode of adjustment has these three aspects of *thought, emotional attitude,* and *practice,* which are interdependent. Primitive Buddhism, for example (which was

a non-religious mode of adjustment), had on its thought side a belief in the universality and rigidity of the law of cause and effect, and the impermanence of all things; on its emotional side, it inculcated an attitude of indifferent acceptance of things as they are; and, on its practical side, taught the destruction of desire, the abandonment of metaphysical speculation, and the systematic following of general kindliness and right conduct.

Religion is one such attitude towards the universe as a whole. Some would say that religion is any attitude towards the universe as a whole, but this is to define religion so broadly as to destroy the value of the word. Religion is one kind of adjustment, one which has as an essential part of its adjustment of thought the belief in beings or in a Being in some way controlling the cosmic process, towards whom the emotions of love and gratitude may be felt, combined with the distinctively religious emotion of awe, and with whom man comes into relationship by religious rites. If we wish to define religion we may say that: *religion is a felt practical relationship with what are believed in as a superhuman being or beings. This being is God; the beings are Gods.*

160. Religion as a Social Phenomenon.—There is danger in speaking of religion as a mode of adaptation to the universe as a whole, and of forgetting that this adjustment is not, in fact, carried out by a single individual. It is an adjustment carried out under the influence of his fellowmen, and the religious individual takes over in great measure his beliefs, his ritual behaviour, and his religious ways of feeling from an organised group of other people. In other words, religion is in great part a social phenomenon: its beliefs are social beliefs and its rites consist in individuals taking part in social ceremonies. This is the side of religion which is specially stressed by the school of French socio-

logists of whom the exponent best known in England is M. Lévy-Bruhl.[150]

This is not, however, the whole truth about religion. One of the most striking features of the development of religion is its passage from the purely social form of adjustment to an adjustment of the individual. The most individual form of religion is, nevertheless, still an adjustment that takes place in a social environment, and this environment cannot be neglected in dealing with the individual's religion, but it becomes progressively less important. In the most developed religions the emphasis is shifted from the relationship of a social group to its God, to the relationship of an individual to his God. We cannot, therefore, be content with the French sociologists to describe religion as merely " un fait social."

161. The Essential Problems of the Psychology of Religion. —The psychological problems of religion are two : one belonging to general psychology, the other to individual psychology. The problem of general psychology is to investigate the mental origins of the religious mode of adjustment as it is found in the average religious person ; and the problem in individual psychology is the question of the origin in innate constitution and environmental circumstances of the individual differences in the religious adjustment—why, even under the same social influences, one person is strongly religious and another irreligious, and why one finds his spiritual home in one form of religion, while another finds it in another form of religion.

162. The Mental Origins of the Religious Attitude.— Professor Leuba has pointed out the insufficiency of any definition of religion which describes it merely as a system of intellectual opinions, or as merely a system of ways of feeling, or as merely a system of ways of behaviour.[151] It is all three of these things together.

Every religion has a systematised body of beliefs (its *dogma*); a system of emotional reactions to the objects of these beliefs; and its system of ways of behaviour (the *religious rite*). All three of these are organically connected together. Religious dogma is not merely a set of intellectual propositions; it is also a statement of the possibility of religious ways of feeling and of the effectiveness of religious modes of behaviour, and it cannot be understood properly unless considered in conjunction with these ways of feeling and behaviour. What we have to give an account of in our psychology of religion is, therefore, religious dogma, religious feeling, and religious rites. No one of these can be treated adequately apart from the others. We have already seen that in the individual's religion, his beliefs and rites are largely taken over (by the process of herd-suggestion) from his social environment. If all of his religious attitude were taken over in this way without any reaction on it of his own personality, we should be justified in saying that religion is merely a social product; (or, from the point of view of the individual, that it was a response to social influences—the product of his gregarious instincts.)

This, however, is not the full story of the development of the religious sentiment in the individual. The body of beliefs he takes over from his social environment will be acted on by his own intellectual processes: he will reason about them and criticise them, and will be unable finally to find a satisfactory adjustment for his own problems in a system of beliefs which he cannot justify intellectually.* And, moreover, the individual's own emotional experiences

* It is true, of course, that his intellectual criticisms will often be *rationalisations* of his emotional needs, but I see no reason to doubt that there is such a thing as intellectual criticism apart from rationalisation, and that this criticism is operative in any intelligent person's acceptance or rejection of a body of opinion supplied to him by his social environment.

make an individual contribution to his religious beliefs. The emotional experiences which have a bearing on religion are, for example, those of conversion, the sense of penitence and forgiveness, and of the felt presence of God in prayer and sacrament. These unquestionably play a large part in the building up of most persons' religious sentiments.

In fact, we may say that, at adolescence, the body of religious beliefs, feelings, and behaviour, which have been socially received in childhood, are subjected to the impact of the individual's own intellectual criticisms and his own emotional needs ; and this system is accepted and modified or totally rejected according to how far it satisfies the requirements of these influences. The religious adjustment, therefore, is made up, not only of a traditional element, but also of what we may call an *experiential* element,* and a *rational* element.

163. The Instinctive Basis of Religion.—It has sometimes been maintained that men have a specific religious instinct. This theory (though it is certainly a possible one) is difficult to fit in with the conception of instinct as the primitive element in human character. A view more consistent with this conception of instinct is obtained if we consider that primitive instincts may be *deflected* into the religious channel. There seems to be reason for supposing that any instinct can play this part in contributing to religious feeling and behaviour, for the ascetic practices of those who were training themselves to lead the most intense religious life included suppression of the primitive modes of expression of a variety of instincts. The instinct of sex was

* I have elsewhere suggested that this element should be further subdivided into the experiences of :

(*a*) Beauty, harmony, and beneficience in the outside world (the *natural* element).

(*b*) The moral conflict (the *moral* element).

(*c*) Emotional experience (the *affective* element).[154]

suppressed in chastity; the instinct of assertion in meekness; the instinct of primitive comradeship in voluntarily accepted solitude.

That religious behaviour is by no means independent of the sexual instinct is shown by many observations of the relationship between the religious life and the sex life. The first of these to be brought to notice as a contribution to the psychology of religion was Starbuck's observation of the connection in time between puberty and conversion.* Certain wild theories of the dependence of religion on sexuality were singled out for severe condemnation by William James in his *Varieties of Religious Experience*,[149] but perhaps William James would not have been so drastic in his condemnation if he had lived at the present time. A temperate and reasonable account of the relationship between religion and the sex-instinct is to be found in the work of Flournoy.[156]

Bovet has similarly described the deflection of the instinct of pugnacity into religious channels (of which he finds examples in the Salvation Army and in the foundation of the Society of Jesus).

164. The Individual Psychology of Religion.—The general theory of the psychology of religion is in a more advanced condition than is our knowledge of the origin of individual differences in religious adjustment amongst people from the same social environment. This problem has been studied much more fully in the more abnormal religious developments of the mystics than it has in the development of ordinary religious persons. For this study there is much valuable material in the recorded lives of the mystics and in such careful studies of individual mystics as those of Baron F. von Hügel[157] and Delacroix.[158] It is clear that

* Although Starbuck himself was unwilling to admit that religion was in any sense a deflection of the sex instinct.

the initial impetus towards the mystical life may often be provided by a peculiarly severe deprivation, such as the failure to find happiness in love. A certain amount of mental instability is probably also a determining factor; the general nature of the mentality of a person who becomes a mystic is certainly related to that of a person who becomes a psycho-neurotic.

On the more important question of what constitutes individual religious differences amongst normal persons, no work of comparable completeness has been done. The most hopeful suggestion comes from the psycho-analysts' suggestion that the child's attitude towards his parents is the framework on which is later modelled his attitude towards God. The father, for example, who drives his son to rebellion by over-great severity, may lay the foundation for an adult attitude of rebellion against God and against the world-process as a whole, while the child who is cowed into submission by similar parental severity will find the most satisfactory conception of God one in which He is regarded as a severe lawgiver.

There has, however, been much more speculation along these lines than precise study. No attempt has, so far as I know, yet been made to obtain statistical information on which to base a correlation between childhood attitude to the parent, and adult attitude to God. Until such statistical information is obtained, such theories remain unproved speculation.

165. Other Modes of Adaptation.—It is a view commonly put forward that the mode of adjustment to the world must develop from the old adjustment based on a belief in a supernatural system to one of ethical principles with no supernatural background. The moral principles of religion are regarded as essential to a harmonious existence in the world, and these moral principles have only been accepted

in the past in their religious setting. Now we are supposed to have advanced to a stage in which this setting is no longer necessary or possible. We must abandon the religious sanction of morality (understanding supernaturalism as merely a symbol adapted to a primitive stage of thought) while clinging to the this-world behaviour system which it enshrined. This is, for example, the essence of the contention of Dr. Jung with respect to the relationship between religion and morality.[161] It is a suggestion that the religious adjustment is obsolete, but that a mode of adjustment must still be found which shall be as serviceable practically as the old one.

This is no new problem. There have been in the past many attempts to furnish non-supernatural world adaptations which have outwardly borne a more or less close relationship to the old religious practices which they were supposed to supersede. The worship of Reason during the French revolution, the Positivism of Comte, and the modern ethical churches are all examples of such substitutes for religion. Probably the most remarkable of these, historically, was the system of Gautama Buddha. It is a great mistake to regard the Buddha as the founder of a religion. He regarded his mission to men as rather to save them from religion, and to lead them to a correct world-adaptation by understanding and controlling their own mental processes. In the Sutta on the Three Vedas he scoffs at those who make central in their religion the attempt to ascend to Brahma in ecstasy.[162] He would have his disciples find a satisfactory world-adaptation not by religion but by practical psychology. The later exaltation of this essentially anti-religious teacher to a position in the Godhead worshipped by the greater number of the millions of modern Buddhists is an illustration of the incurable preference of most men for the religious adjustment.

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