

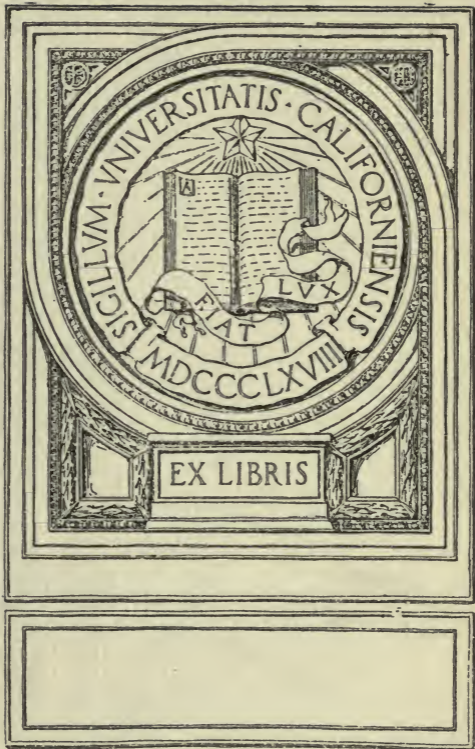
UC-NRLF



\$B 278 491



PSYCHOLOGY
IN EDUCATION



EX LIBRIS

THE NEW EDUCATOR'S LIBRARY

*An abridged sectional edition of "The Encyclopaedia and
Dictionary of Education"*

PSYCHOLOGY
IN
EDUCATION



LONDON

SIR ISAAC PITMAN & SONS, LTD.

PARKER STREET, KINGSWAY, W.C.2

BATH, MELBOURNE, TORONTO, NEW YORK

1922

New Educator's Library

NOW READY

IDEALS, AIMS AND METHODS IN EDUCATION
SOCIAL ASPECTS OF EDUCATION
PSYCHOLOGY IN EDUCATION
EXPERIMENTAL PSYCHOLOGY AND CHILD
STUDY
THE TEACHING OF HISTORY: GENERAL,
POLITICAL, AND SOCIAL
THE TEACHING OF GEOGRAPHY AND
ECONOMICS
TRAINING IN DOMESTIC WORK
THE TEACHING OF COMMERCIAL SUBJECTS

READY SHORTLY

TRAINING IN MUSIC
THE TEACHING OF ART AND HANDICRAFTS
THE TEACHING OF ENGLISH
EDUCATIONAL PIONEERS AND REFORMERS
TEACHING AIDS AND APPARATUS
MORAL AND RELIGIOUS EDUCATION
THE TEACHING OF FOREIGN LANGUAGES
THE TEACHING OF MATHEMATICS
THE TEACHING OF SCIENCE

Other volumes in preparation

Uniform in cloth, fcap 8vo, 2s. 6d. net.


G. E. P.

PUBLISHER'S FOREWORD

The New Educator's Library presents in a convenient form that is likely to appeal to many specialist teachers and others whose interest lies in a select few of the aspects of Education much of the subject matter of *The Encyclopaedia and Dictionary of Education* recently issued by the Publishers; in fact, the scheme is due in great measure to the suggestions of many readers of the latter work, pointing out the desirability of issuing in sectional form the authoritative contributions on the various subjects.

It is hoped that these little books embodying, as they do, the results of research and experience of educationists and others of high distinction in their subjects, will serve a really useful purpose to teachers, to students, and to many others connected with or interested in educational matters.

501412



Digitized by the Internet Archive
in 2007 with funding from
Microsoft Corporation

CONTENTS

| <i>Section</i> | <i>Page</i> |
|--|-------------|
| I. PSYCHOLOGY IN EDUCATION | 1 |
| II. RECENT DEVELOPMENTS OF GENERAL PSYCHOLOGY | 9 |
| III. THE NERVOUS SYSTEM AND EDUCATION | 14 |
| IV. INTELLECTUAL DEVELOPMENT THROUGH THE SENSES | 21 |
| V. SENSE-TRAINING | 24 |
| VI. INSTINCT | 27 |
| VII. EMOTION | 31 |
| VIII. INTELLECT | 34 |
| IX. ATTENTION | 37 |
| X. INTEREST | 43 |
| XI. EFFORT | 46 |
| XII. FATIGUE | 48 |
| XIII. PERCEPTION | 54 |
| XIV. APPERCEPTION | 58 |
| XV. IMAGINATION | 62 |
| XVI. EDUCATION OF THE WILL | 65 |
| XVII. ASSOCIATION | 69 |
| XVIII. PSYCHOLOGY OF ASSOCIATION | 73 |
| XIX. SELF AND SELF-CONSCIOUSNESS | 78 |
| XX. INDIVIDUALITY | 81 |
| XXI. EDUCATIONAL ASPECTS OF SUB- CONSCIOUSNESS | 85 |
| XXII. PSYCHOTHERAPY | 90 |
| XXIII. DREAM ANALYSIS | 94 |
| XXIV. PSYCHO-ANALYSIS | 100 |
| XXV. SOCIAL PSYCHOLOGY | 104 |
| XXVI. THE RELATIONS OF ANALYTIC AND GENETIC TO GENERAL PSYCHOLOGY | 109 |

AUTHORS

Section

- I. PROF. JOHN ADAMS, M.A., B.Sc., LL.D.
- II. JAMES WELTON, M.A., LL.D.
- III. PROF. D. NOEL-PATON, F.R.S., M.D., LL.D.
- IV. J. C. FLUGEL, B.A.
- V. PROF. E. P. CULVERWELL, M.A.
- VI. PROF. C. LLOYD MORGAN, F.R.S., D.Sc.
- VII. W. G. SLEIGHT, M.A., D.Litt.
- VIII. MISS A. M. BODKIN, M.A.
- IX. PROF. H. BOMPAS-SMITH, M.A.
- X. W. G. SLEIGHT, M.A., D.Litt.
- XI. W. G. SLEIGHT, M.A., D.Litt.
- XII. W. B. DRUMMOND, M.A., F.R.C.P.
- XIII. JAMES WELTON, M.A., LL.D.
- XIV. B. DUMVILLE, M.A., F.C.P.
- XV. PROF. T. P. NUNN, M.A., D.Sc.
- XVI. PROF. H. BOMPAS-SMITH, M.A.
- XVII. PROF. H. J. W. HETHERINGTON, M.A.
- XVIII. B. DUMVILLE M.A., F.C.P.
- XIX. JAMES WELTON, M.A., D.Litt.
- XX. PROF. A. ROBINSON, M.A., D.C.L.
- XXI. PROF. JOHN ADAMS, M.A., B.Sc., LL.D.
- XXII. ERNEST JONES, M.D., M.R.C.P., D.P.H.
- XXIII. DR. ERNEST JONES
- XXIV. MISS CONSTANCE LONG, M.D.
- XXV. PROF. E. J. URWICK, M.A.
- XXVI. JAMES WELTON, M.A., LL.D.

PSYCHOLOGY IN EDUCATION

SECTION I

PSYCHOLOGY IN EDUCATION

THE Latin Grammar reminds us that verbs of teaching govern two accusatives : one of the person, another of the thing. Teachers tend to lay more stress on the subject taught than on the person, but modern educational theory emphasizes the claims of the person. The paidocentric tendency—as Dr. Stanley Hall names this directing of interest to the nature of the pupil and to the pupil's point of view—has always existed, though its full development belongs to quite recent times. Plato took some account of the various qualities of the pupil that make for successful educational results ; and the English educator, Roger Ascham, in his *Scholemaster*, utilizes the Platonic analysis. Quintilian, too, in his work on the training of the orator, lays some stress on the personal qualities essential in those who are to become successful public speakers. Thomas Fuller, in his *Holy and Profane State*, includes among the qualities of the good schoolmaster that “he studies the scholars' natures as carefully as they their books.” Rousseau's educational masterpiece, the *Émile*, is strongly paidocentric; and, when we reach Pestalozzi, we find the demand for the study of the pupil's nature expressed in the saying that it is necessary to psychologize education. It is true that Pestalozzi himself knew but little psychology; yet his point of view was received with favour, and since his time there has been an increasing tendency to regard a study of psychology as an essential part of the training of a teacher. Till quite recently, however, there has been little

real application of psychology to the work of the classroom. In text-books for students in training to be teachers, there used to be a section at the beginning set apart for psychological theory, while the rest of the volume dealt with practical matters. Psychology and teaching were both represented, but the universal complaint was that they were always kept separate; they were like oil and water, they would not mix. Of late, the combination has been to some extent effected. Writers on the subject no longer label their works *Psychology Applied to Education*. Professor Welton gave a lead by entitling his work *The Psychology of Education*. (1911.)

Practical Use of Psychology to a Teacher. Curiously enough it is the professional psychologist himself who feels called upon to give a warning about the teacher's use of psychology. Professor James and Professor Münsterberg have both counselled teachers not to expect too much from this subject. James told them that all the psychology that was really of value to them could be written on the palm of the hand, while Münsterberg assured them that there never was a teacher who would have taught differently had the seat of intelligence been the liver instead of the brain. The teacher was, in fact, warned off the psychological domain, and recommended to stick to his own business.

But Pestalozzi was right, though what he meant by psychology was something quite different from what would satisfy Münsterberg. There is a popular and a technical psychology. It is sometimes said that we are all psychologists more or less. The element of truth in this is that we have all to deal with human nature in some form or other, and have accordingly to dabble in what is the subject-matter of psychology. But it does not follow that we are psychologists in the technical sense. The point of view is the determining feature. The auctioneer studies human nature in order to learn how to stimulate bids; he is not interested in mental processes, but in practical results. The psychologist

on the other hand, studies mental processes as such, and has no interest in the material results of those processes. A train of thought has the same value for him whether it results in the liberation of the slaves or the burning of Rome. Herein lies the teacher's danger. It is wise to warn teachers against studying the pupil as a mere specimen. The living child here and now present is what must occupy the focus of their attention. Teaching is a vital process in which there is a vigorous give-and-take between personalities. Psychology is the cold-blooded scientific study of mental and spiritual reactions.

This scientific attitude is the one thing about which psychologists are agreed. In the definition of their study, they are unanimous as far as "Psychology is the science of . . ." But there differences arise. Many writers, who are fond of peace, are willing to finish the phrase with the word "mind," on the understanding that this term includes all the spiritual, or at any rate non-material, nature of man. Some would prefer to use the word "soul" taken in practically the same sense. Others, again, would like to make psychology the science of *consciousness*, since this is the element that forms the real subject-matter of psychological investigation. Some present-day writers, impressed by the importance of subconscious or even unconscious spiritual process, wish to get rid of the word *consciousness* altogether in the definition, and propose to call psychology the science of *behaviour*. To the teacher there is something very attractive in this definition. It offers possibilities of help that were absent from the old psychology.

For the teacher the old psychology had one great defect; it confined itself to the study of the mature human being. It studied man on the spiritual side very much as the old natural histories did on the physical. Its methods were markedly static. The human nature studied was regarded as the subject on the table is regarded by the anatomist. For the teacher, the result was disastrous. He studied the psychology of the mature mind and straightway

applied his results to the developing minds of his pupils. A most dangerous fallacy is wrapped up in the saying that a boy is a little man. He is potential man, if you like; he is man in the making; but he is no more a little man than a tadpole is a little frog, or a grub a little butterfly. Psychologists recognized this when they labelled one aspect of their study *genetic* psychology, the psychology of growth or development. The child has come to his own as a subject of study, but he may be treated from two totally different standpoints. His nature may be investigated so as to discover his qualities in order to help us in manipulating them, or in order that by acquiring a knowledge of his present state we may learn more about the nature of man as a whole. Treated from the second point of view, he supplies matter for the prosecution of purely psychological research. With this the teacher has no special concern. But, when treated from the first standpoint, the child forms the material of what is popularly known as Child Study, a subject that is obviously of great practical importance to the teacher. But professional psychologists are at hand with grim warnings about the futilities that too often accompany the direct study of children. It cannot be denied that a great deal of time has been spent in investigations that have only a sentimental value, and that statistics have been used to produce results that have no real significance for education. But, on the other hand, the intelligent study of children cannot but help the teacher. So far from warning him off child study, the professional psychologists ought to give him some guidance in the methods he should adopt in prosecuting that study.

Attitude of Approach. Obviously the teacher must avoid the static methods of the old psychology, must give up the natural history plan. Within the period of childhood itself there is plenty of development, so Child Study must be treated genetically. This becomes clear when we examine a book like Professor Claparède's *Psychologie de l'Enfant*, in which we find the different periods of childhood carefully marked off from one another. The very

title of Claparède's book implies the real point of the professional psychologist's criticism of Child Study. If we call it *Child Psychology* we recognize that it is carried on in a scientific way; and it will not do to criticize teachers for foolish methods of Child Study, and at the same time warn them off from the field of psychology. What is wanted is that teachers should conduct their work and their studies in such a way as to get the best practical results, without losing touch with the human side of their pupils.

In another direction, the newer developments of psychology have increased the value of the subject to teachers. Formerly the science confined itself to the study of the human individual. Recently it has extended its range, and takes account of the interaction of individuals upon one another. This new branch, known sometimes as Social Psychology, sometimes as Collective Psychology, has obviously great attractions for the teacher. Even in the training of an individual pupil, as in the case of Rousseau's *Émile*, the teacher depends largely on the interactions set up between the pupil and those around him. But the ordinary professional teacher has a very special claim on collective psychology, for most of his work is carried on by means of classes—and a class is a collective psychological unit, a more or less homogeneous crowd. The psychology of the class is only now beginning to be studied, but the professional teacher is entitled to hope for much practical help when the subject is developed.

The Place of Experimental Psychology. In another direction, the opening up of psychology promises great things to the teacher. Experiment has always been, to some extent, associated with the study; but, in the past, more has been done in the way of observation, largely introspective. In what is now called Experimental Psychology, we have practically a new field in which all the resources of brass instruments and statistics are utilized. Some of the results obtained with the ergograph, the aesthesiometer, and the tachistoscope are regarded with suspicion; and there are those who feel inclined to

question the basis on which statistics are manipulated by the formulae of Correlation. But there can be no doubt that the newer methods have the great advantage of dealing categorically with definite points of practical importance. Binet's intelligence tests, for example, are of the utmost consequence to practical teachers. They are at present in a very incomplete state, and are subject to a perfect hail of criticism. But, as this is accompanied by series of testing experiments all over the world, we are being put into exactly the most favourable position for finding the truth. Already very useful results have been obtained in connection with the memory, with fatigue, with association in its various forms; and there is every reason to hope for still better results. The great charm of the experimental method is that teachers can put practical questions to the professional psychologist, and wait for a reply without themselves dabbling in matters and methods beyond their range.

The Correlation of Psychology and Education.

The suggestion is frequently made that between the practical teacher and the professional psychologist there should arise an intermediary who is a competent psychologist and has had sufficient experience as a practical teacher. His business would be to keep abreast of all the modern developments of psychology and to extract from the results whatever facts bear a practical relation to the work of the school. To some extent this functionary already exists in the persons of those members of the staffs of training colleges who are called masters and mistresses of method. No doubt in the past these functionaries were more qualified on the scholastic side than on the psychological, but the newer representatives of the class have all had a technical training on the psychological side. At any rate, they are thoroughly capable of mediating between psychology and education. Their work at present, however, is with the young teachers who are undergoing training. The great mass of the profession is at present uncared for, except in so far as some of the teachers study psychology and

try to apply it in their work. The question naturally arises why should not practical teachers study psychology directly, at least to the extent of being able to follow and understand all the newer developments? No doubt a great deal of the work of modern psychology has no direct bearing upon educational work, and can be quite wisely ignored by the practical teacher. But, in order to be able to discriminate between what is useful and what is not, the teacher should have some first-hand knowledge of psychology. He will not ask impossibilities of the brass instruments if he knows the principles on which they are worked.

The correlation between education and psychology is, in fact, being made by the development of what is called *Experimental Pedagogy*. Meumann, in Germany, has done pioneer work in this subject, and a good deal is being done both in England and America on the same lines. If one turns to a book like Dr. Rusk's *Experimental Education*, or to *The Journal of Experimental Pedagogy*, one will see how closely the psychological and the purely educational are linked together. Formerly, we have seen, the difficulty was to bring the two into contact. The modern difficulty is to separate the sphere of the one from that of the other—not that there would be any advantage in separating them, if it were possible.

The one danger is that the teacher may acquire the heartless scientific attitude and regard his pupils as mere raw material for psychological study; but, after all, the nature of things secures most of us against such a lapse. No man can teach and psychologize at the same time. Once he gets before his class, he has to deal with individual human beings who insist upon being treated as such. It is sometimes said that what happens with young teachers in training is that their minds are stuffed with psychology, while they are admonished that when they find themselves face to face with a class they must forget all about it. The quip is not without point. But it may be accepted by the trainer without any qualms. It is true that the

teacher must not carry his psychology with him consciously into the classroom. But he cannot rid himself of his psychological lore by merely giving himself up to the needs of the moment. He comes before his class with a paid-up capital of reactions acquired under the direction of the psychological knowledge he has acquired. He is not thinking of psychology when he is teaching, but he is teaching in a particular way, and not otherwise, because of the psychology he has already mastered.

References—

- ADAMS, J. *The Herbartian Psychology applied to Education.*
- BINET, ALFRED. *Les Idées Modernes sur les Enfants.*
- CLAPARÈDE, E. *Psychologie de l'Enfant* (English translation, Edward Arnold).
- DRUMMOND, W. B. *Introduction to Child Study* (Ed. Arnold).
- HALL, G. STANLEY. *Adolescence. Educational Problems.*
- HAYWARD, F. H. *Day and Evening Schools*, pages 564-571. (For the Correlation Formulae:)
- JAMES, W. *Talks to Teachers on Psychology.*
- LE BON, GUSTAVE. *Psychologie de l'Education. Psychology of the Crowd.*
- MORGAN, LLOYD. *Psychology for Teachers.*
- MACDOUGALL, W. *Social Psychology.*
- MEUMANN, E. *Vorlesungen zur Einführung in die Experimentelle Pädagogik* (Leipzig.)
- MEYERS, C. S. *Text-book of Experimental Psychology.* He has an excellent little Introduction to the subject in the Cambridge Shilling Manuals Series.
- MUNSTERBERG, H. *Psychology and the Teacher.*
- NUNN, T. P. *Education: Its Data and First Principles* (Ed. Arnold).
- RUSK, R. R. *Introduction to Experimental Education.*
- SPEARMAN, C. "The Foot-Rule for Measuring Correlation" in *British Journal of Psychology*. Vol. II, Part 1, July, 1906.
- TERMAN, L. M. *The Measurement of Intelligence.*
- THORNDIKE, E. L. *Educational Psychology.*
- URWICK, W. E. *The Child's Mind.*
- WELTON, J. *The Psychology of Education.*
- WEST, MICHAEL. *Education and Psychology.*

SECTION II

**RECENT DEVELOPMENTS OF GENERAL
PSYCHOLOGY**

THE doctrine of evolution changed the point of view from which all living beings were once regarded. The concept of immutability of type gave place to that of constant development towards a type more perfectly adapted to the life it has to lead. The movement influenced psychology later than the biological sciences, but its influence has transformed the conception of psychical life as fully as that of bodily life.

Sixty years ago, psychologists generally regarded their task as essentially finished. They had carried out with much thoroughness the analysis of the structure of their own minds, and they accounted for that structure by a thorough-going application of the doctrine of the association of ideas. The leading characteristics of this psychology were its individualistic outlook, its assumption that intelligence is the leading factor in psychical life, and its articulation of that life by mechanical relations. Equally marked were the individualistic, intellectualist, and mechanical aspects of the psychology of Herbart, which reduced psychical life to the interaction of idea-forces, which were the representatives in consciousness of external things. The natural effects of such theories on education were a belief in its omnipotence, an exaggeration of the part played in it by instruction, an identification of learning with accumulation of facts.

At the same time, the older doctrine of faculties, though theoretically inconsistent with that of associationism or Herbartianism, furnished the accepted criterion of the educational value of subjects of instruction. While most professed psychologists were disciples of some form of psychical mechanism, teachers commonly, both in their theory and in their practice, held together

incompatible shreds of both that theory and the theory of faculties.

These theories, however, agreed in this, that the mechanism and the faculties were each deduced not only from adult life but from the life of philosophical thinkers. Neither theory saw any need for a separate study of the psychical life of the young. Each assumed that, the more perfect the life analysed, the more complete and accurate must be the results attained.

The coming of evolution has introduced fundamental changes of conception which have led to a great enrichment of the study, a vast enlargement of its scope, and is bringing about a franker acceptance of the testimony of consciousness to its own nature. This movement is of necessity correlated with the general philosophical reaction against the arid materialism of the later eighteenth and most of the nineteenth centuries. The need for knowledge of origins led to the initiation of the study of children, of primitive races, and of the lower animals. The conceptions appropriate to the understanding of each class were sought in those lives, and not assumed to be those which the traditional psychology set up as typical and normal.

New Methods. The new demand has necessarily led to new methods. Children are being studied intensively as individuals, and extensively by observation in the mass, and each method promises valuable results. In this enlargement of method, also, psychology followed the lead of biology. The evidence for biological evolution was gathered from observations of considerable extent, and that for psychological evolution must be sought outside the consciousness of the individual psychologist. So introspection was found inadequate, and observation of the manifestations of the psychical lives of others was seen to be necessary. For a time, there was a tendency to make this substitution too thorough-going. After all, introspection is the only direct source of knowledge of the psychical life, and so must give the one available clue to the mysteries of another life. Objective methods, then, are

supplementary to introspection, and are indispensable to any knowledge that deserves to be called scientific, for nothing is more unscientific than to generalize one's own observed adult life as descriptive of that of all other human beings, or even as the norm to which all other lives approximate in proportion to their perfection. But they rest on a basis of introspection and, therefore, call for more exact introspection than was demanded when it had to serve as interpreter only to itself.

Further, in all methods of external observation, more or less complete precautions can be taken to secure certain definite conditions: this is experiment, and experiment in many forms marks the new movement in psychology. For a time there was a tendency to assume that experiments really physiological would yield psychological knowledge. "A psychology without a soul" has ever been the dream of the materialist. The results were disappointing, and such methods have been largely replaced by others of a more definitely psychological character. Many problems of educational importance are being thus attacked, such as the testing of general intelligence, the transference of power to a department of activity other than that in which it was acquired, the conditions of attention, the natural forms of various processes of acquirement, the inducement of fatigue.

Study of individuals in the mass could not remain individualistic, and the evolutionary hypothesis of natural selection emphasized the importance for life of the relations of the individual with his environment. In genetic psychology, the same point came out yet more clearly. Children were seen to take up into their own mental lives the characteristic features of the psychical life of the family, the lives of savages were found to be governed by tribal ideas. So the need for studying psychical life in the community as well as in the individual became apparent. Thus has arisen social psychology, a study still in its infancy, but which has already revolutionized traditional views of the nature both of the individual and of the community.

A theory of the origin of the latter from an aggregation of the former is no longer tenable; an individual separated from a community is seen to be a mere abstraction of thought, as devoid of reality as a community in which were no individuals. Every community has its psychical life, and that life is focused in one way or another in the life of each of its members. But neither community nor individual is possible apart from the other.

Changes in Fundamental Conception. The changes of view and method imply further a changed conception of the fundamental nature of psychical life. Evolution sees life as a striving through difficulties towards a goal, even though that goal may not be consciously apprehended by the individuals in whom the life is manifested. The passive mind of the presentationist psychologist is incompatible with such a conception. And with it goes the over-emphasis on the intellect as the ruler of life. Conation and feeling come by their own, and are recognized as fundamental, and not mere by-products of the play of ideas. Thus the newer psychology is much more cognate than was the older psychology with real life as we know it, for in that, certainly, few find intellect the constant ruler. It involves, of course, a reversion to the earlier conception of life as essentially functional, which found expression in all forms of the doctrine of faculties; but it is a return with a difference, for now the dynamic force known as life is derived from the lives of its ancestors, and has, therefore, an innate particular nature, which, and only which, can find expression in actual life. External influences can, therefore, no longer be regarded as all-powerful in training a child, and one of the most important problems both of psychology and of education is to determine the part which such influences can play in modifying inherited nature. But that nature itself as self-directed activity is the fundamental fact for education.

References—

- ADAMS, J. *The Herbartian Psychology.*
DRUMMOND, W. B. *An Introduction to Child Study.*

- HOBHOUSE, L. T. *Mind in Evolution.*
- KIRKPATRICK, E. A. *Fundamentals of Child Study* (New York).
- MCDUGALL, W. *An Introduction to Social Psychology.*
- REID, G. A. *The Laws of Heredity.*
- SANDIFORD, P. *The Mental and Physical Life of School Children.*
- TITCHENER, E. B. *Experimental Psychology* (New York).
Two Vols., each two Parts: (i) Student's Manual;
(ii) Instructor's Manual.

SECTION III

THE NERVOUS SYSTEM AND EDUCATION

EDUCATION may be defined as the attempt to develop in the individual the most perfect relations with his or her environment in place and time. In its simplest form, such co-relation implies the appropriate response to any immediate change in the surroundings; and, in its more complex form, the adaptation of mental activity to more complicated series of changes. Alike in the simplest and in the most complex forms, the action of the brain is essential: it is that which must be trained. Whatever view may be adopted of the nature of the relationship of the consciousness and of the mind to the brain, the evidence appears conclusive that, for normal mental activity, normal brain action is essential. Extensive injury of the brain is associated with complete loss of consciousness; marked physical defects are accompanied by manifest disturbances in mental activity; while more subtle changes have, as their sequel, more or less marked divergences from the normal. For the *mens sana*, the *cerebrum sanum* is necessary.

Reaction to External Conditions. The first essential for co-relation with the environment is definite information as to its nature. This is gained through the organs of sense, and each special kind of change in the environment acts more particularly on one kind of sense organ. Thus, contact of gross matter and the addition or withdrawal of heat act specially on the organs in the skin; various substances in solution act on the organs in the mouth; substances suspended in the air breathed may stimulate the organs in the nose; the structures in the ear are called into action by vibrations in the air, and those in the eye by certain vibrations of the ether. The part of the nervous system connected with each of these senses is not always stimulated from outside through the peripheral structure, but may be

directly called into action with a resulting sensation (*e.g.* in epilepsy, when, before the onset of a fit, the patient may, as a result of direct stimulation of the brain, experience a visual sensation of the nature of a definite picture identical with that produced by actual changes in the outer world). Further, any flaw in the peripheral structure, or in the connecting nerves, or in the part of the central nervous system involved must necessarily distort the information gained.

Such are the "gateways of knowledge." It is thus, indirectly, and with many possibilities of error, that information as to our relations with the outer world has to be gained. And yet, precision of association of our consciousness with these external changes is the first essential for accuracy of knowledge of our surroundings. Fortunately, this is capable of improvement by training, and to effect such an improvement must be the first object of any rational system of education.

While at any time the action of one of these special senses may be dominant, may command the consciousness and arrest the attention, it is rare that one is ever called into action alone. Others are also being played upon. Thus changes of consciousness and responses of the organism are usually determined by the associated action of the different sense organs, which, co-operating harmoniously, colour the resulting sensation and give it quality.

To secure an appropriate response to these incoming impressions, an effective arrangement is necessary, by which the body may be set in motion in whole or in part. The great effector structures are the muscles. By them, such crude reactions as the striking of a blow, or such responses—often more effective and subtle—as the use of language, spoken or written, are made. The muscular movements are guided and directed by special parts of the nervous system which the incoming impressions rouse to activity.

These reactions to external conditions through the effectors do not necessarily affect consciousness. Many of them are inherited instincts, such as the

act of sucking when the nipple is put in the infant's mouth, or the pecking action of certain young birds. These race reactions are the most fundamental and the most resistant of modification. The educationist must recognize and accept them, and take advantage of their persistence.

Habit and the Nervous System. As the individual is brought into more and more complex relation with the surroundings, each incoming impression and each reaction leaves its mark; and, at any time, the response evoked by a stimulus depends upon the previous reactions which have occurred. For there seems to be no doubt that, a given reaction once having followed a given stimulus or collection of stimuli, the repetition of that stimulus or collection of stimuli, or sometimes even of one of the collection of stimuli, will tend to call forth the same reaction. The whole theory of education is based upon this conclusion, for the attempt to develop advantageous habits, whether in actions or in thoughts, involves the acceptance of such a conception.

The evidence in its favour is chiefly derived from a study of the formation of habits in animals and man, and it is so strong as to justify the formulation of a law of the development of lines of least resistance through the nervous system. Oliver Wendell Holmes said that the perfectly normal man, placed under the same conditions as on a previous occasion, will do exactly the same thing. Had he said "will *tend to* do," his statement would have been nearer the truth; for the combinations and permutations, both of the external conditions and of the state of the nervous system, are so endless, that the wonder is that the same reaction should ever occur again. Certain it is that the more normal the nervous system, and the more dominant the main stimulus, the more likely is the unaltered repetition of the reaction to occur.

By reaction is meant not merely the muscular response by act or speech, but the alteration in the condition of consciousness which may accompany it or be independent of it, and which may vary

from a simple sensation to the most complex trains of thought. In Education, then, the teacher must strive to work upon a normal nervous system and arrange, in developing appropriate responses, for the stimulus of import to be dominant (*i.e.* for the learner's attention to be arrested).

The Brain and the Spinal Cord. From what has been said, it is manifest that the nervous system must consist of a receiving and a reacting side, so connected that the simultaneous incoming stimuli are properly blended, and so that the present dominant stimulus is associated with past impressions, in order that the reaction may be appropriate.

The central nervous system consists of a long cylinder of nervous matter called the spinal cord, into which pass the nerves from the organs of sense, and from which pass the nerves to the muscles. Each ingoing fibre divides into two: a long ascending part, which may ultimately reach the brain; and a shorter descending part. From these, side branches come off and connect up by means of branching terminations with the cells from which the outgoing nerves pass: thus, the ingoing nerves of any part of the body are related not only with the outgoing nerves of the same part, but also with those of distant parts of the body.

The spinal cord, being thus made up of myriads of such ingoing and outgoing *neurons* (as the individual nerve structures are called), is capable of an enormously varied series of reactions, according to the nature of the stimulus, and according to the condition of the cord. Definite stimuli usually call forth definite results. Thus, in the case of a dog with the spinal cord separated from the brain, pinching one hind foot causes the leg to be drawn up, but pressure on the sole of the foot causes the leg to be thrust out as in walking.

While, with the spinal cord in a normal condition, these reflex responses are perfectly definite and purposive, although unaccompanied by changes in consciousness, under the influence of such a drug as strychnine they may become an incoordinate convulsion. This illustrates the importance of a normal

condition of the spinal cord for the production of definite and purposive movements.

Not only is the spinal cord thus independently capable of complex and definite reactions, but it is connected with the brain, so that its action is controlled and modified. The spinal cord was developed in connection with the tactile mechanism of the skin. The great brain or cerebrum, on the other hand, was developed primarily in connection with the sense organ of smell. The advantage of some such arrangement at the anterior end of an animal, warning it of changes in the composition of the circumambient medium, is manifest. The organ of smell has been described by Sherrington as taste at a distance, and the peripheral structures connected with it he has termed distance or anticipatory receptors—organs acted upon before the animal has come directly upon the source of the stimulus.

A similar development in the brain has occurred in connection with the organs of vision, and another with the organs of hearing. Finally, these have all been linked up together, while the ingoing fibres from the spinal cord, connected with touch, etc., have also been received into this associative complex, and thus means have been afforded for that association of sensations, the importance of which has been previously emphasized.

From this great associated mechanism in the cerebrum, fibres extend down the spinal cord and direct the simpler reaction of that structure.

The complexity of the cerebral mechanism is the basis of the complexity of mental activity which depends upon the development of the capacity for reception and association.

The complicated nature of the paths in the spinal cord has been already referred to, but these paths are simple when compared with the myriads of labyrinthine connections which exist in the cerebrum. The reactions of the spinal cord to a given stimulus are more or less fixed, and can be foretold under average conditions, but the possible reactions of the individual when the cerebrum is involved

appear almost endless, and, in the attempt to foretell them, so many factors have to be considered that prophecy becomes almost hopeless. This is the great difficulty of the educationist. The results of his attempts to modify cerebral activity may be far other than those he desired to evoke.

Determinants of Brain Action. Probably the most important determinant is the hereditary history of the brain. The great race characters of cerebral activity are recognized by all, but in every case these are modified by the influences of the more direct family descent. And in cerebral development, as in the structural development of the body, all the complicating influences of heredity, and all the variations which the Mendelian Law attempts, more or less successfully, to elucidate, are met with. These fundamental hereditary factors are often more or less modified in early childhood by attempts at training by parents ignorant of what they wish to act upon, and influenced only by the traditions of the past and the fashions of their own generation.

The second important determinant of brain action is the nutrition of the organ, and this is too frequently ignored. But any one who has studied the response to a stimulus in an individual with a well-nourished brain, and in the same individual in a state of fatigue, must have recognized the importance of this factor in any attempt at education. To try to train a badly nourished brain is to court failure. But, in order to have the requisite knowledge of the condition of the brain, the educationist must be a trained physiologist and physician! The result of fatigue of the cerebral mechanism has been very fully studied by physiologists. It manifests itself in a decrease in the power of attention, a decrease in the definiteness of the response to the stimulus, a prolongation of the time which elapses between the stimulus and the response, and in a decrease in the power of the muscles to respond fully to impulses from the central nervous system. (See **FATIGUE.**)

In teaching, the stimulus applied must be dominating, arresting to the attention so that some

definite reaction may be called forth, and so that some definite line of least resistance, some definite mark (the basis of memory), may be left upon the brain, in order that the repetition of a similar stimulus may be associated with it and the stored impression be again called forth or recollected.

In real education, it is the lines of action, cerebral and mental, which are least developed that require most attention to render them more definite. Just as a trainer of the body tries to ascertain which groups of muscles are weakest, and endeavours by appropriate exercises to strengthen them, so the educationist must find what lines of action in the brain require similar attention. In training the brain and mind, as in training the body, it is desirable that the exercises should be well within the power of the brain, and should proceed from the simpler to the more complex.

The development of the brain does not proceed at the same rate in all individuals, and some simple tests of the stage of development are useful. Such a method has been devised by Binet and Simon, and elaborated and improved by other workers. Every teacher should be familiar with these methods.

That the brain is capable of education, even to the extent of one part being able to take upon itself functions usually discharged by another part, has been demonstrated by removal of parts of the brain in monkeys and by the recovery of function after extensive destruction of brain substance by gunshot wounds. Some such direct evidence of the capacity of the brain for education is wanted to cheer the heart of the teacher.

SECTION IV

INTELLECTUAL DEVELOPMENT THROUGH
THE SENSES

EACH of our sense departments consists of an apparatus of greater or less complexity, which is "attuned" to, or adapted for the perception of, a particular aspect or portion of reality. The amount of information we gain from each department depends upon: (1) The delicacy and responsiveness of the sensory apparatus itself; (2) the degree of attention given to the sensory *data*; (3) the significance which these *data* possess for us in virtue of their associative connections.

As regards the comparatively undifferentiated sensations from the interior of the body, it is manifest that they influence consciousness far more on the affective and emotional than on the intellectual side. Biologically, they are important enough as giving rise to life-preserving activities (*e.g.* hunger and thirst), but they afford us little "knowledge" in the strict sense. Yet cases of widespread visceral anaesthesia have shown that the sensations from the interior of the body do sometimes play a more important part on the purely cognitive side of consciousness than is often suspected. Thus it is probable that the constant background of consciousness afforded by these ever-present sensations constitutes an important factor in the consciousness of Self, while the periodicity of many of these sensations has been shown to be of use in the appreciation of time.

Equally important biologically are the sensations from the muscles, joints, and tendons, by means of which we appreciate the movements and positions of our own body. Though they contribute but little to exact knowledge, their abolition or impairment causes loss of control over our movements; further, their co-ordination with sensations of touch and of vision is involved in all the more

complex motor activities, and the importance of their training in this respect is becoming increasingly recognized by modern educationists.

As regards sensations from the outer surface of the body, modern research has demonstrated the existence of complicated systems of sense-organs, some of greater and some of lesser delicacy. There is still some disagreement as to the precise details of these systems, but it seems fairly certain that the elementary qualities of cutaneous sensation—pressure, pain, heat, and cold—are, each of them, found in at least two systems: one of a coarser nature, giving rough qualitative information only, and influencing consciousness in a predominantly affective manner; the other providing sensations delicately graded according to the intensity of the stimulus, and being predominantly cognitive in function. The former system provides information of great biological utility, but of a vague and comparatively undifferentiated character. The more delicate system is of great importance for the appreciation of the size, shape, texture, etc., of objects, as well as for the execution of movements involving dexterity; the important part such sensations may play in education has been increasingly realized of recent years.

As regards the chemical senses of taste and smell, there is no doubt that the latter, at any rate, has played an important part in mental development at the infra-human stage, but that in the human race it has suffered very considerable degeneration. In many animals (*e.g.* the dog) smell is the most important cognitive sense, as is clear both from the behaviour of these animals and from their relatively enormous development of the olfactory area of the brain. Since odours are to be found in greatest intensity and variety in close proximity to the surface of the earth, the decay of smell in the human race is probably connected with the assumption of the upright posture, which has produced a mode of life less suited to the exercise of smell, and more favourable to that of hearing and vision.

Hearing and vision derive their chief biological importance from the fact that they enable their possessor to become aware of objects at a distance from his own body, and thus to seek or to avoid them, as occasion may require. They are the predominantly cognitive senses in man and, by means of all three of the factors mentioned at the beginning, contribute more to knowledge than any of the other senses. Vision is especially important as the sense through which our ideas of the external world (*i.e.* space and size, shape, position, and movements of the objects occupying it) are chiefly formed. Hearing and vision are, further, the normal channels through which we become possessed of the inheritance of human culture, through the connection of the former with spoken, and of the latter with written, language.

We may note, finally, three facts of general importance in connection with our subject—

1. As regards the acquisition of human culture, it is possible to use effectually a sense other than that generally employed for a given purpose, as is shown by the congenitally blind or deaf, and (still more markedly) by the well-known cases of Laura Bridgman and Helen Keller.

2. There exists a tendency towards an inverse correspondence between the affective and the cognitive value of the different senses.

3. Much of our most important knowledge is acquired, not exclusively through any one sense, but by means of a co-ordination of sensory *data* from two or more sense departments.

SECTION V

SENSE-TRAINING

THE use of the term "sense-training" implies imperfect psychology. We do not train the senses, if by that we mean the organs of sense. It is only nervous matter that can be trained, because, in the highly organized human body, it is only nervous matter that *remembers* (*i.e.* that is so modified by use that it responds to later stimuli not only with more or less vigour, but in a different way. That is the essential point—even a muscle responds in a different way (*i.e.* more vigorously, or less) after use, but there is no difference in kind; it simply contracts or becomes flaccid. So far, then, as the senses depend on the muscular or vascular portions of the sense-organs, it is certain that they cannot be trained.

There is, however, nervous matter in every sense-organ; and if it could be trained, we might truly speak of training the sense-organs. But this nervous matter is only the ends of the fibres of the nerve cells along which the messages pass to the central system, and these nerve fibres cannot be trained, because, unlike the central nervous matter, they are not modified by use. It is, indeed, essential that they shall transmit the message of the moment exactly as it is received, and wholly uninfluenced by the messages which preceded it. The telescope would be of no use if the rays it transmitted to the eye depended not alone on what it was pointed at, but also on what it had been pointed at in the past. It is the man behind the telescope, whose interpretation of what he sees must be modified by his past experiences, who must be trained.

Nature arranges for this through the repair of the waste matter. When a discharge passes along a nerve path, some of the nervous material is used up. The waste matter is carried off by the blood

supply, which also carries new material to the nerve to replace that which has been used up. In repairing the central nervous system, the structure and arrangement of the nerves over which the discharge has passed are altered, so that they respond in a different way when the same or a similar stimulus passes over them next time. Therein lies the strange secret of organic life, for these alterations of structure are, in normal circumstances, such as to secure that the response is changed in the direction of greater well-being for the organism. But when the discharge passes along the nerve fibre from the sense-organ to the central system, the waste material is replaced in such a way as to leave the nerve fibre unchanged. Thus even the nervous material of the sense-organ cannot be trained. What we call sense-training is, therefore, really brain-training, and the problem of sense-training is that of finding how the brain can best be trained to interpret the messages which are sent by the organs of sense.

Is Formal Training Possible ? The most important question we can ask relates to what is known as formal training. Can we do anything to improve the general power of observation, or is the improvement, due to practice in one direction, entirely limited to that direction ? Experience proves, what the above theory suggests, that, since what we mean by training the sense-organs is really improving the power of the brain to interpret the messages it receives from the organ, we must expect this training to be specific rather than general. The physician who has become extraordinarily quick to observe and interpret the slightest changes in his patient will be helpless if asked to interpret the tracks which the Red Indian reads without effort—and *vice versa*, though their sense-organs may be equally good. Or, to take another example, suppose A knows French, but is not very keen of hearing, while B, who does not know French, is. When both listen to a Frenchman, A's ears send less distinct messages to the brain than do B's; but while A, if he attends carefully, can "hear"

every vowel and consonant distinctly, B can make nothing of it.

It is, therefore, abundantly clear that special aptitude in sense interpretation in a particular field requires special training in that field. But it is not shown that the special aptitude is not built on a general foundation which may be trained apart from the special activity. And the physiological principles on which sense-training depends indicates that this is probable. For, just as the telescope has to be moved by hand so as to follow the object at which we are looking, so in every adjustment of the eye, or other sense-organ, the muscles must be used to adjust the eye—to alter its direction, or its focus, or both. And just as steadiness in moving the telescope comes only with practice—and just as steadiness in moving it to follow a bird on the wing will be carried over to give steadiness in following any other object—so our physiological knowledge would lead us to expect with the eye. Similarly in regard to attention. We should expect that the power of concentrating attention on the message conveyed by one or more of the many nerve fibres from the eye, when acquired in connection with one kind of object, would help us to *discriminate* the messages sent by those nerve fibres when dealing with another kind, although we should not expect it to help us in interpreting the other messages. For it is evident that the power of discriminating the messages sent along sensory fibres is only to be acquired by practice, just as is the power of adjusting the motor impulses along the different motor fibres.

The conclusion seems to be that this discrimination should be acquired by sense-training in early childhood, while interpretation is a later specialization.

SECTION VI

INSTINCT

THE term "instinctive" may properly be applied either (*a*) to certain observable modes of behaviour, such as the swimming of a duckling directly it is placed in water, or the flight of a swallow when first it is committed to the wing; or (*b*) to certain inferred dispositions of which more complex behaviour is the expression, such as the instinctive disposition of some birds to migrate and, on their return to the breeding area, to secure a territory, to mate, build a nest, procreate and rear their young. In either case, the emphasis is on the hereditary character of the observed behaviour or of the inferred disposition. They are unlearned in the sense that they are not gradually acquired in the course of individual life. In the phraseology of a well-known educational formula, they depend upon some form of racial preparation; they demand some presentation of appropriate conditions; and they lead up to application in the conduct of life. Whether the dispositions are to be regarded as primarily organic and dependent, let us say, on the hereditary structure of the nervous system, or are to be regarded as dependent on structures of the mind which uses the body as its instrument, is a difficult problem which need not here be discussed. From the educational point of view, the stress is on instinctive dispositions in the broader sense (*b*), which are to be regarded as mental, and which must be reckoned with by those whose chief concern is the training of the mind.

Habit and Instinct. It is clear that if such inherited dispositions were unalterable, there, from the educational point of view, would be an end to the matter. We should have to accept them as they are, just as we accept the colour of the child's eyes. But instinctive dispositions are not unalterable. They increase in strength when they are

allowed free play; they wane if opportunities for their expression are denied them. An instinctive disposition, endorsed by the frequent repetition of the kind of behaviour which is its outward manifestation, is supplemented by habit; but, if it be prevented from finding expression, it may pass into a latent state, though circumstances unusually favourable to its manifestation may reveal its continued presence. Under the simpler conditions of animal life, the group of dispositions which we speak of as the nature of the animal seldom fail to be endorsed by habit. But under the more complex conditions of human life, instinctive dispositions appropriate to the mere animal nature above which the child must rise need checking or guiding to finer issues. But here it is often more efficacious to utilize the principle of supersession than to attempt direct suppression. It is by affording opportunities for the repetitive establishment of what we deem good habits that the overcoming of bad habits is most effectively secured.

Apart from the direct influence of habit-formation in supplementing certain instinctive dispositions, with the diminution in strength of opposing tendencies—apart from this, as mental development proceeds, the hereditary bias to certain kinds of behaviour comes more and more under the sway of motives in connection with something like a settled purpose in life. The instinctive dispositions, as such, are impulsive; they arise unbidden in presence of the situations which evoke them. Whether, notwithstanding the strength of the impulse of the moment, they can be held in check, depends on the strength of the intellectual and moral character, and on the inborn power of self-control developed under that guidance which it is the chief end of education to afford.

The innate capacity of acquiring systematic knowledge and, in the light which it sheds, of controlling action for the compassing of foreseen ends, is no less hereditary than are the instinctive dispositions. Neither child nor man can do aught beyond the limits of his inherited power. It seems

necessary, therefore, to distinguish carefully between (1) instinctive dispositions to behave in certain ways prior to explicit intelligent guidance, and (2) innate capacity for such intelligent guidance and control of action. The latter, no less than the former, may show tendencies in specific and hereditary directions: both may be more or less markedly touched with emotion; but innate capacity more distinctively affords the hereditary foundation of character.

Instinct and Emotion. So close is the connection between instinctive and emotional dispositions—the former to behave in certain ways, the latter to be effectively stirred in some distinctive manner—that we may regard the more primitive emotions as in intimate alliance with instinctive dispositions of full intensive force, experienced with some measure of warmth and glow, felt distinctively each with its special quality, and overflowing the normal limits of expression in behaviour.

Mr. McDougall, to whose *Social Psychology* reference may here be made, gives a list of what he regards as the primary emotions of man, each of which has its instinctive manifestation in some recognizable kind of behaviour. Tempting though it would be, however, to try, did space permit, to assign to the period of school life a definite number of instincts duly labelled and placed in order, it is questionable whether, in the present state of knowledge, it is not wiser, and perhaps more practically helpful, to rest content with a broad distinction of two groups of dispositions with opposite tendencies. In the one group, there are those which tend towards yielding, shrinking, clinging for support, dependence, submission, falling readily into line, and helplessness in presence of difficulties. In the other group are those whose tendency is in the direction of what may be summarized as independent self-assertion. Between these opposing dispositions, unquestionably instinctive in a broad sense of the term, there is constant interplay. Which of the two, in any given situation, is dominant depends in large measure on the circumstances. In the child as he enters school, and in the boy who is about to leave

it, the balance is different. But, at any given stage, the tactful teacher can judge whether a boy has an instinctive disposition which renders him over-timid, dependent, merely imitative, and too readily daunted by difficulties on occasions when self-reliance, independence, and reasonable self-assertion would be in place; or, on the other hand, when, through inherited nature, the opposite state of matters obtains. It is for him, then, so to act as, so far as may be possible, to redress the balance.

Reference—

DREVER J.—*Instinct in Man.*

MACDOUGALL, W. *Social Psychology.*

SECTION VII

EMOTION

No mental phenomena are less understood than those of emotion. The unsophisticated person would speak of fear, horror, and anger as emotions, and recognize such phenomena as preliminary to action. A simple form of fear, he would say, impels to flight, just as anger often impels to combat. He would also recognize more complex forms of emotion, such as grief, joy, surprise, scorn, reverence, and many others. Analysis of a state of fear reveals (1) an awareness of the object of fear, (2) an impulse to flight, and (3) the emotion of fear, the whole accompanied by peculiar bodily feelings, caused by increased heart-beat, tingling of blood, impeded or vigorous respiration, and other well-known phenomena. It had always been thought that the emotion is the antecedent cause of these peculiar organic sensations. It has, however, been argued by William James and Professor Lange that the organic sensations do not *follow* the emotion, but *are* the emotion. Now, if the emotion is identical with the organic sensations, it follows, inversely, as Professor Stout points out, that all organic sensations must be emotions, or at least those types of organic sensations which produce a generally diffused nervous disturbance. No one, however, ventures to assert that the morning cold bath originates a true emotion. Moreover, when an emotion arises in connection with definite perceptions and ideas—as is the case where an object causes fear—there is *first* a disturbance of the central nervous system, having its mental correlate in what most people would call an emotion. The central disturbance gives rise to organic disturbances which doubtless are in their turn felt, and which augment the original emotion and help to give it distinctive quality. It is clearly illogical, then, to limit the components of emotion to the organic sensations,

Emotion, Instinct, and Action. The close connection between emotion and action has led to discussions in which MacDougall and Shand have been the protagonists. Primordially, the instincts condition what James calls the coarser emotions. According to MacDougall, each principal instinct has its special form of emotion, also innately determined. The instinct of flight or concealment is always accompanied by the emotion of fear, repulsion by disgust, and so on. Many emotions, however, are complex (*i.e.* fusions of the primary emotions). Such, for example, is admiration (compounded of wonder and negative self-feeling and including also an element of pleasure). Other affective states, such as reproach, anxiety, jealousy, etc., are said to be complex emotional states, only explicable in virtue of the existence of some sentiment. Within the sentiment of love are said to be found reproach, anxiety, jealousy, hope, and others. Shand differs from MacDougall in declaring that the same instinct may involve various emotions, and that the same special emotion may lead to different types of motor activity.

Whatever be the final outcome of the study now being given to this subject, all psychologists agree in noting the vital connection between emotion in its widest sense and action or expression. From the instincts, desires are developed; the object of desire is at length clearly cognized, and definite and even remote purposes come into being, the interpenetrating emotions finding vent in different forms of expression. As a rule, the spontaneity and vigour of the expression correspond to the degree of emotion aroused. The fiercely angry man expresses himself quickly and freely in blows or strong language, or undergoes a suppressed emotional agitation that may threaten his very life.

The Utilization of Emotion in School. While an emotion may be aroused by anything which interests or appears to be important for us, the emotion is quite different from the interest. The latter has a strong intellectual element, the former a foundation

of strong organic disturbance. The school must not fail to utilize emotion for both its immediate and remote purposes. On the intellectual side, the emotion of elation consequent on the overcoming of difficulties may result in transforming an uncongenial into a congenial task; the sentiment of patriotism and its expression in civic conduct may develop through an inspiring presentation of our country's history; emotions roused by selecting beautiful forms for study may lead to permanent interest in aesthetic types; the emotional excitement roused when the pupil sees the purpose of a piece of school work may induce permanent interest in the subject. Over and above these aims, it is the function of the school to arouse the emotions which may lead to the religious sentiment and to character formation. It is the business of education to inspire the emotions of which admiration, reverence, awe, and gratitude are compounded. It is to be remembered, however, that the mere arousing of the feelings is not an aim in itself, and that, unless they are directed into useful channels of activity, the ethical purpose has not been achieved. The proper interpretation of children's emotions may be of great assistance to the teacher. As a rule, he can determine whether his methods of teaching and government are on right lines by the emotional response of the class. There is, however, some little danger of mistaking his function, and of imagining that he has to aim at supplying children with merely pleasurable emotions. What he has to do is to supply intrinsically valuable knowledge and capacity in a way which affords the greatest amount of pleasurable feeling possible.

SECTION VIII

INTELLECT

LIKE various other powers of the mind, intellect has been differently defined by philosophers according to their general view of the nature of man and the universe. The reverberation of these differences has been felt even by the psychologist, in his endeavour to distinguish intellect from the powers of feeling and volition, from instinct and intuition. It seems helpful, and indeed inevitable, in pursuit of a definition, to follow the clue suggested by Plato, and seek the first broad notion of the nature of intellect, "writ large" in the achievement of the race, rather than dim in the recesses of individual consciousness. Intellect is the power that reveals itself in the ordered structure of common knowledge: both in the everyday world of perception as articulated by the forms of speech and thought, and, above all, in the system of the sciences, where not only the product, but the ideal aims and shaping principles of intellectual activity appear discernible.

Viewing intellect in this way, one sees why it has always been regarded as in a special sense common, even identical, in individuals. Men may feel and will in harmony, yet their emotions and volitions, based upon their individual needs, constantly emphasize the distinctive position of each within the whole; men's intellectual activity is thought of as biased indeed by their individual desires and emotions, limited by the limitations of their experience, but of its own nature opening out toward the same prospect of objective truth; and capable, according to its ideal, when challenged at any point, of retracing a path of argument which all may follow, back to principles deep-rooted in social experience. Again, this view of intellect helps us to formulate the distinction between it and instinct. Through each power the individual participates in

the heritage of the race: but in the case of instinct, the heritage is transmitted through the inborn structure of brain and mind, and operates as a blind prompting from within; while in the case of intellect, the heritage, embodied in language, in the structure of material tools and social institutions, must be consciously appropriated by the individual and seems to come to him from without. It is in this conscious appropriation that the business of intellectual education must evidently largely consist, and it is the exclusive emphasis upon such appropriation that constitutes one of the besetting dangers of the latent educational theory that guides practice. There has been constantly present the tendency to forget that the child is a creature of instinct, of emotion and action, as well as a potential intellect; and the spring of intellectual activity itself has sometimes been broken under the burden of accumulated knowledge to which individual experience fails to give reality. For while it is necessary to emphasize the dependence of the individual in his intellectual effort upon the community, it is important to note also the necessity for a degree of dependence of each upon himself. The individual can only appropriate effectively the knowledge of the community so far as he is continually testing the common results and methods by application to his own experience, under the stimulus of his own purposes; and it is clearly only in a community of individuals who so hold and test it that the body of common knowledge can develop.

We must not leave the distinction between intellect and the other powers of the mind, emotional and volitional, without noticing that the latter also have their inner nature writ large in social achievement. In art, in morality and religion, we find collective products wherein the dominant fashioning force is not intellect with its discursive methods, but rather some impersonal emotion, or practical reason, proceeding by way of intuition. Some philosophers have maintained that, through these achievements, and the powers that underlie

them, man may make contact with aspects of reality which the human intellect is unfitted to explore. The educator to whom these problems appeal may be led to emphasize the necessity for developing the possibilities of the individual through contact with the great results of artistic effort and religious aspiration; but history will perhaps suggest to him that, even within these domains, the claim of the critical intellect to enter cannot long be resisted without nemesis of spiritual death.

SECTION IX

ATTENTION

ACCORDING to what may perhaps be called the traditional view, Attention is, primarily, an intellectual process. A boy is said to be attending when his mind is focused upon the ideas which form the subject-matter of the lesson; as, for instance, when he is listening to the master's explanation. The selected ideas to which attention is given gain in clearness. The boy "understands" [see e.g. Bagley: *Educative Process* (p. 96)]. This conception of attention has been developed by distinguished psychologists and, undoubtedly, throws light upon important features of the process. "The problem of attention centres in the fact of sensible clearness" [Titchener: *Psychology of Feeling and Attention* (p. 182)]. "The essence of attention as a conscious process is an increase in the clearness of one idea or group of ideas at the expense of others" [Pillsbury: *Attention* (p. 11)]. It fails, however, to emphasize the conative aspect of attention, which is the essence of the process according to the best educational thought and practice. When a boy is attending properly, it is not enough that he should clearly comprehend the master's words; the important thing is that his own mental activity should be stimulated and controlled. For a master who knows how to teach, "attention is a mode of mental activity by which a given system of mental processes is intensified, directed, and sustained to the exclusion of all incompatible and irrelevant mental processes" [Burt: In "Report of a Conference of London County Council Teachers, 1913," p. 25].

Conative and Affective Elements. The conative theory of attention may be regarded as one outcome of a movement which is modifying both our educational ideals and the practice of the schools.

In education, as generally in our social life, the individualistic and narrowly intellectual point of view is being superseded by one which endeavours to do fuller justice to the social, emotional, and conative aspects of experience. The theory will doubtless undergo further changes as our knowledge of mental life increases; but, in its present form, it owes much to the results obtained by psychological experiment and is supported by the authority of the best contemporary English psychologists. Thus attention is defined as "the mind at work or beginning to work upon its object"; or, as essentially consisting "in a felt tendency to dwell on an object so as in some way to adjust ourselves to it theoretically or practically." [See: Stout & Baldwin in *Dictionary of Philosophy and Psychology* sub voce; and Stout: *Manual of Psychology*, 1913 (p. 135).] "Effort of attention," says Dr. McDougall, following William James, "is the essential form of all volition"; a statement which emphasizes the conative aspect of attention from a somewhat different point of view. [See *Social Psychology*, 1914 (p. 242); comp. James: *Principles of Psychology*, Vol. II (p. 562).] This theory of attention brings into prominence the affective element in the attention process. If our minds are at work on an object, we are sensible that the object concerns us; we have a feeling towards it or an interest in it. This interest involves cognition and conation; but its core is an emotional attitude towards the object, which may include pleasure, or pain, or any emotion. The continuity of our interest in the object maintains, and is itself maintained by, the continuity of our attention; while the whole process of attention is directed towards the satisfaction of our interest. Interest and the conative process of attention mutually imply each other. We may say that a boy attends when he is interested, or that he is interested when he attends. As has already been suggested, the practice of good teachers implies a view of interest and attention similar to the one just outlined. Thus, to give a single example only,

we find such teachers usually begin a lesson by assuring themselves that the class realizes the importance of the end to be attained. By so doing, they tend to secure that continuity of interest which should characterize a lesson as a sustained process of attention. Just as the intellectualist doctrine of attention led teachers to regard Herbart's *First Step of Preparation* as the most effective beginning for a typical lesson, so the provision of an adequate aim, appreciated by the boys themselves, is the first step demanded by the conative doctrine.

How to Secure Attention. This view of the meaning of attention throws light upon the practically important problem of how attention is to be secured. If it is accepted, the chief conditions of attention may be grouped under three heads. First, we have the so-called objective conditions of attention. Certain types of stimuli normally tend to excite attention. Thus a stimulus tends to challenge attention if it is intense, extensive, changing, sudden, novel, or repeated. A large picture is more effective than a small one. An unexpected change of procedure will often pull a class together, while a sudden interruption is distracting. A moving object will nearly always hold the attention of the class. Secondly, the direction of attention may be determined by associations formed in the course of the boy's previous experience. A present situation recalls similar situations in the past, which included features not forming part of the existing situation. These additional features, when recalled by association, may become the object of attention or influence its course. In this way, previously formed associations may render attention more effective, as when the subject of a lesson recalls situations in the boys' daily lives; but, when attention is not controlled by a strong coherent interest, the recalled associations may lead it to pass more or less aimlessly from one object to another, as is shown by the conversation of garrulous and weak-minded persons. But, thirdly, the most important conditions determining

attention are those due to the dispositional interests developed during the boy's previous life. By the action of his experience on his congenital endowment, he will have acquired a relatively permanent tendency to feel an interest in certain objects or groups of objects. In the presence of an appropriate stimulus, the dispositional interest becomes active, involving a corresponding act of attention. The boy's interest in football will make him hear the clock strike the hour at which he is free to play, while under other conditions the sound might have passed unnoticed.

These dispositional interests largely determine the course of the boy's mental life and, being relatively permanent, manifest themselves in specific habits of attention. As such an interest grows more comprehensive and coherent, the corresponding acts of attention become more systematic, less liable to distraction by irrelevant stimuli, but more responsive to any stimulus connected with the interest. Thus, for example, the development of the child's interest in picking flowers into the botanist's devotion to his science implies the evolution of a complex system of habits of attention. In particular, a strong dispositional interest in some worthy end will help a boy to keep his attention fixed even on a distasteful object, and so tend to save him from belonging to the class of frivolous persons whose attention is at the mercy of any momentarily attractive stimulus. It follows that, while use will be made of suitable objective stimuli, or pre-formed associations, the chief method by which the school will arouse and guide the attention of its pupils will be by fostering the growth of healthy dispositional interests.

Probably the main weakness of the traditional methods of teaching has been their failure to do this to the fullest possible extent. Schoolwork has been kept too much apart from other fields of vivid personal experience.

These conditions of attention are exemplified in the social influences of the boy's school life. The words and gestures of his masters and companions are

among the most potent stimuli which challenge his attention. The traditions of the school society and the exciting incidents of school life give rise to a multitude of strong associations. His participation in the common life widens his aims and provides opportunities for their pursuit, and thus leads to the growth of dispositional interests of great value.

Stimuli and Interests. Individuals differ in their ability to attend to various classes of stimuli, and in the general character of their attention. Thus, one boy's attention will be easily aroused by a fresh stimulus of almost any kind, while another boy will find it difficult to attend to unfamiliar presentations. [See *e.g.* Rusk: *Experimental Education* (p. 41).] The further investigation of these differences is likely to throw light upon the methods of education appropriate for children requiring individual treatment. Valuable results may also be expected from a systematic inquiry into the changes which the child's attention undergoes with advancing years. [On these changes, see Meumann: *Vorlesungen uber experimentelle Padagogik* (Vol. I, p. 139); Rusk (p. 46).]

But the kind of attention paid to an object depends also, in part, upon the character of the interest involved. If our interest is in the object for its own sake, so that our adjustment to, or mastery of, the object is an end in itself, our attention is immediate. If, however, we are interested in the object as a means to a further end, our attention is derivative. A boy may read a book with attention either because he is interested in what he reads, or for the sake of passing an examination. Moreover, the nature of our attention varies according to the kind of stimulus by which it is aroused. We may be said to have different attentions for different senses. These variations in the process of attention have led some writers to speak of attentions in the plural rather than of attention in the singular, or even to prophesy that the term attention will disappear altogether from scientific psychology and education. [See Rusk (p. 38); compare Baldwin: *Mental Development in the*

Child and the Race (p. 313) ; Pear, in the " Report of a Conference of London County Council Teachers, 1913 " (p. 30) ; Watt : *Economy and Training of Memory* (p. 38).] Whether this will be so, the future must decide. At present, it seems convenient to employ the term to denote " the essential form of all mental activity " [Stout : *Manual of Psychology* (p. 126)], remembering that it covers a wide variety of mental processes.

References—

- BAGLEY, W. C. *Educative Process*.
BALDWIN, T. M. *Mental Development in the Child and the Race*.
JAMES, W. *Principles of Psychology*.
MCDUGALL, W. *Social Psychology*.
PILLSBURY, W. B. *Attention*.
RUSK, R. R. *Experimental Education*.
STOUT, G. F. and BALDWIN, T. M. *Dictionary of Philosophy and Psychology*.
STOUT, G. F. *Manual of Psychology*.
TITCHENER, E. B. *Psychology of Feeling and Attention*.

SECTION X

INTEREST

INTEREST has been aptly described as "a feeling of the worth, to the self, of an end to be attained." The term is sometimes loosely used as if interest were a quality attaching to certain objects, as when we say: "This book is interesting." The interest is, however, not a characteristic of the object, since to some persons the same book may be uninteresting; it rather describes some relation existing between the individual mind and the object.

The statement speaks of an "end to be attained." Now "ends" may be of every conceivable kind and of every degree of nearness or remoteness. For example, we may extend the meaning to cover an infant's desire to examine a large, bright-coloured flower, or an adult's attitude of mind towards an unpleasant odour. More remote ends are aimed at when a child silently studies a page purely in order to gain his teacher's approval, or when Mrs. Jellaby arranges her whole life towards some supposed future good of the community. The child is directly or immediately interested in the teacher's approval, and indirectly or mediately in the page; the adult immediately in the good of the community and mediately in the means she adopts. The child's undeveloped powers of conception usually prevent the formation of very remote ends or purposes.

The definition speaks also of a "feeling of the worth." This must not be confused with the feeling of pleasure or pain which always accompanies a state of interest. Some writers have identified interest with the pleasurable or painful feelings called forth by the object of attention. But a man may be much interested in tattooing himself, although the process is painful; the painful feeling is, however, not the interest: he is interested, not in the pain, but in spite of it.

It is clear that the fundamental quality of interest is conative—the impulse towards the fulfilment of desire, the reaching forward to some purpose. Thus desire, purpose, activity, and effort are fundamentally connected with interest. The conation is, however, not blind; there is also an intellectual element in interest, a cognitive factor. The object or end is cognized, and various ways and means are considered as serviceable towards attainment. The guide to the conation is, therefore, to be found in attention. "This concentration, step by step, from the beginning of the process to the accomplishment, is the work of attention," says Professor Welton.

The School Point of View. The school is chiefly concerned with the opening up of new interests, or, in other words, with inducing the formation of new and useful purposes. Punishments and rewards cannot be used as substitutes for purpose, for they enforce attention to themselves; although they may sometimes serve a useful purpose in compelling attention to a subject long enough for the matter itself to arouse interest. Frequently, however, attention and interest vanish as soon as the fear of punishment or the hope of reward is removed. Even work done from a sense of duty may entirely fail to induce direct interest. The arousing of purpose on the children's part is essential, and is dependent upon the presence of a felt need. Thus, a teacher of infants may suggest the game of shopping; the game involves little problems, the solution of which the children recognize as essential to their play purpose; they feel a need for the knowledge, they become interested in the calculations. To secure the strongest conation in the work of young children, the practical purpose of it must be clear; and the purpose must be the child's and not the teacher's only. Thus, it is necessary to ascertain and make use of existing childish desires and aims in such a manner that the way towards their realization leads to the development of fresh interests. Many children cannot easily find interest in subjects which appear theoretical

(*e.g.* grammar, French, algebra). But as soon as the teacher gives opportunities for applying grammatical rules, for constructing conversational sentences, for solving real problems, interest is aroused and held.

It is clearly important to preserve the continuity of the conative process. It may be possible to arouse and maintain attention to a series of operations only on condition that those operations are felt to be natural and necessary steps in the process of attaining the end. A living, self-formed purpose will induce intensest effort—the effort required in tackling uncongenial and often difficult work recognized as necessary if the aim is to be achieved. Moreover, the interest in the main purpose may spread to the means, and may be maintained even if interest in the purpose dies. The child who tackles a few geometrical problems for the purpose of making a perfect kite, may find the indirectly evoked interest in geometry keen long after he has lost interest in kites.

The problem of interest is, therefore, the vital and permanent educational problem. If it is rightly handled, and not transformed into the problem of how to amuse or give pleasure, the schools may produce a generation of men and women armed with purpose and prepared to expend intense and persistent effort towards achievement.

SECTION XI

EFFORT

"EFFORT" has been defined as the process of trying to realize an end, to achieve a purpose. In true play, there is no purpose beyond the activity, and therefore no real effort. Competitive games, on the other hand, aim definitely at a desired end, and therefore involve all degrees of effort. The number of steps between desire and achievement will vary according to the remoteness and complexity of the aim. Thus, in seeking to realize the desire to visit a friend, the stages may be comparatively few; the number involved in the attempt to reach perfection of character is very great. The processes may also be different in quality; some may be congenial and some uncongenial; some easy and some difficult.

The genesis of effort is to be found in desire. For example, some object may arouse the instinct of acquisition. The cognition of the object and the emotion incident to it are accompanied by a conation towards the object, the whole mental condition being known as "desire." The effort put forth is the result or expression of desire, and is primarily muscular in its nature.

The teacher's function is, therefore, to lead his pupils to see and feel the worth and purpose of their work in school, sometimes by demonstrating its practical value and sometimes by disclosing higher purposes in such an inspiring way that their values may be appreciated and their achievement made to appear desirable. When a child perceives that the work he is asked to undertake leads directly to the attainment of his desires, he will be willing to attack it, no matter how arduous or painful it may be. There will be little need of compulsion or of coaxing—methods which tend to distract attention from the real purpose, and which may result in the cessation even of this distracted attention

as soon as the stimulus is removed. If the teacher follows the course Nature reveals, minor errors on his part, such as over-praise or lack of encouragement, the undue prominence of punishments or rewards, making lessons too pleasant or unpleasant, may fail to distract the pupil from his purpose or to diminish his effort.

SECTION XII

FATIGUE

THE problem and study of school fatigue is twofold—hygienic and educational. The first aspect of the problem is well stated by Professor Mosso: "When children are taken from their peaceful home life and sent to school, they do not at first feel any great discomfort, nor are they fatigued by the new mental work, because the novelty of the thing diverts them; but the long fixation of attention begins to tire, and ends by exhausting them so much that their health is affected; and we can all see this for ourselves in the pallor which takes the place of the beautiful rosy complexion of childhood. The children become less merry and lively, lose their appetite, become dull or more excitable, and complain of headache." The second aspect is the influence of fatigue on mental development and educational progress. Genuine fatigue retards both. The whole problem of fatigue is the avoidance of an important obstacle to the attainment of the chief aim of education—a sound mind in a sound body.

The Nature of Fatigue. Fatigue is one of Nature's defences of the organism. Up to a certain point, it is not harmful. The limit, however, is soon reached, especially in childhood; and if Nature's hints are disregarded, the penalty has to be paid. From the physiological point of view, fatigue is primarily an auto-intoxication or self-poisoning by waste products produced within the system. The classical demonstration of this fact is Mosso's well-known experiment, showing that a little blood drawn from a dog suffering from exhaustion and injected into a fresh and lively animal, immediately causes the latter to show signs of fatigue. But fatigue is also due to the exhaustion of nervous energy, or, rather—to adhere to the physiological standpoint—to the exhaustion of certain substances

whose presence in the nerve cells is essential to the production or expenditure of energy. The changes in the nerve cells caused by fatigue can be seen with the microscope. According to Dr. Crile: "In the extreme stage of exhaustion from over-exertion, we found that the total quantity of Nissel substance was enormously reduced. When the exertion was too greatly prolonged, it took weeks or months for the cells to be restored to their normal condition. We have proved that in exhaustion resulting from emotion or from physical overwork, a certain number of the brain-cells are permanently lost. This is the probable explanation of the fact that an athlete or a racehorse trained to the point of highest efficiency can reach his maximum record but once in his life." These statements are of great importance with reference to school fatigue. They should help the teacher to realize that children may suffer severely from emotion and from physical overwork, as well as from mental strain; while the cases of the athlete and the racehorse recall the many brilliant schoolboys who have never been heard of in later life. Other experiments of Dr. Crile have given an ocular demonstration of the restorative value of sleep. The study of rabbits' brains showed that "eight hours of continuous sleep restored all the cells except those that had been completely exhausted." On the other hand, long-continued insomnia permanently destroys some of the brain cells in the same manner as too great physical exertion or emotional strain.

The Methods of Studying School Fatigue. Fatigue in school children is studied by applying certain tests before and after a particular lesson or at different times of day. The tests employed always aim at measuring something believed to be influenced by the degree of fatigue—for example, muscular power, sensibility to touch, or quickness of response. As examples of tests which have been very largely used, the following may be mentioned: (a) Mosso's Ergograph, which measures muscular fatigue; (b) the dynamometer, which measures the grasping power; (c) the aesthesiometer, which

measures sensory discrimination; (*d*) adding up columns of figures, which measures quickness and accuracy of work; (*e*) stroking out particular letters on a page, which measures quickness and accuracy of observation. The study of fatigue by such methods is much more difficult than might be supposed, and numerous fallacies lie in wait for the unwary. For example, in adding up a column of figures, fatigue certainly diminishes rapidity; but, on the other hand, practice increases it. Consequently, one cannot measure the amount of fatigue by simply observing the loss in speed and accuracy without regard to the gain from practice. Again, children are likely to be more interested in a test the first time it is applied, and variation in interest will affect the results apart altogether from fatigue. When tests are applied in the morning and afternoon, the nature of the mid-day meal is likely to be a disturbing factor. A good dinner at mid-day means more blood to the stomach and less to the brain, with effects upon the test which may be attributed too readily to the fatigue of the morning lessons.

The Results of Studies in School Fatigue. So many contradictory statements have been based upon experimental studies, that it is a safe rule for the teacher not to accept any which do not accord with common sense. To quote one example, Bellei declares that "the work done by children during the afternoon lessons is, on account of the great mental fatigue it involves, of no advantage to their instruction, but full of danger to their health"; whereas Heck and others have recently found but little evidence of fatigue in the afternoon—not enough to warrant any adaptation of school procedure to it. Such different results do not necessarily imply faulty observation, but may depend upon actual differences in some of the many conditions upon which school fatigue depends.

Symptoms of Fatigue. Temporary fatigue is indicated by such symptoms as a wearied expression, inattention, or fidgetiness in class. Chronic fatigue, when approximating to the condition

popularly known as overpressure, produces similar but more marked symptoms. The face becomes dull and expressionless, the eyes are somewhat sunken, and the head has a tendency to droop. The child becomes dull and listless instead of alert and active. Twitching of the fingers may be noticed, and, on inquiry, it is found that the pupil sleeps badly, and grinds his teeth or talks in his sleep. His appetite is poor and he loses flesh. His temper becomes fretful and irritable; he dawdles over his tasks, is disinclined to play, and often becomes morbidly dreamy or introspective. Such symptoms should be regarded as a serious warning that the child requires medical attention and supervision.

The Prevention of School Fatigue. Space only permits of a brief enumeration of the conditions to which attention must be directed, in order to prevent school fatigue of a harmful degree—

(a) **SCHOOL HYGIENE.** The ideal school should combine "fresh air" conditions as the phrase is understood in sanatoria, with a comfortably warm atmosphere. The new Staffordshire type of school is an important advance in this direction.

(b) **MEDICAL INSPECTION.** This is now provided for by law; but children should be inspected, even if not thoroughly examined, annually instead of every three years or so.

(c) **FOOD.** Sufficient nourishing food is essential to supply the energy necessary for school work.

(d) **SLEEP.** In all ages and in all classes of society, the health of children often suffers from insufficient sleep. This has been proved by Miss Ravenhill's investigations among the poor, and Dr. Acland's study of the hours of sleep provided for in the great public schools. Naturally the hygienic conditions in the children's sleeping-rooms have a marked influence on school work.

(e) **EMPLOYMENT.** Many children are employed as wage-earners out of school hours—*e.g.* in one school nearly 25 per cent. of children over 12. Such employment should be strictly limited by the local education authorities.

*Length of Lessons
requiring Concentration of Attention.*

| | | | | |
|----|-------------------------|--|----|---------|
| At | 6 years | | 15 | minutes |
| „ | 7 to 10 years | | 20 | „ |
| „ | 10 to 12 „ | | 25 | „ |
| „ | 12 to 14 „ | | 30 | „ |

*Total Amount of School Work
involving Attention.*

| | | | | |
|------|---------------------|--|-----|--------------|
| From | 5 to 6 years of age | | 6 | hrs. per wk. |
| „ | 6 to 7 „ | | 9 | „ |
| „ | 7 to 8 „ | | 12 | „ |
| „ | 8 to 9 „ | | 15 | „ |
| „ | 9 to 10 „ | | 18 | „ |
| „ | 10 to 11 „ | | 21. | „ |
| „ | 11 to 12 „ | | 25 | „ |
| „ | 12 to 14 „ | | 30 | „ |
| „ | 14 to 15 „ | | 35 | „ |
| „ | 15 to 16 „ | | 40 | „ |

Amount of Sleep required at Various Ages.

| | | | | | |
|-------|----|-----------|--|-----|-------|
| Under | 6 | | | 13 | hours |
| „ | 7 | | | 12½ | „ |
| „ | 8 | | | 12 | „ |
| „ | 9 | | | 11½ | „ |
| „ | 10 | | | 11 | „ |
| „ | 13 | | | 10½ | „ |
| „ | 15 | | | 10 | „ |
| „ | 17 | | | 9½ | „ |
| „ | 19 | | | 9 | „ |

(f) ARRANGEMENT OF SCHOOL WORK. In the case of young children, very short lesson periods should alternate with exercise or play. As children grow older, the length of the lesson periods should increase gradually, the most suitable length depending partly on the age of the children and partly on the amount of concentration the subject demands. The most fatiguing subjects should be taken in the forenoon. Hard and easy subjects should alternate,

or two hard subjects should be separated by a short period of recreation or exercise. A careful correlation of subjects is of practical importance in the limitation of fatigue. The amount of home work required should be moderate.

(g) HOURS SPENT IN SCHOOL. No law can be laid down as to the length of time which children should spend in school. This depends upon the school conditions. In some Montessori schools, children under five spend the whole day (*i.e.* from 9 till 6) not only without fatigue, but with benefit to their health.

(h) HOLIDAYS. These should be short and fairly frequent in the case of school children, whose requirements are quite different from those of, say, university students. On the other hand, a long, quiet country holiday is the best treatment for chronic fatigue and its concomitant nervous symptoms.

Fatigue Tables. The tables on page 52 are given for reference, but are not to be taken as of universal application, seeing that children and circumstances differ widely.

The third table is Dr. Duke's. The allowance is slightly higher than the minimum standard of other authorities.

References—

- CRILE, G. W. *The Origin and Nature of the Emotions.*
 MOSSO, A. *Fatigue.*
 STRONG, E. K. *Work, Fatigue, and Inhibition.*

SECTION XIII

PERCEPTION

THE term "perception" implies knowledge of the world of material things in which we live. With this world we make acquaintance through the sensations we receive from it. This is so much a matter of everyday experience, that it is only when we begin to examine its nature, and to inquire into its method, that we find questions raised that are not easily answered, and on the answers to which depend the fundamental principles of instruction.

Into the ultimate questions of the nature of the mind that knows, and of the matter that is known, and of the relations between them, we need not enter. Ours is the simpler task of inquiring how, on the assumption that both mind and matter are in some sense real, the one gains knowledge of the other.

The first crude solution offered by the unreflective consciousness would probably be that the mind is a kind of mirror which reflects copies of things. Over that we need not linger. Science, by reducing all impressions on the organs of sense to forms of vibration, cuts away the ground on which the proposed explanation must be based, and makes further criticism superfluous. More examination is needed of the theory so long expounded by the majority of psychologists that the primary constituents of consciousness are independently existing sensations which gradually become associated in repeated experience, so that when the same group has occurred together a number of times we regard it as representative of an external object.

The essence of this doctrine is that knowledge of the external world is passively received by a

mind devoid of initiative, and consequently formed wholly by its environment, and that its worth depends on number and variety of experiences. Hence comes the doctrine that it is good to form the habit of comprehensive observation, superficial though it must be, and the corollary that increase of knowledge beyond the sphere of personal observation should be on the same lines of accumulating as great a store as possible of facts. A whole theory of pedagogy is, therefore, involved in this doctrine of perception; and if this latter be true, every incompatible method of instruction must be not only ineffective but disastrous, as opposed to the way in which mind really works.

The doctrine is, however, demonstrably false. It takes the ultimate results of analysis as original elements of consciousness. There are no such things in the world of reality as sensations existing by themselves and then combining in various ways. Little study of the way in which we actually attain a piece of knowledge is needed to show us that we do not first grasp each individual element and then combine them into a whole, but that we first vaguely apprehend the whole and then proceed by analytic study to make that apprehension distinct in its elements. All advance of knowledge, as we know it in adult life, is towards greater definiteness. Examination of the early life of children shows that the beginnings of knowledge are on the same lines as its later advances. The earliest acquaintance of the babe with the world of things is not in the form of a number of isolated and distinct sensations which he has to build up into as true a representation of the world as possible. On the contrary, all is both vague and confused. The sensations of one sense are not distinguished from those of another, nor the child's body from surrounding objects. Indeed, to him there are as yet no objects. Those he has to find.

Now, in the first place, be it noted that this finding means selection of those parts of the whole mass which have most attraction for him. At first, the directive force is instinct; but soon the influence

of discriminative intelligence is seen in more or less definite choice between the promptings of several instincts. And choice implies at once a learning from the past and a looking forward to the future. Moreover, such selection is not an isolated event; it is part of a continuous activity prompted by instinct and increasingly guided by intelligence. The objects perceived are, then, perceived not simply as of such and such a kind, but in such and such relative positions with regard to each other. Further, perception is essentially the expectation that if certain acts are done, certain results will follow. For we never have concurrently all the sensations which an object can give us, and, as knowledge becomes more precise, less and less is needed to present the whole to the mind (*e.g.* the scent of an unseen flower may set us searching for it).

Implications of the Theory. When the implications of all this are examined, even the most elementary perception is seen to be a complete piece of life, in which are implicit many forms of mental activity which in analysis can be distinguished from it. They are implicit in that they are not attended to; but they are present, because without them the act of perception could not take place. Retention of the past is necessary for recognition, but in mere recognition there is no call for explicit memory. Recognition as this or that kind of thing further involves conception, for, without the assimilation of likes into a class, no such recognition is possible. But, in perception, such relations are not explicitly thought. And so on.

The theory of instruction implied by this analysis is evidently opposed to that already noted. Knowledge is no longer something to be acquired and stored: it is a developing mode of life. Knowledge of things is gained in practical dealing with them in ways determined by felt purposes. Increased knowledge implies greater insight into such relations as those of similarity, dissimilarity, space, time, and causation. To these abstract aspects of

perceived things, attention should be directed at need. To suppose perception, conception, and reasoning to be distinct successive stages of development is to misapprehend entirely the process by which man learns to know.

References—

JAMES W. *Principles of Psychology* (2 vols.) (Chaps. XIX—XXI).

MITCHELL W. *Structure and Growth of Mind* (Lect. IX, XII).

ROYCE J. *Outlines of Psychology* (Chaps. IX—XI).

STOUT, G. F. *A Manual of Psychology* (Bk. III).

WELTON, J. *Psychology of Education* (Chap. VI).

SECTION XIV

APPERCEPTION

APPERCEPTION is the process whereby an object is not merely recognized, but comprehended more fully than ever before. To appreciate this distinction between mere recognition and the higher cognition involved in a more or less complete comprehension of an object, a knowledge of the psychology of *association* and *abstraction* is a necessary preliminary.

No cognition is possible unless the object presented arouses, by virtue of associations already formed, some traces of past experience. Both the kinds of cognition referred to, therefore, involve the revival of traces of previous experience. To take a simple case, the baby recognizes his rattle at a distance in so far as the visual sensations which he now has can revive traces of the tactual, kinaesthetic and auditory sensations previously enjoyed in dealings with that object. And this revival is possible because these latter sensations, having in past experience occurred in close connection with the visual ones, have become indissolubly associated with them, and are now partially revived by them. At the same time, there is aroused, also, an impulse to repeat former movements; and the child is seen clutching at the object. Here, then, we have an example of mere recognition, or *perception*, as it is often called. This process takes place with the lower animals, as well as with human beings.

Let us now examine an instance of a more complex cognition (*i.e.* of *apperception*). Suppose that the same child is now at school, and is asked to draw and paint the rattle. Obviously, when the object is first put before him, it is perceived in a manner similar to that just described, the only difference being that, since much more tactual, kinaesthetic, auditory, and other experience has been obtained with this and other somewhat similar

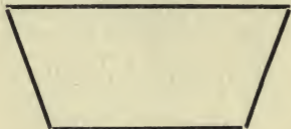
objects, the results of that experience having been "boiled down" into more stable and more readily revivable residues, the process is more unerring; so far, however, it is merely *perception*. But if the child is to draw and paint the object, he must revive and bring to bear on it (still by virtue of associations enabling the results of past experience to be recalled) further psychical elements of a more or less *abstract* nature.

Ideas and Their Relations. What, now, is the nature of these governing ideas? Human beings can single out parts, or aspects, of the concrete wholes which are presented to them in mere perception. They can *compare* objects, retaining or reviving the idea of one while perceiving another, and noticing differences or likenesses between them. In this process they are greatly helped by *language*. Elements thus singled out and associated with words or equivalent signs are called *abstract ideas*. But abstract ideas are more or less connected elements. When, for instance, a human being has observed sufficiently to be able to state unerringly that a given object is exactly square, he has acquired a *system* of abstract ideas (*i.e.* a number of abstract ideas which are not separate elements, but so intimately related as to form an organized combination); he realizes that a square is a plane, rectilinear figure bounded by four equal lines which meet one another at right angles. All definitions and laws, or general statements, are expressions of such systems of ideas. We may call them *general truths*.

Now, to direct the process of drawing the rattle, the child must bring to bear systems of abstract ideas in the spheres of shape, size, and colour. He must be able not only to *perceive* the object, but to *apperceive* or *observe* it on the lines indicated.

Apperception, Reasoning, and Observation. Apperception is often spoken of as a process of interaction between the *old* and the *new* (*i.e.* between the ideational furniture or apperceptive systems already elaborated, and capable of being aroused and brought to bear, and the object or situation presented). Apperception is involved in all solving of

problems, as in each case some object or situation is presented and a requirement is made for further knowledge with regard to it, which can be obtained only by reviving and bringing to bear some of the ideational machinery already possessed. But the solving of problems is usually known as *reasoning*. Hence, reasoning is apperception. If we choose to confine the term *reasoning* to the solving of more complex problems, we can say that reasoning is the highest form of apperception. But if we prefer to extend the meaning of *reasoning* to cover *all* cases in which we use abstract systems of ideas already possessed to learn more about any particular object or situation, we can say that *reasoning*, *apperception*, and *observation* are synonymous. The same object, however, may be apperceived differently according to the system of ideas aroused on its presentation. Thus, if the accompanying figure be shown to different persons, or the same person at different times, it may be variously comprehended. If the ideas aroused are of plane, rectilinear figures, it may be apperceived as a trapezoid with two sides parallel. If ideas of perspective predominate, it may be taken as a square placed exactly in front of and a little above the level of the eye. If the apperceptive system summed up by the word "dishes" prevails,



the figure may be conceived to represent a straight-sided bowl placed exactly on a level with the eye. Similarly, it might be

taken as a hat, or a boat, or as some other thing.

It is the teacher's business in most lessons to see that objects are similarly apperceived by all the pupils. If this is to be the case, the apperceptive systems must obviously not be allowed to arise casually (*i.e.* according to the state of each child's mind when the object is presented without any previous preparation). Often the necessary systems must be expressly aroused. Hence the need of

careful introductions to many lessons, and of precision in the framing of questions and in the setting of problems. The teacher, for instance, who, without any qualification, asks, "What do you notice about that?" is opening the door to a host of mental visitors who may easily bring chaos instead of harmony into the lesson.

SECTION XV

IMAGINATION

THE practice of using the word "imagination" in psychology exemplifies the difficulty of employing for scientific purposes terms borrowed from common diction and infected with its ambiguities. The word has, in ordinary discourse, two chief meanings. (1) It signifies the production of a mental image of an absent object, as when one sees in imagination this morning's breakfast table, or hears in imagination a band of pipers, or enjoys in imagination the fragrance of meadow-sweet. (2) It is also applied to certain intellectual processes of high level, especially to the "imagination" of the inventor, the poet, the novelist, the man of science.

To avoid ambiguity the psychologist may (as in the parallel instance of the use of "force" in mechanics) restrict the scientific use of the term to one of these meanings. Thus William James, in his chapter on Imagination (*Pr. of Psych.*, ch. xviii), takes it to mean the formation of mental images and nothing else. His usage is supported by etymology but has serious inconveniences. The formation of mental images occurs as an incident in psychological processes of widely different types. For example, I may hold in my mind an image of a man's voice in the hope that it will remind me of his name; or build up a mental picture in order to follow a friend's description of his new motor-cycle; or call up imagery to deepen my enjoyment of Keats's "sweet peas on tip-toe for a flight." Now if the mere occurrence of images in these processes makes them all instances of imagination, some qualifications are needed to distinguish the different purposes that the imagery subserves. So we have the terms "reproductive imagination" (which is practically equivalent to

vivid recollection), "interpretative imagination" (equivalent to "understanding"), and "productive imagination"—the last being reserved for invention and original art and thought. But, in addition to being largely redundant, these terms are open to the objection that they emphasize the wrong thing. They suggest that the presence of images is the essential feature in remembering, understanding, reasoning, invention, whereas that feature is, in fact, often only of subordinate importance and may sometimes be almost entirely absent.

On the whole, then, it seems better to keep imagination for the higher "creative" processes, and to describe the mere production of images by some term, such as "imaging," which has no divergent associations. We are thus led, disregarding the part played by imagery, to inquire what is the common feature of these higher processes. In doing so, it is important not to be misled by the popular antithesis between the "imaginary" and the "real." The traveller who remarked that Turkish statistics are admirable if regarded as works of imagination, but valueless for scientific purposes, had this antithesis in mind, and made playful use of it; but it must also be remembered that great investigators have declared imagination to be the prime instrument of scientific discovery. That is, imagination is not only the weaver of fiction but also the light that discloses truth. What, then, is the common factor by whose virtue it produces such widely diverse effects?

The answer is that imagination, in the sense here followed, is the expression, in intellectual activity, of that creative element or spontaneity which is one of the essential characters of all, and especially of human, life. Mind has the power not only of retaining its experiences, but also of selecting, remoulding and recombining them for practical ends, or in the disinterested pursuit of knowledge, or to explore the beauty and mystery of the world, or for mere enjoyment of its own activity; and this power is the essence of imagination.

It follows that imagination always goes beyond what is before the senses here and now. That fact explains both why ordinary language calls imaging imagination, and why it contrasts the imaginary with the actual. But however remote from actuality the constructions of imagination may be, their elements are always derived from reality; only the pattern in which they are recombined can be new. This is true even of myths and extravagant fiction—such as W. K. Clifford's tale about the giant whose favourite food was bread and butter sprinkled with light brown horses. But, as Professor Alexander has said (*Time, Space and Deity*, i., 146), fiction itself is not necessarily fictitious; for instance, the imagination of a great dramatist or novelist, so far from falsifying experience, brings out essential features of experience that the ordinary, unimaginative man would miss. While, as was pointed out above, the imagination that qualifies what is seen by what is not seen, and so explains it, is the very essence of science.

These observations make clear in what sense certain school subjects—literature, science, history, geography—may “train” the imagination. They cannot foster a power to create out of nothing (as teachers appear sometimes to suppose); for no such power exists. But when properly taught, they do serve to widen and deepen the pupil's vision of the actual world; and that is the most important function of imagination.

SECTION XVI

THE EDUCATION OF THE WILL

THE education of the will is often discussed under the general head of the training of character, without much explicit reference to the special problems which the education of the will in the strict sense involves. This treatment of the subject tends to obscure the importance of developing in the boy (or girl, and so elsewhere) the specific power of voluntary decision or choice. Similarly, the schools are apt to rely upon the effects produced upon the boys' characters by the schools' corporate life, the instruction they provide, and the influence of their masters, without attempting definitely to train their boys' wills as such. The excellent results obtained by many schools cannot be questioned for a moment, but it may be suggested that, if these schools employed their present methods with a more clearly defined intent, new possibilities of achievement would open out before them. If the average school conceived its task of educating its boys' wills with the same precision as that with which it now views the problem of cultivating their intelligence, the whole educational outlook would be changed.

The question to be here considered is how a boy can be encouraged to acquire a habit of effective voluntary decision. The answer to this question can only be suggested in vague outline, but one important principle seems to stand out in clear relief. Our knowledge of the characteristics of an act of will, which has been rendered more definite by recent psychological investigation and experiment, appears to warrant the conclusion that the will is trained primarily by being exercised under appropriate conditions, and not by instruction, though the latter is often of great value.

The Nature of Willing. Like other mental processes, the act of willing has three aspects, the

conative, affective, and cognitive. Of these aspects the conative is central, and its special characteristics are reflected in the other two. In the experience of willing, we are conscious that we ourselves are the cause or source of our activity. It is our resolution, "I will do this," which, with our consequent action, leads to the attainment of some end selected by ourselves. Obstacles may intervene, but in the act of will these obstacles are neglected or taken as surmountable. Otherwise the act of will is obstructed; we lose confidence in ourselves and cannot whole-heartedly devote ourselves to the realization of our chosen aim. But, secondly, an act of will owes its vigour to the strength of the impulses, emotions, or sentiments which will find satisfaction in the results of the chosen course of action. The emotions are connected with the thought of some end from the attainment of which satisfaction is expected, and are therefore prospective emotions of desire. Thirdly, the end which we resolve to gain must be conceived as not yet realized, but as realizable by or in our own activity.

It follows that a process of mental construction is required, and, if the act of will is to give us permanent satisfaction, this process must be reasonably complete. The end must be viewed in its relations with other ends; we must have adequate knowledge of the results involved in its attainment, and the means by which it can be attained. More particularly, we must think of the achievement of the end as our own act, as part of our own history. We must bring the idea of ourselves as willing the act into relation with our permanent conception of our own character, our interests and ideals. If we deliberate before choosing between different courses of action, "the alternative is not 'this' or 'that' but 'shall I do this?' or 'shall I do that?'" Each line of action with its results is considered not in isolation, but as part of the ideally constructed whole for which the word 'I' stands."

Training the Will. This brief analysis of a voluntary act throws light upon the methods by which the boy's will may be trained. The necessary

conative, affective, and cognitive dispositions must be developed in combination with each other. Thus it is possible to increase the boy's ability to initiate or determine his own activity by providing him with numerous and appropriate opportunities for the exercise of his will, particularly in practical affairs. In this way will and achievement become inseparably associated. Further, since the boy's will owes its strength to his emotions and sentiments, the education of his will involves the fostering of his delight in knowledge or in helping others, his devotion to his school, and other more or less permanent systems of emotions. But the emotions here concerned are emotions of desire, depending for their satisfaction partly, at any rate, upon the boy's own efforts. They will, therefore, be developed mainly through the satisfaction of their conative tendencies, not merely by learning about the objects which arouse them. Thirdly, with the growth of his knowledge and power of mental construction, the boy should acquire the habit of due deliberation. He should learn to attend not merely to the momentary advantage of a course of action, but also to its more permanent effect upon his life. Thus his powers of self-control and of resistance to temptation will be strengthened.

Lastly, while special stress will be laid upon the boy's own active experience, no single aspect of the education of the will should be emphasized to the neglect of others. A one-sided insistence upon the conative aspect will tend to make the boy obstinate and headstrong; the exaltation of the affective aspect will encourage him to be impulsive and sentimental; concentration upon the cognitive aspect will help to make him an ineffective Hamlet. It is the whole boy that must be trained to be a self-directing agent.

References—

- ACH, N. *Über die Willenstätigkeit und das Denken. Willensakt und das Temperament.*
HART, B. *Psychology of Insanity* (for effects of repressed emotional reactions).

- MITCHELL, W. *Structure and Growth of Mind.*
MEUMANN, E. *Intelligenz und Wille. Experimental Pädagogik.*
OGDEN, R. M. *Introduction to General Psychology.*
RUSK, R. R. *Experimental Education.*
SHAND, A. F. *Foundations of Character.*
STOUT, G. F. *Manual of Psychology.*

SECTION XVII

ASSOCIATION

THE term "Association" has a history almost as baffling as that of the word "Idea." In general, it describes the elementary and common fact of recall. When I look at the photograph of a house where I spent a holiday, I recall not only the actual house, but, by Association, the various incidents and experiences of my stay. Such a fact is evidently of the first importance for the understanding of our mental life. It has a direct bearing on the process of *memory*; it furnishes us with material for our reflective and higher activities, and partially determines their direction. Plato (cf. *Phaedo*, 73 d.) noted this fact of Association, and used it in support of his general theory of knowledge. Since that time, the examination of it has occupied a notable place in the history of psychology and epistemology. The conception of Association is peculiarly the special contribution of English thinkers to philosophical discussion. It is the dominating principle of the English empiricists from Hobbes to Mill, and most of them found in it the ultimate explanation of knowledge. For Hume, for example, the only discoverable unity of knowledge was that of the association of one impression or idea with another, because of their occurrence together. The final issue of Hume's doctrine in scepticism revealed the inadequacy of Association to serve as the basis of knowledge, and roused Kant to prove that Association itself implied some more ultimate or "transcendental" principle.

The failure of Association as an epistemological principle does not affect its value for psychology, although its use within this more limited province has often been marked by error. We cannot, for example, assume that we explain any sequence of mental events merely by calling it a case of association of ideas. That would be to convert

what is simply a description of the fact to be explained into an explanation of the fact. The problem is rather to discover the conditions under which associative connections are formed and how their direction is determined. But it is convenient, first, to describe in general the function of Association in the constitution of knowledge.

Association, in its widest sense, enters into both *perception* and *thought* (i.e. not only are ideas associated with one another, but Association is essential to the perception of external objects. Berkeley's proof of this is, in its main outlines, sufficient. In the *New Theory of Vision*, he shows that certain qualities which we "see" in objects are really not seen, but inferred, that is, "suggested" by our visual experiences in virtue of past associations. Similarly, tactual sensations are completed by the recall of visual and motor sensations. This inter-relation of our sense experiences is a first condition of the development of a perception of objects (cf. e.g. the account of the perception of space in Stout's *Manual of Psychology*, pp. 464-519). Even more conspicuously, at the level of conceptual or ideational process, Association is operative. The construction of chains of ideas, whence springs all progress in theoretical knowledge, plainly requires the possibility of recall. Memory largely depends upon this power of Association.

The investigation of the conditions on which Association depends raises two distinct sets of problems—physiological and psychological. As to the physiological conditions, our knowledge, though vague, is sufficient to lay down one general principle—that when two cortical cells have been excited, simultaneously or successively, a subsequent excitation of the one tends to spread to the other. Psychologically, we may distinguish at last four important conditions—

1. Percepts and ideas tend to recall one another according to their *proximity* in time. This is styled Association by Contiguity, and some psychologists regard it as fundamental. For example, the words

“men may come” irresistibly complete themselves with “and men may go”; while if we hear the latter phrase first, we tend, though less strongly, to preface it with the former. Association, however, is selective, and we recall the most significant elements in a series.

2. The *order* in which our presentations come affects the manner of their recall, as the foregoing example shows; while we know that it is more difficult, without much practice, to repeat the alphabet backwards than forwards.

3. The *recency* of our presentations is obviously important. The more distant they are, the harder and less certain is the process of recovery.

4. The effect of *repetition* is specially noteworthy, from its practical importance in memory-training. Ebbinghaus proved that the power of recall of a series of nonsense-syllables was more accurately and easily acquired if they were repeated a few times on each of several days, than if repeated many times all at once. The more the repetitions were divided, the more economical the process.

These four are the main objective conditions of Association, and all are always operative in some degree. More fundamental, however, is the direction of the subjective interest at the moment of recall. This primarily determines what shall be recalled and how. I try to recall the events of yesterday in order to decide what I was doing at a certain hour, and note that I was reading psychology. I remember nothing, however, of the details of the argument which I then followed. But if my purpose in recalling yesterday's events is to help the composition of this article, then it is those details that I recall most precisely. It is this condition, also, which most determines which of two competing lines of association I shall ultimately follow. Indeed, it is impossible to insist too strongly upon this condition; and most “associationist” controversies have sprung from its neglect. “Association marries only universals”; I recall those ideas and events that fit in with my

purpose at the time of reinstatement. Hence, Association is ultimately governed by the principle governing all mental activity, viz., a mental state tends to work out its own fulfilment and completion. It is, in this sense, teleological.

The literature on Association is immense, as every psychological text-book and review devotes much space to it. There are the various works of Professors Stout, William James, Hoffding, Bain, and Pillsbury, and Dr. Ward's article in the *Encyclopaedia Britannica*; while Professors Myers and Titchener give illustrative experiments. F. H. Bradley's *Principles of Logic* gives the logical implications.

SECTION XVIII

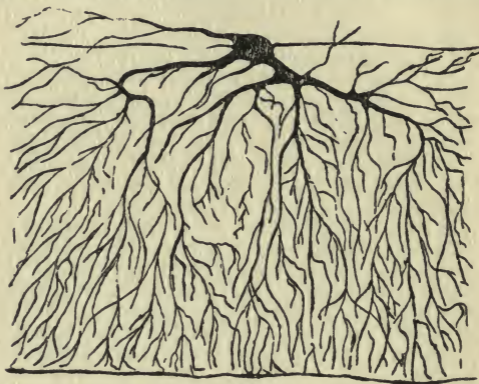
THE PSYCHOLOGY OF ASSOCIATION

WHEN two things are attended to together or in close succession, the recurrence to mind of the one, whether by renewed perception or by "thinking of it" again, tends to bring up the thought of the other. This fact is at the basis of all "learning by heart." The learner repeats words in a given order and, if later he starts with some of them, he is likely to be able to reproduce the others unaided. In such instances, it is not merely a case of *one* thing recalling *one* other, but of *many* things conspiring to the recall of *many* others.

All such connections are usually referred to under the name of *association*. The expression *association of ideas* is sometimes similarly employed, though it is somewhat misleading. For many things not usually called *ideas* are connected in the way described. All *habits*, for instance, are cases of association. Thus a sound may be associated with an action (*e.g.* the soldier's movement at the word "Attention!"). Association not only occurs between *ideas*, but these ideas themselves are often the products of association. Thus the child's idea of a cat which becomes associated with the word *cat* is itself a whole compounded out of many simpler experiences. The child has seen and stroked the cat, thus obtaining definite sensations of sight and touch, and others more indefinite connected with his own movements in dealing with the animal (*i.e.* *kinaesthetic* sensations). He has heard it mew, and possibly felt its scratches. All these associated experiences form an aggregation now called the *idea* of the cat; and the recurrence of one of them will immediately revive traces of the others. The associations may be so strong that it is scarcely correct to speak of one element recalling another; there has been such a close fusion as to deserve a distinct name, so Professor Stout has suggested the

term *complication*. The fixing of associations is the basis of all *memory* (i.e. the power to recall strings of ideas and to consolidate many of the ideas themselves).

Physical Aspects of Association. It seems to be generally agreed that the neurones or nerve cells



NERVE CELL FROM THE CORTEX OF THE
CEREBELLUM, WITH RICHLY-BRANCHING DENDRITES
(After Kölliker.)

involved in each of the mental processes which become connected (every mental process involving a corresponding neural excitation in the brain) are brought into closer relations probably by the fine fibres springing from each nerve cell. These fibres, or *dendrites*, give off still finer branches or *arborizations*. And the arborizations of one neurone intermingle with those of others, such interminglings being usually called *synapses*. It is believed that nervous impulses or excitations are in some way transmitted from one neurone to another across the synapses, though the latter are not always *ready-made* connections. There seems, on the

contrary, to be an increased resistance to the passage of impulses at many of these places. But, when once an impulse succeeds in passing across, it breaks down some of this resistance more or less permanently; so that the next time one of the neurones in question is in a state of excitation, the impulse will spread more readily.

No universally accepted answer has been given as to how the *first* passage of energy is secured. McDougall and others have adopted what they call the *Drainage Theory*. They suppose that when a given neurone is in excitation, it tends to attract or drain energy from any others at all excited, thus increasing and continuing its activity. Now, this is the case when the neurones involved in one mental process (*e.g.* the perception of B) are excited immediately after those involved in another (*e.g.* the perception of A). For the excitations involved in the last-mentioned state have not completely subsided when the supervening excitations are aroused. Nervous energy is thus drawn through certain synapses, leaving a path more open than before. The openness of the path (*i.e.* the strength of the association) will depend on the amount of energy involved. If I am very strongly impressed by two things attended to in close connection, a single experience will suffice to form a permanent association. This is the case when great *interest* is aroused (*e.g.* the boy keen on county cricket can give the scores of the prominent players in a particular match after once reading them). Obviously, then, the more teachers can arouse their pupils' interest, the more ready will be the memorizing. Intense interest cannot always be aroused where strong associations are necessary (*e.g.* in the case of the multiplication table). *Repetition* may be necessary for the formation of such associations.

The foregoing process of association is sometimes called *association by contiguity*. Some psychologists distinguish contiguity in *place* from that in *time*; but, from the purely psychological standpoint, the former merely enables the two things in question to be perceived *in close temporal connection*.

Association by Similarity. The earlier psychologists made much of what they termed *association by similarity*. My grandfather's name recalls him to mind because the two have been previously associated by contiguity. But an old man now seen for the first time twenty years after my grandfather's death may also recall the latter. *Similarity*, we are told, is the bond in this case. If my grandfather has been dead twenty years, and I now see another old man for the first time, I can never have associated the two by virtue of contiguity. But let us examine the matter more closely. The eyes, the nose, the long, white beard of the old man now seen are practically *the same* as my grandfather's, and, being now re-presented, recall the rest of the whole which constitutes my grandfather. The association on which the recall depends is not, in this case, an association between the two separate individuals, but the connection which was inevitably formed among the various elements which constituted for me my grandfather. In the present old man, *some* of these elements now occur again, and these recall the others which were associated with them—by virtue of *contiguity*—twenty years ago. This close connection, which is formed among the various elements or aspects of one thing (as distinguished from the association between one whole and another separate whole), has been called, by Stout, *complication* (see above).

Not only do the cases usually cited as instances of "association by similarity" rest also upon contiguity, but the very thing (similarity) which is supposed to distinguish them from the cases, usually quoted as instances of association by contiguity, is also a feature—and, indeed, still more completely so—of the latter. As Lloyd Morgan says: "I think it may be said that *all* association is by contiguity, and that *all* suggestion is by similars, for we never have the same presentation twice, though it may on the second occasion be another presentation from what we call the same source" (*Psychology for Teachers*, p. 80).

Association by Contrast. Several other so-called

forms of association have been mentioned by the older psychologists. *Black* suggests *white*; *good*, *bad*; *empty*, *full*; etc. It has been asserted that such instances are cases of *association by contrast*, whereas the bond is still *contiguity*. We can distinguish and thus abstract qualities by comparison of things possessing one quality in greater or less contrast with another. Now, the most striking contrasts occur when directly opposite qualities are in close proximity (*e.g. black* stands out most clearly, and is hence most readily abstracted when contiguous to *white*). So with *good* and *bad*, etc. Since these qualities are most clearly distinguished when thus occurring, strong associations are formed by reason of this frequent *contiguity*.

SECTION XIX

SELF AND SELF-CONSCIOUSNESS

THE reality of self is the ultimate datum of consciousness—the primary intuition. We cannot get beyond it, for it is necessarily involved even in the attempt to do so. The ultimate questions we can ask about the self do not concern its reality, but its nature and its development. Knowledge of this is of the greatest importance to all who are engaged in training the young, for understanding of the self is the only clue to the understanding of others. But it is not intuitive: it is attained only as the result of careful study.

The traditional psychology attempted to explain the individual self in isolation, and regarded the community as an aggregate of self-sufficient units. Modern thought attacks the problem from the other side. It sees in each individual essentially a constituent of a society, with the rest of which his relations are organic. Into a certain community a child is born, and in it he grows up. This community is a psychical life, having its purposes, its views of good and bad, wrong and right, its estimates of the relative values of experiences and aims, its knowledge of the world of men and of things. Into its feelings the child enters by innate sympathy; into its estimates of value he is led by example, by precept, and by authority; into its ways of acting and thinking by unconscious assimilation and by conscious imitation. Thus the whole texture of his psychical life is a concentration and reflexion of the life of the community of which he is as truly a constituent part as a cell is of an organic physical body. At the same time, he has from the beginning a certain definite characteristic trend due to his heritage from his forefathers, and the study of heredity and variation increasingly emphasizes the importance of this inheritance. This accounts for the fact that, in similar social surroundings, markedly different individualities are developed. Yet, however great may be these divergences, each is seen

as a variation from the type established in the particular community in which they develop. Each individual represents the common life in his own way, and each, therefore, is fitted to contribute his appropriate share to the common good.

The coming to consciousness of the self as an individual is a progressive development of clearness and definiteness of purpose. The self, determining its own ends, stands out with increasing explicitness from the material and human surroundings in which it works. Its relations to them are more exactly seen as experience brings home the consequences of acting thus and thus. As the results of actions are foreseen, what is capable of achievement becomes more definitely marked off from what can merely be pictured in imagination, and so the means to attain purposes are more surely planned. Throughout there is growth of intelligence, but only as one aspect of a life of directed purpose, which is at the same time an active striving, finding satisfaction or dissatisfaction in the course of its activity. Intelligence apprehends what is in accord with the common sentiment, and consequently sees where to expect to profit by public assistance or to enjoy public approbation; and where, on the contrary, public opposition, active or passive, may be anticipated. The individual, because he is an individual, may adopt aims not accepted as good by the community; on the other hand, because his nature is social, his aims are always related to those which win public acquiescence.

Characteristics of the Self. At first, apprehension of the self is very closely involved with that of the body, for the beginnings of life are predominantly physical; intelligence and emotion can only take form as life itself calls them forth. And always in ordinary thought and speech the self is at once body and spirit. The distinction between these is the result of analytic thought directed on experience. This makes clear to us that we, as active agents, can be set apart in thought from the circumstances in which we act, though the separation not only cannot be made in fact, but cannot even be

thought as so made. In thinking thus, we assume that the self we so envisage is a continuing reality. Bare perception of the present cannot give us this, and cannot by itself justify the certitude that the self of the present moment is the self of even an hour ago. As the reality of the self is an ultimate intuition, so is its permanence. Experience soon shows us that it is not an unchanging identity; in all apparent characteristics we are very different in adult life from what we were in infancy. Nor can we appeal to explicit memory of the past, even if to do so did not involve this very intuition; for definite memory will carry none of us back to the beginning of life. The self, then, is characterized by both permanence and change. The past lives on in the present and gives it its effective force to work out the future, which we see in idea, itself resting on experience. It is because the past is thus taken up into the present that the self we find by introspection is a permanent self.

It is also a unity, despite the multiplicity of its experiences. For at each moment it is making for the attainment of some one end; and, as evaluation of experience becomes more exact, the ends sought are progressively systematized. The unity of the self, therefore, is a dynamic unity, which takes up into itself all its experiences, so that they become one with it. Especially important is this in so far as those experiences relate the self to other selves. Neither can be known apart from the other, because neither is real apart from the other.

When we examine the self, we, as it were, construct from the real concrete self of life a representative and partially abstract self, and so make evident its general character and tendency. This concept of the self we can use for our practical guidance.

J. WELTON.

References—

- BOSANQUET, B. *Psychology of the Moral Self*.
JAMES, W. *Principles of Psychology* (2 vols.), Chap. X.
MAHER, M. *Psychology*, Book II.
STOUT, G. F. *Manual of Psychology* (2 vols.), Pt. IV, Chap. VII.

SECTION XX

INDIVIDUALITY

THE term "individuality" implies a variation from the average or normal type, and is often used to designate the sum of the qualities which mark off one person as different from another. A better usage is to adopt the term "individual differences" or "variations" for these qualities, either separately or in the mere aggregate, and to reserve the term "individuality" for the organized personality which is reached by a process of development, in so far as the given person owns systematic tendencies to react to his environment in ways different from other persons. Individuality is, then, the capacity to make a specific contribution in a given situation. In general, this term implies approval: there is a marked tendency to use it only of desirable or laudable qualities; we speak of the originality of a burglar or murderer rather than of his individuality. The undesirable extreme of individuality is eccentricity.

Individual Variations. Differences between individuals may be common to classes of individuals. The characteristics, for example, which mark off a saint from a sinner may be common to all saints; so the psychologist investigates the mental outfit of a criminal or a philanthropist, an imbecile or a genius. But, as Münsterberg remarks, there are individual differences in a narrower sense; that is, "the differences in which we cannot recognize the traits of a large group such as sex or race, but in which the individual really differs from his neighbour" (*General and Applied Psychology*, p. 228). Such differences are those of character, intelligence, etc. Again, individual differences may be either qualitative (e.g. differences in types of mental imagery) or quantitative (as differences in sensory

acuity or in capacity for sustained attention). Various classifications may be useful in different cases. Perhaps the classification most generally useful for educational theory is to group the differences as they belong to the affective, conative, or cognitive processes respectively. Of these, it is mainly the last, namely, differences in cognitive process, that have been exactly investigated. Sensory acuity, memory, general intelligence, etc., may be tested in a considerable variety of ways; but there is room for difference of opinion as to the degree in which education is thereby aided. From individual variations there arise two problems for the educator. The first is the question of subjects of instruction, the second is the question of methods. As to the first, it is evident that there are some subjects which everybody must learn, whether with or without an aptitude for them. The heaven-born genius, musician or poet, cannot be excused his multiplication table. Of course, the more scope for the individual bent, beyond this necessary limitation, the better; and the fact that aptitudes themselves are often owned by groups helps the practical problem. As to the second, individual differences do not, in practice, interfere to any considerable extent with class teaching, provided always the class be not too large and, above all, the teaching skilled and sympathetic.

Individuality Proper. Individual differences, as we have seen, are not yet individuality in its highest sense. Rather, they are part of the raw material on which the educator has to work. His problem is so to train a human being that peculiar endowments shall not be lost in the process, but be fostered and developed into a system of capacities and tendencies which, as a whole, possesses a specific nature of its own. So individuality, thus understood, is a goal and an ideal, not a starting-point.

Individuality, then, implies spontaneity, energy, and originality in thought and in action, and on it depends the onward drive of whatever progress there is. It may be said to be a mean between

mere passive obedience to custom and the established order on the one hand, and eccentricity and the innovations of the pure crank on the other. There is, of course, no merit in mere diversity. The value of individuality lies in the fact that no human being touches experience at all points, and so special capacities and points of view are an enrichment of humanity.

Mill (*Essay on Liberty*, Chap. III) drew a somewhat gloomy picture of the attitude towards individuality in his own times: "Individual spontaneity is hardly recognized by the common modes of thinking as having any intrinsic worth. . . . We should think we had done wonders if we had made ourselves all alike." Nowadays there is little danger of forgetting its claims; perhaps there is more danger of its becoming a catch-word, ill-understood and carelessly applied. With every desire to give spontaneity, energy, and genius the fullest scope, it must be remembered that there are such things as concerted actions, in which spontaneity has no place, and that individuality does not mean doing things differently from other people when other people do them in the best possible way.

There is a good deal said as to the danger of destroying individuality, and, in particular, its aspect of initiative, by systems like military training. The Prussian military system, for instance, was said to destroy initiative and individuality. Such a result is no doubt possible, but that it is not inevitable may be proved by a glance at the British Navy. And in some of the instances alleged it would be relevant to know how much individuality there was to destroy.

What, if anything, can be done to evoke and develop individuality? The question is a hard one, for it may be easier to hinder than to help. Positive instruction seems almost excluded by the nature of the case, but much is still possible—sympathetic encouragement and the provision of a free field of varied opportunities. And this should begin in the early years of life, for individuality is not a flower that can grow and blossom in a day. A marked

individuality will out, not only without fostering care, but even in the face of direct opposition and hindrance. Yet it is a real loss to the world if the feebler forms be crushed or starved out. Hence the supreme importance of determining what is the special aptitude of each individual child.

SECTION XXI

THE EDUCATIONAL ASPECTS OF
SUB-CONSCIOUSNESS

LOGICALLY there is room for the existence of only two states, Consciousness and Unconsciousness; for at any given moment we are either conscious or we are not. Psychologists recognize this when they speak of the threshold of consciousness. Once an idea falls below this threshold it is unquestionably in the realm of the unconscious. But practical considerations interfere with the smooth-running distinctions of logic. All the elements that are said to be below the threshold are not in the same state. Some appear to be perfectly passive, others uneasily dormant, and still others are in a condition of what may be called sub-activity. The state of affairs below the threshold is not unlike the state of affairs above. In both cases the elements that make up the content may be arranged according to their power of influencing the mental process at any given moment. The continuity between the upper and the lower realm is recognized by the term that is often applied to what lies below the threshold. When we speak of "the subliminal consciousness" we implicitly grant that there is a "sort of" consciousness that is not quite what we usually understand by that term. This view obviously reduces the importance of the threshold, if indeed it does not challenge its very existence. Yet the plain man readily admits that there is a difference between what is above the threshold and what is not. His trouble is to distinguish between the two grades—sub-consciousness and unconsciousness.

The Threshold of Consciousness. Sometimes the prefix *sub* appears to be used as indicating merely a lower degree of anything, as in the case of *sub-activity* as used in the above paragraph. In this sense the sub-consciousness should not be treated as below the threshold at all. It is only a weaker form of consciousness. But for many

minds the prefix *sub*, as applied to consciousness, is connected with the notion of the threshold, and for them the sub-conscious must be regarded as *below* the threshold. For practical purposes it may be permitted to treat the conscious, the sub-conscious and the unconscious as making up a great series of states of gradually diminishing intensity from focal consciousness on the one hand to total passivity on the other, the whole being divided into two by the threshold, which is assumed to occur just above the sub-conscious. At any given moment, then, the subliminal would include all the elements of which we are not conscious, though these elements may be roughly classified into a group having some activity (the sub-conscious), and another having none.

The content of the whole series from focal consciousness to inert unconsciousness may be compared to the content of the spectrum as it appeals to human sensation. According to the lengths of the ether waves, different colours are presented to the human eye. A certain wave length gives the sensation of red; with diminishing wave lengths, the various colours of the spectrum are presented till after the violet band has been passed the wave lengths are too small to make a colour impression on the human sense. But both above the violet and below the red there are wave lengths, though they do not produce colours to the human eye. In the same way below the threshold of consciousness there are activities, though they cannot lead to that state that we all recognize as consciousness.

Some regard consciousness as a mere epiphenomenon, as something that accompanies certain physiological processes, but has no significant causal relation with them. However this may be, it is generally admitted that some physiological process accompanies all states of consciousness, and there is no reason to suppose that these processes actually cease even when they fall below that degree of intensity that is necessary before they can be accompanied by consciousness. When

we are unconscious, these processes of diminished intensity may correspond to the vibrations of the ether whose wave lengths are too long to produce the sensation of red.

Active and Passive Elements of the Subliminal.

It is obviously to the educator's advantage to recognize the distinction between the active and the passive elements that make up the content of the subliminal. At any given moment this content may be divided into two sections, the smaller of which will include all the elements that for some reason or other are at that moment exercising influence on the content of consciousness, while the other section includes all the remaining elements, these being mere potentialities. The first section would then represent the sub-consciousness, while all the other elements would belong for the moment to the unconsciousness. On this view all the ideas that are either on their way into consciousness or have just passed out of consciousness will form the most prominent elements of the sub-conscious segment, while ideas that are more or less closely connected with these will have a greater or less degree of influence on whatever ideas are at that moment in consciousness. Whatever has once formed part of the mental content, and has been driven below the threshold, will necessarily form a part of the subliminal content. It may exercise practically no influence at any given time on what is above the threshold, but on the other hand it may at any moment be roused to activity if there should enter the consciousness elements in some way related to it. The process of education consists largely in building up connections among elements that it is of importance to keep co-ordinated with one another. When Herbart sets up the ideal of education as the cultivation of a many-sided interest, he is really pleading for such a correlation of the elements of experience that the content of the subliminal shall be sensitive to the appeal of certain kinds of stimuli that may originate within the realm of consciousness. In Herbartian terms, it is the teacher's business to increase the

presentative activity of certain ideas, so that it is easy to cause them to rise above the threshold. Dropping the Herbartian figure of speech, that treats the ideas as almost self-active forces, we may express the facts by saying that what the educator has to do is to increase the sensitiveness of the mind to certain classes of stimuli, whether these come directly from without, or from the organization of the processes that are set up as the result of the interaction between the mind and the outer world. The teaching of a particular subject is really the systematic increase of the presentative activity of certain correlated ideas. In actual classroom work the teacher is often concerned mainly with what is going on in the sub-consciousness of his pupils. In dealing with a certain problem the pupil has often an uneasy sense that the line he is following is not the right one, but he cannot tell exactly why. This state of mind results from the fact that within the realm of the sub-conscious are certain elements that are antagonistic to the conclusions to which the elements within the consciousness would lead. These disturbing elements cannot produce their definite effects till they have risen above the threshold, but even while subliminal they have the power to exercise at least a warning influence. It is the teacher's business, wherever possible, to stimulate the vague protests from the sub-consciousness. By more or less direct suggestions he may arouse elements that exercise a calculable influence on what is going on in the consciousness.

The Part Played by the Subliminal in Education and in Life. The Freudian school lay great stress on the subliminal. They regard it as making up the true man. Educationally this view is of great importance, though it is only an exaggerated statement of a point of view that is not specially Freudian. For the teacher the important problem is the building up of the subliminal. The value of an education may be justly tested by the sort of subliminal content it produces. The great function of education is to help the educand to

form good habits. Sometimes this process is, perhaps a little crudely, described as helping the pupils to pass on the direction of certain activities from the upper to the lower brain. This is the physiological way of saying that habit formation consists in the elimination of consciousness from the performance of certain acts—in other words, of reducing certain activities from the conscious sphere to the subliminal. Here arises for the educator a practical question of great importance. Does the educational process always work the one way, or can it be reversed? Must the educator always begin with the consciousness of his pupils and pass on to the unconscious, or is it possible for certain pieces of knowledge or skill to make their beginnings in the subliminal and pass upwards into consciousness? There appears to be a growing belief that this upward movement is not only possible, but that it counts for a great deal in our psychological development. The change from Professor James's "big, blooming, buzzing confusion" to the ordered universe of the adult is not accomplished by conscious process. We acquire certain knowledge and skill and then realize that we possess them. To help in this upward development the educator must begin in the realm of the sub-conscious as outlined above.

SECTION XXII

PSYCHOTHERAPY

"PSYCHOTHERAPY" means treatment by certain mental measures. The conditions to which it is applicable are numerous and exceedingly common. Most of them come under the heading of *neuroses*, or "functional" nervous troubles, of which hysteria (including most morbid fears) is a characteristic example. There are certainly more people suffering from some form of neurosis than not, for only the smaller number of neurotic cases culminate in actual nervous invalidism or "breakdown." The distinguishing mark of a neurotic tendency is disproportionate reaction to a given situation or event, undue emotional importance being attached to it. This surplus is not a simple exaggeration, as is usually thought, but represents a displacement of feeling from an older, associated mental situation on to the current one, the reaction to which is thus determined by more factors than are evident. The therapeutic problem essentially is how to render such reactions (in feeling or conduct, or both) more proportionate to the situation that has elicited them. The emotional disturbances that underlie neurotic conditions can also lead to bodily affections of various kinds, such as digestive and bowel irregularities, eye strain or temporary loss of vision, palpitation and pain at the heart, "functional" paralysis of the limbs, and so on; these are equally amenable to psychotherapy.

The *insanities*, even those having no discoverable physical cause, are on the whole strikingly refractory to psychotherapeutic treatment. It is, however, possible to influence for good the earlier stages of some such conditions.

Chronic *alcoholism*, of whatever form, and addiction to *drug habits* are also much more refractory to psychotherapy than the neuroses. It is nevertheless possible to effect a cure if mental deterioration has not proceeded too far. *Sexual perversions*

are more amenable, the most stubborn being inversion (homosexuality).

A further irregular group of cases comes under the care of the psychotherapist, which may be termed *character anomalies*. This class includes such states as depression and lack of zest in life, amounting to active unhappiness; conjugal estrangements and incapacities; various mental conflicts and difficulties; inability to get on smoothly with relatives or colleagues, to face adequately the tasks of life; and so on. In conjunction with this class, a word may be said about the important field that *childhood* offers for psychotherapy. This subject may be fairly distinctly divided into three. In the first place, the early recognition of neurotic tendencies gives the opportunity for treating them at what is by far the most favourable and plastic period of life, and the results yielded by treatment then are both more satisfactory in quality and more easily achieved. Secondly, some of the methods used in psychotherapy lend themselves also to use in dealing with the more difficult of children, in connection with such traits as stubbornness, defiance, sulkiness, bad habits, cruelty, and the like. Thirdly, and most important, the actual knowledge gained in the practice of psychotherapy concerning the genesis of later neuroses and character abnormalities dictates certain principles in the training of children, which are commonly neglected, relatively simple to act on, and of the greatest consequence for their later development.

Psychotherapeutic Procedure. There are many sub-varieties of psychotherapeutic procedures, but they all fall into the three following groups—

The simplest, the oldest, and the most generally practised is that of *Suggestion*, including hypnotism. Through the action of suggestion, a hyper-receptive state of mind is brought about, which has the double result of causing a general relaxation of nervous tension; and further of rendering the patient susceptible to beneficial statements, assurances, and instructions given by the physician. It is now known that the action of suggestion

depends on the patient's emotional absorption in the idea of a person whom he respects, so that the relationship is a peculiarly personal one, and therefore one fraught with many potential disadvantages.

The second and more elaborate procedure may be termed *Re-education*. In this the therapeutic aim is to appeal to the patient's reason, in the hope that fuller information concerning the symptoms will lead to the disappearance of them. The attempt is thus made to "explain away" the symptoms, and at the same time to inculcate healthier trains of thought, broader or fresher points of view, and better balanced feelings. The results of this method of treatment are probably better than those of suggestion. Its weakness is that too often the so-called explanations consist of rather banal platitudes and so do not carry matters much further. The reason for this is that in the purely re-educative procedure there is no satisfactory method for discovering the real causes and meaning of the neurotic disorders, so that there is nothing to do but deal superficially with what is often the end-product of a complicated chain of mental processes. In these circumstances, much of the good effected by the treatment is really due to a more subtle form of suggestion or personal influence.

The third and most ambitious procedure is that of *Psycho-analysis* (*q.v.*), a method devised by Freud, of which a changed version has been put forward under the same name by Jung, and supported in this country by Eder and Constance Long. It differs from "re-education" in recognizing that the causes of a neurosis are far from evident, and only to be discovered and dealt with by a patient and unravelling analysis. The practice of psycho-analysis is intimately bound up with a certain theory of the neuroses, gradually elaborated as the result of analytic experience, according to which such disorders are the product of various internal mental conflicts. The conflicts are between opposing tendencies, one set of which is incompatible with the ethical or aesthetic standards of the conscious

mind, and so are "repressed" or kept from consciousness, the individual refusing to be aware of them. The symptoms are then the substitutes for these repressed tendencies, and are symbolical presentations of the conflicting forces. The repressed tendencies are of various kinds, but the kernel of them is always sexual. The aim of the treatment is to destroy the function of the neurotic symptoms, rendering it superfluous by means of resolving the conflicts; this is done by breaking down the inhibiting repressions that form a barrier between the two sets of forces and thus allowing the latter to melt together. In this way a unity is established between the two regions of the mind—the conscious one and the repressed "unconscious" one. The devices used to penetrate through to the deeper layers of the mind are principally free association of ideas and dream analysis (*q.v.*). The technique is such that all the morbid material in the mind has to be dealt with, it being impossible to isolate any symptom; the trouble involved in this, however, is more than compensated for by the completeness and permanence of the results.

SECTION XXIII

DREAM ANALYSIS

IN dream analysis there are three ways of investigating dreams: they are, chronologically stated, (1) the antique, and still popular, method of arbitrarily interpreting them according to intuition; (2) the method of experimental psychology, in which connections are established between them and physical or mental stimuli, more often the former; (3) the method of unravelling them by applying the technique of psycho-analysis, invented by Freud. (See PSYCHOTHERAPY.) It is in the last sense that the term Dream Analysis is here used. The conclusions reached by the use of the second method differ from the beliefs accompanying the use of the first in denying that dreams have any mental meaning, and in demonstrating that they are the products of preceding causes. The conclusions reached by the use of the third method, while fully agreeing with the latter point, accord a certain validity to popular belief in so far as this holds that dreams do have a definite mental meaning, though not, of course, a supernatural or prophetic one.

The chief steps in the technique of the psycho-analysis of dreams are as follows: The dream is divided into its constituent parts. The dreamer concentrates his attention on each part in turn and relates *all* the thoughts that enter his mind when so engaged. If the casual, disconnected, and apparently irrelevant aside thoughts are followed up, it will be found that their associations regularly lead to personal thoughts of considerable significance. The material in this way collected contains certain nodal ideas that recur again and again, which are plainly related to the dream itself. They are called the *latent dream*, in contradistinction to the *manifest dream*, or the unanalysed content of the dream

as remembered. There is every reason to think that the manifest dream has proceeded from the latent "dream thoughts," so that the work of analysis is the counterpart of the synthetic process of dream-making. In other words, the manifest dream is the substitute for the latent dream. The questions thus arise: How are the latent dream-thoughts converted into the manifest dream, and what function, if any, does this conversion subserve?

Dream Mechanisms. A comparative study of the two sets shows that the translation of one into the other proceeds by quite definite psychological laws, which can be formulated under the heading of four distinct mechanisms. The first of these is called *Condensation*, by which term is indicated the fact that every element of the manifest dream represents several "dream-thoughts" from the latent content, it being thus "over-determined." For instance, a figure in a dream may be constituted by the fusion of traits belonging to more than one person; this may occur either by the fusion of some traits belonging to one person with others belonging to another, or by making prominent the traits common to the two and neglecting those not common (the latter process producing a result analogous to a Galton composite photograph). It is by means of this mechanism that similarity, agreement, or identity (real or wished for) between two elements in the latent content is expressed in the dream: the two simply fuse and form a new unity.

The second distorting mechanism is called *Displacement*. In most dreams it is found after analysis that there is no correspondence between the psychological importance of a given element in the manifest content and that of the associated ones in the latent content. The most prominent emotion in the dream often accompanies elements that represent the least important of the "dream-thoughts," and conversely. A transposition of feeling or psychological intensity has taken place whereby a highly significant idea has become replaced by a previously indifferent and unimportant one (often a casual and hardly noticed impression of the preceding day,

as such impressions from the paucity of their associations lend themselves well to this purpose).

The third mechanism may be called *Dramatization*. Most dreams resemble a theatrical performance, and the mode of representation employed, like all arts, is subject to definite limitations, so that special expedients have to be used to indicate mental processes which cannot be directly portrayed. It is well known, for instance, that most dreams are predominantly visual in character. (This process of expressing in a dream various underlying thoughts in the form of visual pictures Freud terms Regression, wishing to indicate by this the retrograde movement of abstract mental processes towards their primary perceptions; the network of dream-thoughts is thus resolved into its raw material.) Under this heading are also included various devices for the presentation of the logical and grammatical relations between the different "dream-thoughts," relations which find no direct presentation in the manifest content of the dream.

The last of the dream mechanisms, termed *Secondary Elaboration*, differs from the other three in that it arises from the activity of the more conscious mental processes. The process often does not go far, but to it is due whatever degree of ordering, sequence, and consistency there may be found in a dream.

The dream work does absolutely nothing but translate into a usually unintelligible series of hieroglyphs a group of already formed "dream-thoughts." It performs no creative work whatever and no act of thought (judgment, decision, etc.); these, when present, have been taken bodily from the "dream-thoughts" and do not belong to the dream making. It proceeds by methods quite foreign to our waking life, ignoring obvious contradictions, making use of strained analogies, etc., in just the same way as an insane patient does. There is much to say about the *sources* of the material used in the dream-making (as distinct from the "dream-thoughts"). In every dream

there occurs one or more mental processes that have been experienced by the subject in his last waking interval. Hypermnnesia (remarkable memory) for experiences of early childhood, often long forgotten, is a striking feature, and is still more often present in regard to the underlying "dream-thoughts." Sometimes dream material is taken from physical stimuli during sleep, though by no means so often as is generally said. They never afford the explanation of the dream itself, but are merely material used for its structure in the same way as other psychical material.

Significance and Function of Dreams. There next arises the question of the significance and function of the dream, and the nature of the forces that have brought it about. The essence of Freud's theory is his tracing the distortion considered above to the presence of various "repressing" inhibitions that interpose an obstacle to the becoming conscious of certain mental processes; these inhibitions he groups under the name of "censorship." He finds that the "dream-thoughts" of the latent content are always of such a kind as to be unacceptable to consciousness—on aesthetic, social, moral, or similar grounds. The individual is not aware of their existence, because something in him does not want to be; they must, therefore, remain "unconscious." The dream is a distorted and unrecognizable presentation of such thoughts. In sleep, the activity of the censorship is diminished, though never entirely abrogated, and the manifest dream is a compromise between it and the forward urge of the repressed "dream-thoughts." The censorship can be evaded in other ways than through the mechanisms of distortion considered above. For instance, the ideas may remain unchanged, but their meaning is concealed by the feeling being reversed. The forgetting of dreams, which is even commoner than is generally appreciated, is another effect of the censorship; for this reason, the analysis of previously forgotten fragments is specially important, for they always relate to the most repressed of the dream-thoughts.

Dreams never proceed from trifles, but only from thoughts that are of the greatest moment and interest to the subject. Further, the "dream-thoughts" are invariably egocentric. The dreams of very young children are usually logical and consistent, and it is then easy to recognize that they represent the imaginary fulfilment of an ungratified wish; something denied the child by day happens satisfactorily to him by night. Freud maintains that the *latent content* of all dreams, without exception, represents nothing else than the imaginary fulfilment of an ungratified wish, usually in the case of the adult a repressed and unconscious wish. It is probable that behind the manifest content of a dream there always lies an infantile wish. It goes without saying, that among repressed wishes, sexual ones of various kinds play the most prominent part, though not an invariable one. A dream thus represents the imaginary fulfilment of a repressed infantile wish, which has been recently stirred into activity, but which is not allowed to enter consciousness except in a guise that conceals its true meaning.

In conclusion, the *function* of dreams appears to be simply this, to protect sleep by satisfying and stilling the activity of aroused unconscious mental processes that might otherwise disturb it. Maeder, followed in this country by Nicoll, sees other functions in dreams, such as the tentative probing of various solutions of disturbing problems; but this view is certainly based on a confusion on their part between the dream proper and the latent content that underlies it, being often true of the latter. Dreams are the guardian of sleep, and the frequent expression "sleep disturbed by dreams" only means sleep disturbed by unconscious mental activity which the dream-making faculty is endeavouring, often unsuccessfully, to assuage. In the case of a bad dream, from which the subject awakes, the activity of the censorship, which is diminished during sleep, is insufficient to keep from consciousness the unacceptable dream-thoughts, or to compel such distortion of them as would render them

unrecognizable, and recourse has then to be had to the accession of energy that the censorship is capable of exerting in the waking state; metaphorically expressed, the watchman guarding the sleeping household has been overpowered by thieves, and so has to wake it in calling for help.

SECTION XXIV

PSYCHO-ANALYSIS

PSYCHO-ANALYSIS is a therapeutic method that has been developed during the last thirty years by Professor Freud of Vienna. Working in the first instance with Dr. Breuer upon hysterical patients, he found that the recital of their dreams had a marked effect upon the symptoms of these nervous patients. Further experience led him to conclude that dreams and neurotic symptoms had a common origin in the unconscious mind, and that both were disguised fulfilments of repressed wishes of a sexual and infantile character. The analysis of dreams led him repeatedly to the same experiences, upon the uniformity of which he ultimately based his epoch-making theories of neurosis and the unconscious mind. He found that neurotic symptoms can always be traced back to erotic impulses of which the sufferer is unconscious. He falls ill at the moment when he can no longer adapt to the demands of the external world, and the symptoms are surrogates, or the infantile repressed wishes which his conscious personality cannot allow him to express.

The unconscious mind is conceived as all those mental processes of which we are unaware at a given moment. Some of these processes have been in consciousness before, and can easily be brought into consciousness again (the Foreconscious), others cannot be brought into consciousness without some special technique such as psycho-analysis or hypnotism (the Unconscious proper). The unconscious mind owes its existence to *repression* which has taken place in the interests of civilization (phylogenetic origin) throughout the ages. This repression is repeated in the experience of each individual in the course of social education (ontogenetic origin). The function of the unconscious mind in Freud's view is to

wish, so that every evidence of its activity is regarded as an expression of an unconscious wish. It is conceived as surviving unchanged, and intact, in every adult person. Its infantile and primitive character is so incompatible with the civilized personality that he has a great *resistance* or instinctive opposition to allowing its contents to become known to himself. These contents, however, have a dynamic tendency to enter consciousness and appear in the form of phantasies and dreams, neurotic or psychotic symptoms, or in common everyday mistakes, such as absent-minded acts, slips of the tongue or pen. A *Censor of Resistance* is postulated: this is a personification of the repressing forces, which forbids direct expression of the wish, so that this wish can only appear in a distorted symbolic form. The effect or emotion belonging to one idea is displaced on another. (See DREAM ANALYSIS.) This *transference* of emotion from one idea to another is also typical of neurosis, and it becomes the chief mechanism of the analytic cure. In the course of treatment by means of this transference the physician serves as a catalytic for the unconscious infantile sexuality. The tender or hostile feelings which were originally given to the parents as the first love-objects (and which still exist unchanged in the unconscious mind) are now projected on to the physician. Hitherto they were projected on to the symptoms, or to persons in the environment. What is unconscious always tends to be projected. These projections are analysed and made conscious, by which means the *libido* ("psychic energy," Jung; "sexual hunger," Jones), which was formerly unconsciously at the disposal of the infantile sexual phantasies, is now placed at the service of life, or reality itself, and can be *sublimated*, that is, can be applied to a non-sexual or otherwise useful purpose more in harmony with the adult personality.

It is not to be supposed that theories so subversive of our former psychological ideas would be accepted in their entirety without criticism or

modification. The only criticism that has real value must of necessity be based on an intimate contact with the unconscious mind through the method of dream analysis, which we owe to Freud's genius.

Its Development by the Swiss School. The most important developments have been contributed by the Swiss School under the leadership of Dr. C. G. Jung. In his view the unconscious mind is not merely the result of repression. Instead of speaking of the foreconscious and unconscious he divides it into personal and impersonal contents.

The *Personal Unconscious* contains the repressed materials of a personal nature which are valid for the individual alone, and which are the acquisition of the individual life, and comprise the infantile reminiscences. In addition to the repressed materials there are psychic contents not yet ready for consciousness, which arise from new combinations of the existing materials. These have an energetic value which can carry them into consciousness when required.

The *Impersonal or Collective Unconscious* comprises the instincts and "archetypes of apprehension," or intuitions of ideas. "Just as the instincts compel man to a conduct of life which is specifically human, so the archetypes coerce intuition and apprehension to forms specifically human" (Jung). Here the race memories and images are potentially stored as primary propensities and forms of thought and archaic symbols, capable of being stimulated into existence in response to some outer need or inner necessity. This is the myth-making or primitive mind. What belongs to the personal and what to the impersonal unconscious can only be somewhat arbitrarily defined; the latter contents, however, are universal and inherited, and potentially present in everyone. As a result of this formulation Jung no longer refers symbolism to the work of the dream censor, but claims that it arises primordially. The unconscious mind can only think symbolically, that is, by representation. Dream thought is an

older form of thought, and is a process of comprehension by analogy. The dream is compensatory to consciousness, it constellates round the unconscious conflict just as the neurotic symptoms do. It indicates the existence of other standards than the rational ones, and represents points of view repressed from consciousness, or not yet ready for consciousness. Dreams are schemes or planes by means of which the immediate new direction is indicated; they are not to be regarded as prophetic in the popular sense, nor binding for any length of time, but as supplying other points of view which modify and enrich those actually in consciousness. Neurosis, which is a failure in adaptation, shows that the libido is on the path of regression, that is, it is occupied with phantasies which bring about reactions in life of an infantile or inadequate type. Analysis re-establishes a connection between the conscious and unconscious mind, and aims at restoring the libido to conscious control by detaching it from the phantasies, and thus making it available for a reconstructed life. The new synthesis is a resultant of the conscious and unconscious psychological processes at any given moment.

Psycho-analysis trains its students to bring conscious evaluation to bear upon unconscious thinking, and lays open the psycho-sexual motivations of conduct. Its future does not belong exclusively to the medical profession, but has a marked bearing on pedagogy and education. What is needed by physicians and teachers alike is a deeper psychological insight founded upon an appreciation of the enormous part played in life by unconscious emotional factors.

SECTION XXV

SOCIAL PSYCHOLOGY

SOCIAL Psychology may be provisionally described as the scientific investigation of the psychic elements involved in the causation of social phenomena. This description does not serve to define at all accurately the province of social psychology; but it affords a provisional starting point from which we may reach an adequate conception of the general aim of the subject and its relation to sociology. The social psychologist is concerned primarily with the examination of the processes of mind, and of the results of those processes, as affecting the psychic equipment of the individual. But his conclusions are only important or significant in relation to those manifestations of mind which usually involve reactions of one individual upon others; in other words, his inquiry is naturally connected with conduct, and cannot properly be separated from the investigation of conduct as conditioned by mental causes. But conduct is not only *a* social phenomenon: it may be rightly called *the* universal social phenomenon. No change of importance occurs in social life which does not involve conduct, and all conduct has its mental causes and effects, whether conscious or unconscious. Consequently the psychologist, when he passes beyond the investigation of the processes of mind to the significance of those processes, becomes a social psychologist, whose business it is to make clear the psychic conditions operative in all social behaviour.

The Relation of Sociology to Social Psychology.

So far, his field is seen to be co-extensive with that of the sociologist. It is, indeed, even wider, if the field of sociology is limited to the changes of structure in social life, or of those elements which are more or less stable, such as institutions, customs,

traditions, and so on. For social behaviour has, and can have, no such limitations; it is involved in every change, whether important or unimportant; and the mental forces are operative equally, whether the resulting effects are stable or quite transitory. Mental states and their determining conditions are certainly involved as important causal factors whenever laws are made, or marriage customs or ordinances are developed, or a military system comes into being—these are examples of changes in stable structure; but mental causes are equally involved, and are equally necessary to a full explanation, whenever a member of society initiates any individual activity, whether important or trivial. That is to say, the psychic factors must be taken into account alike in the large group movements, in which sociology is particularly interested, and in the infinity of minute changes which are taking place moment by moment within the groups.

But the psychic factors concerned are clearly only a part of the sum of causal elements which determine any social event. Many others, such as the environmental factors—geographic or economic—are equally important or even of prior importance in so far as they are themselves sometimes responsible for the mental processes and states which the psychologist finds operative as causes. And since the sociologist is bound to take into account the whole causation of the social phenomena which he investigates, it is clear that his subject-matter possesses a deeper *content* than that of the social psychologist, though its extent may be actually narrower. In other words, although the field of inquiry belonging to the social psychologist is at least as wide as, and perhaps wider than, that of the sociologist, the latter is concerned with a much fuller content within that field. He examines *all* aspects of causation, while the social psychologist attends only to one, namely, the psychic or mental.

In relation to the sociologist, therefore, the social psychologist is one among several social specialists, providing *data* for the sociologist, which the latter,

in turn, combines and correlates with the *data* provided by other specialists in order to reach a full explanation of any department of social causation.

Scope of Inquiry of the Social Psychologist. But when we turn to the questions—What is the nature of the *data* furnished by the social psychologist, and by what methods does he obtain them?—we are met by a difficulty due to the different claims put forward by various exponents of the subject. We are probably on safe ground when we assert that the *data* must consist primarily of direct inferences from the ascertained facts of individual psychology. The psychologist proper is able to lay bare the normal mental equipment of individuals of both sexes and at different age periods, and the frequency and causes of many abnormal variations of such equipment. Passing from this knowledge to its social applications, he should be able to demonstrate the effects of such normal or abnormal behaviour in the different relationships of life. That is to say, his aim should be to demonstrate how certain conditions of feeling and thought produce those attractions and repulsions, those sentiments, desires and attitudes, which cause not only the cohesions and antagonisms revealed in social life, but also the form and stability of institutions, and the aims and purposes of social effort. The explanation of social habit and social character will be largely in his hands; as will be the explanation of the great and small changes in the relations and activities of the social members. His starting point is the mental equipment of the individual, both normal and abnormal; his method is the inductive and deductive examination of the effects of this equipment in socializing individuals; in providing the cohesive tissue of groups; in determining and modifying the forms of relationships; in predisposing men and women for different kinds of institutions; and in affecting their detailed behaviour in connection with the different groups, relations, and institutions.

It is, therefore, needless to ask whether the aid of the social psychologist is indispensable to the

sociologist. Without it, it is impossible to explain at all how human beings have become socialized, and how they have become, or can become, moralized. Without it, further, nothing but a one-sided explanation is possible of the diverse forms of social structure and of the varieties of social and moral institutions; and, if inquiry is to be pushed in detail into the complex field of social progress, social psychology still takes rank as one at least of the auxiliary social sciences. Other specialists may claim a greater importance (there is no need here to balance claim against claim); but if the indispensable character of social psychology is sometimes ignored, this is due to preoccupation with other special elements of social causation—and perhaps, too, to the unfortunate fact that the early founders of sociology, including Auguste Comte, were not in a position to appreciate the science of psychology at its true value.

Collective Psychology. But the claim made by some social psychologists is rather different. It is urged with good reason that associated life itself produces psychic phenomena of an altogether unique kind. Owing to the fact of association, modes of feeling are generated and transformations of thought take place which must be regarded as specific psychic phenomena, and the investigation of these will form the true work of social psychology. This claim is sometimes expressed by contending that there is such a thing as a social mind, just as there are undoubtedly individual minds; and that the operations of the social mind form the proper study of the social psychologist. And, as the phenomena connected with the social mind only come into existence when individual minds are in contact in social groups, the entire subject begins after the work of the individual psychologist is completed. It must, therefore, form a special study largely independent of psychology as ordinarily understood.

Now, without denying the assertion that peculiar mental phenomena are generated by the effects of association, we must be content to point out that

the attempts to make this the basis of a really scientific inquiry have hitherto been disappointing. There has been much speculation concerning the mind of a crowd and concerning the soul of a people; but it has been mere speculation, and often patently biased speculation. There has also been some quasi-scientific investigation into the laws of imitation and opposition of ideas in social groups; but this also has been rather suggestive than convincing. On the whole, the wisest course at present is to separate this aspect of the subject from social psychology, to distinguish it from the latter by the name "collective psychology," and to regard it as a much more speculative and dangerous department of the subject. (See also CLASS, THE PSYCHOLOGY OF THE.) E. J. U.

References—

- ELLWOOD, C. A. *Psychological Aspects of Sociology* (New York).
McDOUGALL, W. *Social Psychology*.
ROSS, E. A. *Social Psychology* (New York).
TARDE, G. *Les Lois de l'imitation* (Paris).
WALLAS, GRAHAM. *The Great Society*.
WOODWORTH, R. S. *Dynamic Psychology*.

SECTION XXVI

**THE RELATIONS OF ANALYTIC AND
GENETIC TO GENERAL PSYCHOLOGY**

THE characteristic of all science is that it deals with relations that hold true universally. Yet psychology can start only from the individual mental life, for that only is open to immediate observation. Here, then, is the problem of general psychology—to set forth what is normal in the psychical life of man, to distinguish what belongs universally to that life from merely personal peculiarities. This implies that the first step in psychology—as in every other sphere of investigation—is analytic; the attempt to distinguish and hold apart in thought features which in actual experience are found only in complexes. By comparison of experience with experience, whether in the life of one observer or in the lives of several, what is common to them can be marked and named, and so given a kind of quasi-independence for thought.

Life being immediately known as activity, the first analyses were functional. So arose Plato's distinctions of three fundamental springs of conduct, and Aristotle's more elaborate classification of the aspects of life under five faculties, a modification of which was the traditional map of psychical life during many centuries. The object sought, however, was not so much to gain a detailed knowledge of the ever-changing phenomena of psychical life as to determine the nature of that life. With the development of natural science came a change in the conception of knowledge. The importance attached to facts enormously increased, and the theory of the universality of law gathered strength. When these conceptions were applied to the psychical life, the content of consciousness became the centre of interest, and speculation saw

as its task the discovery of universal relations constituting the machinery by which that varied and varying content is bound into a whole. The ideal both of result and of method was naturally sought in the physical sciences. So the aim was to find the limits of analysis in elements which could not be decomposed, and in relations which could not be simplified. The results found were sensations and the law of association of ideas. Much of the analysis was of permanent value. But it had inherent defects. It was limited to the intellectual contents of consciousness; emotion and volition could not be thus examined, for contemplation of these modifies them. They were, consequently, accounted for as secondary products of the play of the intellectual elements. Nor was this merely an omission of part of the field which analysis sets out to survey. It was based on, and strengthened, the theory that psychical phenomena are of the same nature as physical phenomena, and are explicable by the same logical presuppositions. It resulted that the matter yielded by the analysis as the raw material to be synthesized in life was only a portion, or rather an aspect, of the reality. It resulted, too, that the attempted synthesis by formal processes was wholly artificial, and that the mechanical product was very different from the real life known by each one in the very act of living. Mechanism can never give a satisfactory explanation, or even an adequate description, of life, simply because life is the very thing it omits while it laboriously arranges life's products.

Genetic Psychology. The influence of evolution gradually brought this home to psychologists. The field for analysis was seen to be indefinitely enlarged beyond the individual consciousness, which alone is open to introspective analysis. Further, life in all its manifestations was recognized as an operative force, gradually working its way towards more perfect adaptation to its function in the world. No study of it could thereafter be regarded as adequate which dealt simply with a cross-section of it, cut through the stream of development at a moment determined by the convenience of the

observer. The problem was no longer a mechanical one of explaining an existing piece of machinery, but an evolutionary one of tracing the development of a form of life. So arose genetic psychology, which sets itself this task. Its material is vast, for the new conception shows the individual mind inseparable from the common psychical life of the community and inexplicable apart from it. Thus, it is not simply the gradual growth to maturity of the individual human being that has to be traced, but also the development of the common mind; and that involves careful observation of mankind at various stages of civilization in the present, and the study of the products of man's psychical life in the past. Everything that man has left which bears the impress of his mind—his art, his laws, his literature, his religion, his records of his deeds—all is material full of testimony to his mental growth if only the records can be interpreted. Consequently, genetic psychology cannot be isolated from social psychology, for the psychical life it has to follow is at once social and individual.

Nor is it independent of analytic psychology. But, that each may be profitable to that general psychology of which we are in search, the results of analytic psychology must be recognized as mere abstractions, whose separation from each other exists only for thought. The error of the traditional psychology was to confuse logical complexity with psychical development. So, sensation, perception, conception, judgment, inference, were supposed to appear in life just in that order, and until any one of them appeared in clear consciousness it was denied existence. Under this conception, genetic psychology would aim at noting the first distinct appearance of each "higher" mode of thinking. But such a genetic psychology would be as abstract as the analysis from which it starts. In actual psychical life, every mode of mental activity is always present, and is implicit or explicit according to the direction of attention. The task of genetic psychology is not to trace how a fragment of psychical life receives fragmentary additions till a

complete life is formed, but to see how a life complete from the first becomes progressively aware of modes of dealing with its world which it implicitly uses in practice from the beginning.

References—

- BERGSON, H. *Essai sur les données immédiates de la conscience*, tr. by F. L. Pogson under title *Time and Freewill* (Paris). *L'évolution créatrice* (Paris), tr. by A. Mitchell under title *Creative Evolution*.
- JAMES, W. *Principles of Psychology*. Two Vols.
- LUQUET, G. H. *Idées générales de psychologie* (Paris).
- MITCHELL, W. *Structure and Growth of Mind*.
- STOUT, G. F. *A Manual of Psychology*.
- WARD, J. *Principles of Psychology*.
- WELTON, J. *The Psychology of Education*.



YA 06159

12103
194
501412

UNIVERSITY OF CALIFORNIA LIBRARY

