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A TEXT-BOOK OF HUMAN PSYCHOLOGY

A text-book of HUMAN PSYCHOLOGY

by

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With a Foreword by
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With Diagrams

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TO

T. G. AND J. M. McKELLAR

FROM A GRATEFUL SON

To understand a thing rightly we need to see it both out of its environment and in it, and to have acquaintance with the whole range of its variations.

WILLIAM JAMES

Man is at bottom a savage, horrible beast. We know it if only in the business of restraining him which we call civilization.

SCHOPENHAUER

There is one spectacle grander than the sea; that is the sky. There is one spectacle grander than the sky; that is the interior of the human soul.

BALZAC

Foreword

Introductions' to psychology are numerous and many of them good. It is when the student or general reader wants to take the next step in the acquaintance that difficulties arise. Too often the second step has to be a leap across the gulf which separates an introductory text-book from close and specialised studies of particular problems. Books such as this by Dr. McKellar, giving what is still a comprehensive view of the subject but working at a more advanced level than the usual introduction, are rare and much needed.

Dr. McKellar is largely indebted, as we all must be, to the vast amount of psychological work carried out in America during the last thirty years or so, not merely experimental work but psychological thinking as well. While he draws on this great stream, however, he also makes use of two further tributaries. One is the work of the psychoanalytic schools whose contributions have been more and more assimilated to general theory by the present generation of psychologists. Their influence is to be seen in much more of the book than the chapter devoted to them; and it takes its place as one among the many influences that affect the outlook of the scientifically trained psychologist at the present time. The second tributary is the rather intangible but very important 'English tradition' in psychology, the tradition that includes Ward and Stout, Shand and McDougall, Myers and Rivers. In their clear recognition of basic problems and their readiness to wrestle with them, these psychologists—and the colleagues and students among whom they worked—created a framework of thinking to which it is often profitable to refer back. Dr. McKellar's attention to Shand is an instance.

Wide knowledge and full appreciation of recent developments without loss of contact with what went before is characteristic of Dr. McKellar's work. Such a treatment of the subject helps to lessen the waste that often occurs, in a science choked with too much writing, through the overlooking of early work and the pain-

staking reformulation of old principles in new and more cumbrous terminology. It is a great satisfaction to me that a book of this kind should be available, and that it should have been written by a psychologist who has the advantage of combining experience both in applied psychology in the atmosphere of the wartime fighting services and in the presentation of psychology as a scientific discipline at the university level.

D. W. HARDING

Bedford College,
University of London

Preface

This book is addressed to the reader with more than a passing interest in the science that forms its subject-matter. The general emphasis is upon normal, adult human psychology, but references to other branches of the subject have not been excluded where relevant to the central theme. While it is hoped that the book will be of interest to the general reader and the first-year student, some knowledge of elementary psychology has been assumed. It has been my experience as a university teacher that it is not always easy for the student to relate knowledge in one branch of psychology to what is known in other branches. Moreover psychology itself faces the task of forging theoretical relations between its more developed branches like perception and intelligence and those less developed such as personality and emotion. One of my aims has been to assist such integration by emphasizing interrelations as much as possible while preserving a relatively traditional division of subject-matter. An introductory paragraph precedes each chapter and is designed to place the content of the chapter within the wider perspective of the subject as a whole.

A second aim has been to encourage research, and I have not hesitated to suggest points of departure for original investigation which may interest the student either immediately or at a later date. Reference is made to the various 'schools' of psychology. Towards these I have adopted an eclectic position, holding that much inter-school controversy belongs to the past rather than the present, but it is also my conviction that among individual theorists Freud, Pavlov and Clark Hull, and among movements gestalt psychology and psychoanalysis, have made substantial contributions that are worthy of special attention in any balanced account of modern psychology as it exists to-day.

This book does not attempt to cover the complete syllabus of an advanced course in psychology since it is desirable for the advanced student to proceed to original sources as far as possible, but is intended for use in connection with such a course, and it is hoped that it will stimulate such further reading.

I have to thank all those, my teachers, students and colleagues, who have developed and guided my own interests in psychological science. In particular I am indebted to those who have been my teachers: Professor Sir Cyril Burt, Mr H. H. Ferguson, Professor J. N. Findlay, Dr W. R. Geddes and Dr C. F. Wrigley. My colleagues at the time of writing, Messrs D. E. Berlyne, R. C. MacLean, M. Sweeney and Dr J. Uytman, have made many valuable suggestions and constructive criticisms. I am specifically indebted to Dr Ilse Hellman and my former colleague, Miss Sylvia Shimmin, whose ideas have greatly influenced my own in relation to the psychology of the higher thought processes, and I owe a similar debt to my former colleague Mr D. E. Berlyne in connection with the psychology of learning. I wish to thank those who have given permission for the reproduction of diagrams and other material and have made specific acknowledgment at appropriate places.

Professor D. W. Harding of Bedford College, London, first suggested the need for a book of this kind, and myself as a possible author. Although I alone am responsible for the inadequacies of this text, I am greatly indebted to him for this initial encouragement, his interest and the Foreword he has very kindly contributed.

P. McK.

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CHAPTER I

The Scientific Study of Human Behaviour

Human psychology deals with experience, studied by introspection, and behaviour, studied by more 'objective' methods. Its concern is with prediction and with cause and effect rather than with values; it is a positive and not a normative study. Historical origins of psychology are to be found, like those of many other sciences, in philosophy, and the subject is still far from freed of problems which belong more properly to its parent than to itself. Methods of the psychologist include experiment, mental testing, and controlled observation. These do not necessarily exclude introspection. Psychologists as a whole would now admit 'experience' (or 'verbal report') to be a legitimate part of the subject-matter of their science. Nevertheless modern psychology prefers objective to introspective data and is no longer preoccupied with the analysis of consciousness into its 'elements'. This change of emphasis will be considered briefly. We shall then turn to modern psychology, its postulates and methods, and the kind of conclusions which it asserts.

Psychology is an old, not a new branch of human inquiry. In the course of a long history which extends to Plato, Aristotle and the 'fragments' which remain of pre-Socratic writings, it has altered much. Subject-matter, methods and points of emphasis have all undergone considerable change and development. *Experimental* psychology arose very largely out of experimental physiology. Our account of the modern period of psychology begins with its development as a laboratory subject under the influence of William James (1842–1910), Wilhelm Wundt (1832–1920), and Wundt's numerous and distinguished students. Before the establishment of Wundt's laboratory in 1879 James had set aside a small room in Harvard University for psychological experiments. But it was the work which grew out of the intense activity of Wundt's laboratory that marked the beginning of a new period, and contributed substantially to the emancipation of the subject from its

parent, philosophy. The early experimentalists who assisted at this emancipation were called the 'new psychologists'. They were later to become the 'old psychologists', the traditionalists against whom a number of movements or 'schools' of psychology rebelled.

1. Development of Modern Psychology

The modern science of psychology can be identified neither with the (now old) 'new psychology', nor with any one of the systems of thought which reacted against it. Much that is valuable has remained both of the Wundtian psychology and of the often extremely necessary modifications of it suggested by later workers. For Wundt psychology was a subject concerned with 'the facts of consciousness, its combinations and relations'.[1] William James quoted and accepted Ladd's earlier definition of psychology as 'the description and explanation of states of consciousness as such'.[2] Today the subject-matter is different. This difference is the result of subsequent influences which we shall attempt to summarize. On the basis of the work of Wundt psychology has remained an experimental science, but a science which has become something other than the description and explanation of consciousness.

First, there was a marked difference between the weighty theoretical formulations of Wundt and the brilliant but unsystematized contributions of Sir Francis Galton (1822–1911). Again, Wundt himself and many of his students were primarily interested in mind and consciousness in general; Galton was largely concerned with the investigation of individual differences. If Wundt was the 'father of experimental psychology', Galton was the 'father of mental measurement'. Galton was, moreover, the author of the questionnaire technique, the word-association test, and the statistical concept, later to be called the 'coefficient of correlation'. Galton enlarged the subject-matter of psychology to include the measurement of individual differences, and laid the foundation of another empirical technique, mental testing.

Secondly, from medical science emerged a method of treatment and a body of theory which made it apparent that psychology could not continue to remain the 'study of consciousness'. Psychoanalysis was not, in its early period, an attack upon the academic psychology of the day, which was treated by Freud as merely ir-

[1] Wundt, trans. 1912, p. 1. [2] James, 1892, p. 1.

relevant to the realistic study of human beings, their motives and their problems. Psychoanalysis was more than a mere method of treatment; it was in effect a new science, later to become a part of psychology. The greatest psychologist of the modern period, Sigmund Freud (1856–1939), was, in the opinion of one of his closest colleagues, Reik, primarily a scientist and only secondarily a physician and a therapist. Despite his practical interest in the relief of mental disorders, the writings of Freud show unmistakably a primary concern with the formulation of laws of mental life, and the construction of a system of human knowledge upon empirical foundations. Differences between Freud's thoroughgoing interest in cause and effect and the more practical therapeutic aims of Alfred Adler are well brought out in Woodworth's discussion (1931) of the two movements. Freud's empiricism was clinical rather than experimental or psychometric; we are today witnessing a profitable application of the two other methods to the hypotheses of psychoanalytic theory. With psychoanalysis and the other systems of 'depth psychology' that arose from it came again a change of emphasis. The depth psychologist refused to regard consciousness as the whole, or even the most important, part of mental life. Psychology gained a new impetus, a closer relevance to real life, and a new enlargement of subject-matter.

Thirdly, the publication of McDougall's *Introduction to Social Psychology* (1908) resulted in further changes. William McDougall (1871–1938) exercised, in some respects, an influence similar to that of Freud. Although McDougall himself used introspection most effectively, the mere analysis of consciousness into its elements was to him a sterile study. Traditional psychology provided nothing that would assist the social sciences to explain human behaviour and its determinants. Economist, historian and sociologist turned to the psychologist in vain, and were left to contribute *ad hoc* theories of their own about human motivation.[1] What McDougall did provide as a contribution of lasting importance was the emphasis that an adequate theory of motivation must be a central part of psychology. His own theory of motivation was a twofold one, in terms of instincts and sentiments. 'Instinct' has been a far from acceptable concept for many psychologists. Yet the attack which the doctrine of instincts provoked has obscured, par-

[1] Such theories were to McDougall 'hasty, incomplete, and misleading, if not absolutely false, assumptions as to the human mind' (1908, p. 12).

ticularly in the United States, the importance of the second concept of 'sentiment'. This was derived from the earlier thought of Alexander F. Shand (1858–1938), first reported in an article in *Mind*.[1] Shand's main work (1914) somewhat unfortunately appeared at a later date than McDougall's book of 1908. While McDougall made acknowledgment of Shand's concept and theories, a result of these historical circumstances has been a linking of the concepts of sentiment and instinct. Between the two there is no necessary logical connection. McDougall's theory of motivation has not been acceptable to psychologists generally, yet his critics have sometimes done less than justice to the importance of the emphasis upon motivation that McDougall imparted to subsequent psychology, and the developments that arose from this emphasis.

Fourthly, the early experimentalists carried with their objectivity and laboratory methods an atomism: a search for mental elements such as sensations and ideas. This atomism is illustrated in the theory of emotion associated with the name of James (and of Lange and Sergi). It is seen in Wundt's own 'tri-dimensional theory' of emotion and in the introspectionist experiments of the Würzburg school, under the direction of Oswald Külpe (1862–1916). While such an atomism was perhaps suited to physical science, in which Wundt was also interested, it was not entirely appropriate to the study of human experience. A new experimental movement arose with Max Wertheimer (1880–1943) and his students Koffka and Köhler. These men as leaders of the 'gestalt' school opposed what Koffka (1935) somewhat scornfully designated as 'brick-and-mortar psychologizing'. The outstanding contribution of the gestalt school was a theory of perception which embraced laws: these principles have probable relevance to other fields also. Many who would not have classified themselves as adherents of the school came under its influence; always that influence was one contrary to atomism in psychology. Among the early leaders of the school was Lewin, who did much in the later period of his life to introduce sound experimental method into social psychology.

Fifthly, the unduly narrow conception of psychology as the science of experience and consciousness gave rise to a different kind of revolt. This assumed a vigorous character in the writings of J. B. Watson under the title of 'behaviourism'. While McDougall was opposed to Watson's more extreme views his influence was similar

[1] Shand, 1896.

to that of Watson; he, too, emphasized that psychology must embrace the study of *behaviour*. Early experimental psychology was itself 'objective' in the sense in which the work of the philosopher-psychologist was not. Nevertheless its experiments were often of a kind which involved introspective analysis. Subject-matter tended to be further restricted to analysis of the consciousness of trained introspectionists. Watson and others less extreme favoured experimentation of an objective kind, and a subject-matter of 'behaviour' rather than of 'experience'. It is easy to criticize the excesses of early behaviourism, yet the movement resulted in valuable contributions, experimental, theoretical and methodological. The 'purposive behaviourism' of Tolman (1932) and the 'behaviour theory' of Hull (1943) are widely different from 'behaviourism' (Watson).[1] Yet these contemporary developments owe more to behaviourism (Watson) than to most psychologists. Watsonian behaviourism is today of little more than historical interest. Most psychologists have by now accepted the behaviourist position to a large extent, though few would today call themselves 'behaviourists'. A preference for objectively-observable data over the introspective has been grounded, and securely grounded, in the tradition of the subject. With 'behaviourism' (Watson, and others less extreme), came a new definition of psychology: 'the study of behaviour'. For the more cautious it became 'the study of experience and behaviour'. Behaviourism led to a further widening of the subject-matter of psychology. It could never again become, for the majority of its students, merely the study of consciousness.

2. Modern Psychology and its Scope

Modern psychology is neither one nor other of the former 'schools', nor the 'new psychology' against which they, for very good reasons, rebelled. Undesirable rigidities are breaking down and there is much profitable interaction between the contemporary derivatives of these movements. Examples may be taken of such interaction.

McDougall was led to reject much of the thought of 'behaviourism' (Watson) because of the phenomenon of 'purpose', which now

[1] Maslow's useful suggestion (1945) of appending the name of the user of a term to that term is adopted in cases of possible ambiguity. Brackets have been used. Thus 'instinct (Watson)' has a different meaning from 'instinct (McDougall)'.

has an important place in the 'behaviourism' of Tolman. Affinities between Tolman himself and the gestaltist Lewin have been close. Neo-behaviourists and neo-gestaltists have found much common ground in the movement of 'operationism'. Thurstone has brought psychometric methods to bear upon gestalt theories of perception. Among others Rosenzweig has applied mental tests, and Sears laboratory methods, to the study of psychoanalytic theories and concepts. At an earlier date Pavlov attempted a laboratory study of the process of psychoanalysis itself, using the methods of reflexology (see Chapter VI). Finally, Hull's 'behaviour theory' shows less obvious but important debts to Freudian thought (see Chapter VII).

Much has been done in recent times to translate the too rigid concepts and terminologies of particular schools into those of others once strongly opposed. Able men representing the derivatives of what appeared earlier as incompatible movements are now learning a very great deal from one another. This is encouraging evidence of the development of our science. Its subject-matter includes behaviour and experience (to the neo-behaviourist the latter is 'verbal report'). Motivation as a problem is no longer largely ignored. Accepted methods include experiment, psychometrics, introspection, associative and projective techniques, interviewing and various methods of observation. Over-atomistic tendencies of earlier psychological thought have been largely removed. Points of emphasis more appropriate to philosophy and experimental physiology (out of which modern psychology arose) are being slowly corrected.

In the light of these facts a provisional definition of psychology, as it is today, may be formulated. This contrasts in ways which will now be understandable with the definitions of James and Wundt.

Psychology is the science which deals with behaviour and its motivation, and with experience.

As is intended, this definition implies that the theory of motivation is central to the subject-matter with which the modern psychologist is concerned. Psychology deals with behaviour occurring in an environment, with the motives which determine behaviour and the introspectively-observable processes that accompany behaviour and motivation. One important frontier of psychology is with anthropology, sociology and geography, which study the environ-

ment, social or material, in which behaviour takes place. The second important frontier is with neuro-physiology. Psychological processes, whether innate or acquired, involve a nervous system. As Hebb (1949) has put it, psychology and neuro-physiology 'chart the same bay', though each has a different point of original reference. Psychology deals with behaviour while neuro-physiology deals with the nervous system; there is a neurological accompaniment of any form of behaviour. Events observed as processes within the organism ('molecular phenomena') are the concern of physiological science; observed as the behaviour of an organism within an environment ('molar phenomena'), the corresponding happenings comprise the subject-matter of psychology.

3. Psychology as Science

It has been asserted that psychology is a science. Those who regard science as defined by method rather than by content and subject-matter will not seriously question this assertion. Members of the British Psychological Society, the American Psychological Association and similar bodies are scientists and are distinguished as such by the methods they use. More interesting issues are raised if a reply is attempted to those who would assert, despite this fact, that psychology is not a science. Such critics may argue that a science is a body of laws and other principles which enable predictions to be made and that psychology has not reached such a stage of development. If the criterion of science is held to be achievement rather than method, our assertion must be defended at somewhat greater length.

It is widely believed by the layman that scientific knowledge involves certainty. This presupposition is consistent neither with the attitude towards subject-matter which we regard as 'scientific', nor with the analysis of the nature of science contributed by the philosopher. Science involves reasoning from the particular to the general on the basis of what is observed. As has been shown by Hume, certainty cannot be attained by such inductive reasoning. Neither psychology nor any other science can maintain its conclusions with certainty but only with probability. When probability is low the term 'hypothesis' is used, when probability is high we speak of a 'scientific law'. Between hypothesis and law is a quantitative and not a qualitative difference, since scientific probability

invariably falls short of certainty. This is the case for, among others, two somewhat interrelated reasons.

First, *it is not possible to test all cases.* A chemist who asserts that the mixing of sulphuric acid and the metal zinc will result in the formation of zinc sulphate and hydrogen can only make this assertion as a probability. He cannot mix all possible samples of the two substances. The assertion is made, nevertheless, with a high degree of probability since on every previous occasion on which the experiment has taken place the effect has presumably occurred. The psychologist who wishes to investigate, for example, the perception of some illusion is in an essentially similar position to the chemist. Again an assertion may be made, in this case with a lesser degree of probability since individuals may vary in their perception of the illusion. The difference between the conclusions of the chemist and those of the psychologist is one of degree, not of kind. Such differences arise from the greater complexity and variability of the subject-matter of psychology. There has also been a lesser amount of repetitive experimentation.[1]

A second reason why scientific conclusions are only probable and never certain raises interesting problems of method. *It is not possible to investigate every hypothesis that will explain a given phenomenon.* This follows from the fact that the number of possible hypotheses is infinite. Some hypotheses may appear highly improbable. Yet when these are excluded there may remain quite a substantial number of plausible alternatives. We may take as an illustration of this problem a very simple occurrence requiring an explanation.

While preparing this chapter the writer, in a short break from his work, walked to another part of the house. On a chair in the corner of the room he perceived a baby's toy. The task of illustrating this argument led to a train of thoughts. Various hypotheses as to how the toy had reached this place suggested themselves. The first explanation was that it had been put there by his small daughter. This was rejected on the ground that the toy was out of the reach of an infant not yet walking. Perhaps she had thrown it, but this was unlikely, and an a-typical form of behaviour. Perhaps

[1] Chemical experiments have been so often repeated that the names of original investigators cease to appear. We do not hear that 'according to' Lavoisier, Boyle or Paracelsus, such and such a change occurs. The reverse is the case in psychology, and is suggestive of what Harding has urged is needed, more *repetition* of experiments. (*Personal communication*, 1949.)

his wife had put it there, perhaps another adult, possible an intruder who had entered the house? He might have put it there himself and forgotten his action? More speculative hypotheses suggested themselves. The object might be an eidetic image, or an hallucination (experiments have shown that normal individuals can mistake a mental image for a perception). Then followed a series of highly improbable hypotheses, such as might have been considered in an earlier age or a more primitive area of culture. These included the possibility that the object had been placed there by one of the numerous ghosts 'believed' to haunt the town where the incident occurred.

Even in the case of a simple effect, the presence of an object in a chair, the number of explanations is *infinite*. The research worker faces a situation not so different from the one illustrated. To explain a given phenomenon he will consider alternative hypotheses, exclude the improbable ones, and proceed to investigate the plausible alternatives. If no observable consequences follow from the truth or otherwise of an hypothesis, it must be rejected. It is rejected as—if not 'meaningless'—at least not the kind of hypothesis with which science is concerned. Berkeley's philosophical theory of subjective idealism is a good example of this kind of hypothesis. There is no observable consequence in terms of which the hypothesis *can* be tested. As a result there is no reason to prefer the hypothesis to any one of an infinite number of alternative unverifiable (and unfalsifiable) hypotheses which human thought or imagination may choose to formulate. The scientist excludes such hypotheses, and investigates only those that are verifiable. If his inquiry is successful he will be left with one which resists his attempts to falsify it; this is accepted, provisionally, as the most probable. If the phenomenon studied is an important one the task of stating and testing all plausible alternative hypotheses may be a collective rather than an individual one. The end result is the same in either case, since alternative hypotheses not thought of and not tested by the original investigator will in time be thought of by his critics, and eventually confirmed or excluded by other research workers.

This method of viewing scientific research is widely employed. It has certain advantages over more unsystematic procedures as a guide to good work and a safeguard against acceptance of the 'theory' which happens to fit the facts. As we have seen, there are many such theories, but the investigator who has falsified all alter-

native hypotheses which seem at all probable is obviously in a better position to answer his critics than one who has not done so. To the suggested alternative explanation he can reply that he *has* considered it but was able to falsify it by experiment. Again it may be emphasized that the hypothesis finally accepted is only the most probable, and is not certainty. Further research may reveal additional phenomena which will necessitate reformulation to eliminate inconsistencies, and the checking of new alternative hypotheses.

The illustrative example taken included both naturalistic and supernatural hypotheses. Science prefers explanations of the former type, but this was not always the case. John Lange, a physician (1485–1565), was called to perform an autopsy upon a deceased patient. The autopsy revealed the presence in the stomach of a piece of wood, four knives, two lumps of iron and a bunch of hair. The doctor concluded that these objects had been placed in the stomach by the magical practices of a malevolent sorcerer! (Zilboorg 1941.)

In terms of the beliefs of the time such a conclusion was a 'natural' and 'commonsense' one. The hypothesis accepted would not even have occurred to a modern physician. There remain the various alternatives which Lange's modern colleague might advance and which do not appear to have occurred to Lange. An 'obvious' explanation may not be the correct one. What is and what is not 'obvious' among hypotheses is relative to a society and an age, and to the presence or absence of specialized knowledge. (See Chapter VII, p. 164.)

A second example may be taken. A few years ago the present writer and a companion paid a visit to Ireland. In the course of one day they experienced a very large number of misfortunes. The companion jokingly explained these as due to the malevolent activities of leprechauns or 'little people', but in more serious moments attributed them to chance. The writer preferred the alternative explanation of a psychoanalytic kind, that they had unconsciously brought these misfortunes upon themselves.

The validity or otherwise of the three hypotheses is unimportant; what is important is the way they reflect the habits of thought of the persons concerned. An Irish peasant from the nearby countryside might well have advanced the leprechaun hypothesis as an 'obvious' explanation. The chance hypothesis seemed to the

writer's companion the most 'commonsense'. The writer's professional interests and acquaintance with psychoanalysis contributed a third, to him likelier, hypothesis. This was one which would certainly not have occurred to an Irish peasant, and probably not to his companion. Finally, the lighthearted leprechaun explanation might not have been suggested had the incidents occurred in some country other than Ireland. Science attempts to establish hypotheses which are independent of such personal, cultural and situational influences. Civilized and sophisticated modern man is also limited by standards of judgment and thought based upon his observations, his thinking and his reading. What seem to him obvious and commonsense hypotheses may not stand the test of experimental investigation.

In a piece of research work some of the hypotheses most worthy of testing may not suggest themselves at the outset but rather during the experiments themselves after more detailed acquaintance with the subject-matter. This can, to some extent, be minimized by the best preliminary to any investigation, a thorough analysis of what is already known. Such an analysis may assist in eliminating unnecessary experiments. It also ensures that the investigator is acquainted with at least some of the more important and less obvious alternatives to the hypotheses which have occurred to him personally. Consideration of the scientific status of psychology has raised interesting problems of method and experimental procedure. We have indicated that the difference between hypothesis and scientific law is one of degree of probability and that neither are matters of certainty. Viewed in this way the question of whether our subject is, or is not, a science assumes a different aspect. Psychology has many hypotheses, and certain alleged laws. The question is whether these are of sufficient probability-value to justify the title of 'science' for the subject as a whole. In the following pages we shall attempt to support the contention that psychology is a science which has such laws, laws which fulfil in the field of human behaviour the same function as the laws of sciences relating to other phenomena.

4. Choice of Hypotheses

The previous section has outlined a method more rigorous than mere observation and generalization. *Research is better regarded as*

a task of attempted falsification of plausible alternatives to the investigator's own hypothesis. The method is widely used as a guide to good experimentation. In employing it the investigator will be concerned with two kinds of probability:

(1) *A priori probability.* In the examples taken it was decided that supernatural hypotheses were less likely than naturalistic ones. Such a judgment rests, or should rest, on something more than the mere prejudice of the investigator. Other things being equal, an hypothesis has initial likelihood to the extent of its compatibility with what has already been ascertained by science. Science does not favour supernatural explanations of simple occurrences, if these can be explained in other ways. The investigator prefers hypotheses compatible with existing scientific theory. To illustrate, Jung has advanced the view that there is a 'racial unconscious', and that similarities of myths and dreams from different areas of the world are to be explained on that basis. That this hypothesis is correct is initially improbable, since it involves the assumption that acquired characteristics can be inherited. The evidence of biology is on the whole contrary to this, the so-called 'Lamarckian hypothesis'. But scientific convention has its possible limitations, particularly in human psychology. For example, many of the hypotheses of Freud were far from being the simplest possible explanations, though they are not necessarily incorrect because they violate a convention which is on the whole of value to the experimentalist.

From initial likelihood, i.e. compatibility with established scientific conclusions, may be distinguished a second kind of probability:

(2) *Empirical (or a posteriori) probability.* This comprises the evidence of the investigation itself, *plus* any supporting evidence arising from the relation of the data of the study to those of previous investigations. If initial likelihood is low, it follows that empirical probability must be very high indeed for the hypothesis to be established. This means simply that, if the experimenter makes a rather startling and unexpected discovery (one which is contrary to what might be expected from what is already known), then it must be very well supported before it will be acceptable to the scientific world. From time to time such investigations do occur, and support such conclusions. Thus McDougall carried out a lengthy series of animal experiments which supported his contention that the Lamarckian hypothesis was correct. He had suc-

ceeded in demonstrating to his own satisfaction that training of parent rats would assist the learning behaviour of succeeding generations.[1]

The far-reaching implications of these conclusions led to severe and detailed criticisms of experimental method and statistical treatment of data of the kind which more routine investigations usually escape. McDougall and his later associate Rhine attempted to meet such criticism by introducing further refinements of technique and procedure. In this way they attempted to exclude the alternative hypotheses suggested. Persistence of an apparent learning effect, despite these severe criticisms and despite rigorous refinements of method, represents rather convincing support for the hypothesis despite low initial likelihood. Many may prefer McDougall's hypothesis of inheritance to the highly implausible alternatives which finally remained. The reader should himself consult the original reports and criticisms of these experiments, which are too detailed for summary. Such experiments are highly interesting as studies in method. They include the initial precautions of capable experimentalists, severe and prolonged criticism of the same experiments from almost every conceivable standpoint, and finally attempts to meet such criticism by further refinements of procedure.

A second series of experiments were those of Rhine himself, in an attempt to establish extra-sensory perception and related phenomena upon a scientific and experimental basis. These brought no less severe criticisms and similar refinements of method, and are again interesting as a guide to the careful planning of less far-reaching experiments in other fields.

An example may be taken to illustrate the establishment of scientific conclusions by the method of falsification, rejection of alternative hypotheses, and anticipation of probable criticisms. The investigator Geddes (1946) sought to explain why the art of the natives of the Fiji Islands is on the whole achromatic. Earlier observers had suggested that the explanation was the islanders' inferiority of colour vision. Geddes investigated this hypothesis, using the Ishihara test to measure the incidence of actual colour-vision defect among the Fijians. He confined his investigation to

[1] See articles by McDougall, Rhine and others in *Brit. J. Psychol.*, in period 1927–1938, when the experiments and the controversy took place; also Flugel (1933).

red-green colour blindness. Results obtained were as follows, for male subjects:

Age	*No. in Group*	*Red-Green Blind*	*Per cent R-G blind*
18–35	387	2	0·5
6–14	221	3	1·4
Total	608	5	0·8

This incidence was not to be expected either from the usual incidence of colour-blindness of this type or from the initial hypotheses investigated. Far from supporting claims of inferior colour vision the figures indicate a considerably rarer occurrence of defect than is usual. Geddes had employed two control groups. In the first of these, New Zealand (white) males, the incidence was 6 per cent. In the second group, East Indians living in Fiji, the incidence was 8·1 per cent. The difference between the Fijian experimental group's percentage of 0·8 and these figures of 6 and 8·1 was not only statistically significant but rather unexpectedly substantial.

Geddes proceeded to examine hypotheses which might account for the difference. Since vitamin A is known to affect vision, dietary deficiency or excess might prove to be an explanation. The hypothesis was rejected; neither deficiency nor excess could account for the difference. The Fijians, with the lowest incidence of colour blindness, were intermediate between the other two groups in their vitamin A intake. The alternative hypothesis, that difference in degree of pigmentation of the ethnic groups had reference to the disparity, was also rejected. Again the Fijians were intermediate between the more highly pigmented East Indians and the less highly pigmented New Zealanders. The investigator himself favoured the alternative hypothesis, which subsequent research may be able to falsify, that there is an ethnic (racial) factor in such differences of colour blindness. Evidence for the hypothesis was found in other studies which showed a lower incidence in negroid ethnic groups, and in the fact that the Fijians are basically negroid. Returning to his original problem of explaining the achromatic character of Fijian art, the investigator examined and rejected the hypothesis that such art has a cultural explanation in inadequacies of the Fijian system of colour language. As the most probable hypothesis he advanced the view that the reason for the achromatic nature of the art de-

pends upon the plant life of the islands, and the absence in this and elsewhere of sources of suitable and permanent dyes.

The empirical evidence which enabled these falsifications and verifications to be carried out is of interest. Such evidence included prolonged experience of colour vision testing with subjects other than those of the experimental group, an understanding of the Fijian language (colour terminology hypothesis) and the nature of the art, and knowledge of the plant-life of the country. The study reveals the fruitfulness of work on the frontier between psychology and anthropology by investigators acquainted with the disciplines of each. Finally it may be noted that, as is often the case, the investigation failed to support widely held beliefs, namely that the Fijians are defective in colour vision, and (among the Fijians themselves) that women are inferior in colour vision to men. No cases of colour blindness were found among the Fijian women. This finding was in accord with *a priori* probability arising from what is known about the inheritance of colour blindness.

5. Psychological Theory

Differences which divide psychologists include: (1) Those of fact, to be settled by empirical investigation; (2) those of a verbal type, to be settled by greater precision of formulation, by elimination of verbal confusions which give rise to pseudo-problems, and by more work of translation between different systems of thought; (3) finally there are those arising from inadequate theory. Perhaps more than anything else modern psychology is in need of good theory. Absence of such theory is most apparent in social psychology, though Krech and Crutchfield (1948) have recently made an impressive attempt to fill this gap from a 'field theory' (Tolman) standpoint.

Many psychologists have recently stressed the urgent theoretical needs of modern psychology, for example Leeper (1948) and Spence (1948). The question of the function performed by theory in science may be raised. A theory provides a matrix which embraces a number of hypotheses and laws in such a way as to lead to the advancement of the subject, and incorporation of more facts and hypotheses. To illustrate, the gestalt theory may be distinguished from the more specific laws of gestalt formation, such as the laws of *pragnanz* and *closure* (see Chapter III). As Hobbes

declared, the task of science is one of 'tying facts into bundles'. A good theory performs just such a task.[1] The duplicity theory of vision (von Kries) provided such a unified explanation of a large number of otherwise apparently unrelated phenomena. These include light and dark adaptation, the achromatic nature of night vision, the Purkinje phenomenon, the superiority of the periphery of the retina in night vision, and of the foveal (central) parts of the retina in daylight and colour vision, the nature of the vision of albinos and nocturnal animals, etc. (see Chapter III). The duplicity theory is a good theory since it embraces a wide range of phenomena. Theories may be of a greater level of generality, like Darwin's and Freud's theories, or of an intermediate level of generality, like Spearman's neogenetic theory which attempts to embrace only the more limited field of cognitive psychology (see Chapter IX), or of a lesser level of generality, like the duplicity theory which relates specifically to vision.

The layman's habits of thought often lead him to a false dichotomy between theory and fact. It is sometimes argued against certain psychological theories that they tell us nothing not already known. This judgment involves a mistaken view of the function of scientific theory. The value of the duplicity theory instanced above was not that it provided new facts, but rather that it offered a unified explanation of previously unrelated facts. A good theory may relate well-known facts to other equally well-known facts. That the phenomena which are incorporated in a theory are well known, or that some of its principles, laws and hypotheses are even self-evident, is not an effective criticism. What matter are the relations established between phenomena and the unverified relations which must hold between these and other phenomena if the theory is to be upheld. The former make possible an organization of what is known into a meaningful pattern; the latter enable research to be planned, and guide this research into profitable avenues. Construction of scientific theory is a collective human enterprise. The attitude of any investigator who regards his study as having settled and closed an issue, once and for all, is unquestionably not that of the scientist. A verified hypothesis, like a well-established theory, is only a contribution to the large-scale human enterprise for which the word 'science' is used. Principles will, in time, be incorporated in still wider and more embracing generalizations. Thus a good

[1] See Chapter VII, p. 164.

piece of research involves more than the mere establishment of a conclusion. It should be related to previous research, and should draw attention to uninvestigated problems which now appear and which await the attention of other investigators. Questions raised by an experimenter may be of more ultimate value to his science than the questions for which he has provided what seem, at the time, the most probable answers.

6. The Psychological Experiment

An experiment in psychology, like a mental testing or controlled observation project, may be only part of the task of establishing an hypothesis. In an experiment all factors but one are held constant. This variable, *A*, is systematically varied by the experimenter, and the effects are noted. To illustrate, an investigator may be concerned with the hypothesis that oxygen lack has harmful effects upon problem-solving ability. The subject is placed in a decompression chamber, from which oxygen is removed. (Amount of available oxygen constitutes variable *A*.) It will be evident that, if other factors, *B*, *C*, *D*, etc., are allowed to change also during the experiment, there is no justification for assuming that the observed effects are due to *A* rather than to these other factors. In such a case *B*, *C*, *D* and *E* would be called 'uncontrolled variables'. If, for example, the experimenter fails to control undue increase of temperature within the apparatus, apprehension and nervousness, fatigue, fluster and other such influences, the observed decreased accuracy of performance may be due to these, and not to oxygen lack. It is the task of the experimenter to 'control' such extraneous factors. In practice this involves exercising control over the factors which he *predicts* are likely to affect the results of his experiment. Most investigations necessitate control over such factors as age, sex, socio-economic status, and level of education, since these are likely to exert their influence upon performance. An experimenter may 'equate' or match his experimental and control groups in terms of such factors as these.

It is frequently necessary to treat a large number of experimental observations or test results statistically. We shall not attempt to deal with statistical methods, which are best learned from one of the numerous books devoted to that field. Three areas of statistics are of special interest to the psychologist investigator. He is con-

cerned with: (*a*) measures of central tendency, e.g. mean, median and mode, and measures of variability, e.g. mean deviation and standard deviation; (*b*) measures of correlation, e.g. rank order, product-moment and tetrachoric correlation; (*c*) measures of significance, e.g. the probable or standard errors of means, differences between means, coefficients of correlation, etc. The first kind of statistics is involved in such a task as standardization of a test and construction of norms. Correlation is concerned with the extent to which two variables vary together when the relation between them is not of the simple one-to-one order. A lucid account of the concept of correlation is to be found in Knight.[1] Correlation forms the basis of factor analysis, the statistical technique which aims at the most economical and meaningful ways of classifying mental life (Chapter IX). Measures of significance are concerned with probability, and more specifically with the probability that results obtained are the product of some 'chance' factor. By applying a test of statistical significance the investigator seeks to falsify this 'chance hypothesis'. It may be emphasized that statistics is a technique which assists an investigator to summarize what is already implicit in the data obtained. Such methods are no substitute for accurate observation and sound experiment; elaborate statistical treatment of unsound data may perform the adverse function of further misleading the investigator and others. Again, if the limitations of statistical, like verbal, concepts are not fully appreciated they may assist an investigator to misunderstand and to 'miss the point' in weighty and elaborate ways. A contemporary psychologist has described building a house in these terms: 'It is a resultant of an autonomously organismically-governed remoulding of a heteronomous environment.' Little is being said, but the effect is impressive. Statistical concepts may function like words in this adverse way, and may deceive both author and audience into making the judgment that something profound is being said. We would draw the attention of the reader to the dangers of both words and mathematical symbols used to obscure rather than clarify what it is wished to say.

7. Introspection

As has been suggested above, criticisms of earlier schools of psychological thought are often not applicable to contemporary

[1] 1933, pp. 8 ff.

representatives of those schools. Thus 'introspection' as understood by the psychologist of today is not necessarily subject to the criticisms which, for example, Köhler (1929) raised against the introspectionism of Wundtian psychology. 'Behaviourism' (Watson) was opposed to all introspection, but Spence (1948), writing from a contemporary behaviourist standpoint, admits experience to be a legitimate part of psychology. Spence contends that for the behaviour-scientist there are two different conditions. There are those which excite the external sense organs or exteroceptors ('behaviour') and those which excite the internal sense organs or interoceptors ('experience'). He is prepared to admit that objectively-recordable verbal reports give satisfactory information about intra-organic (interoceptive) processes, such as thinking, perceiving and emotion. Allowing for these changes of attitude towards experience and introspection, we may consider briefly the nature and place of the method in psychology.

Introspection is an art, acquired through knowledge and training, and one which is of considerable value to the psychologist. It is probable that the quality of modern introspection is considerably inferior to that of an earlier period. In particular the excellent introspections of Titchener would repay careful consideration (see Chapter IV). The Würzburg School of Külpe brought with it a specific technique of introspection, the *method of fractionization*. Psychological happenings to be studied were divided into time periods. The conditions of the experiment were repeated a large number of times and the introspectionist ('observer') would concentrate first on one and then on another of these periods. For example, association was studied in this way. The observer concentrated first on the period previous to the presentation of the stimulus word, next on the presentation of the stimulus, then on the period preceding his own response word, etc. Repetition under essentially similar conditions permitted very complete records of the psychological processes involved. The Würzburg concepts of 'mental set' and 'determining tendency' arose from the study of association by this method.

The objection frequently raised against introspection is that it involves analysis of unanalysable wholes into artificial parts. As Stout (1913) has noted, it would be a great advantage if the psychologist could say everything at once, but this is not possible. A degree of falsification of subject-matter inevitably arises from the

classification and logical division which is necessary in scientific thinking, speaking and writing. The only alternative to this is silence, and the abandonment of science itself.

A basis for introspection can be found in the traditional categories of cognition, affection and conation. The *cognitive* side of an introspective report embraces present and past perceptions: what is perceived, remembered and imaged. It will include an account of the interplay of past knowledge and present perceptions, and the judgments which arise from this interplay. The *affective* aspect of the introspection deals with feeling (hedonic tone), emotion, emotional moods, and such emotional organizations as sentiments, interests and complexes. An important aspect of affective introspection will have reference to the rapport which the subject experiences towards the experimenter, which may change during the period of the experiment. Finally, the *conative* side of the introspection relates to impulses to action experienced, and either expressed in words and actions or inhibited during the experiment. The observer will also be concerned with the interplay of cognitive, affective and conative processes. Resentment, experienced frustration or fluster may interfere with thought and judgment. Boredom can interfere with accuracy of perception, or with effective actions of the kind which the subject would prefer to occur in relation to the task which the experimenter has set him.

Subsequent working through measurements and recorded observations in the light of a written introspective report is often valuable to both subject and experimenter. Similarly, the research worker who makes it his practice never to employ an experimental set-up which he has not himself first experienced as subject, will ultimately both save time and increase accuracy. Introspective experience as subject may do much to eliminate uncontrolled variables of kinds which would probably not have been anticipated. Finally, introspective records and not the more objective data of an investigation often suggest some of the most fruitful lines of further research. Experiment does not exclude introspection; experiment without introspection may be sterile in ways which are avoidable. Three illustrations may be taken as suggestive of the importance and value of the introspective method.

McDougall's theory of instincts and the much needed introduction of an emphasis upon motivation for which McDougall was largely responsible, arose from this psychologist's introspections

upon himself.[1] Galton's pioneer investigation of human imagery (1883), with which began the questionnaire method and more evolved methods of study of individual differences, involved the introspections of large numbers of people. Thirdly, what has been regarded by some as Freud's major work (1900) was a study of his own dreams, with himself as introspectionist observer.

Summary

Psychology, which was once the 'study of consciousness', has changed much in its emphases, methods and content. Modern psychology is nevertheless heavily indebted to the early experimentalists against whom the schools rebelled, and to the schools themselves. Psychology is a science. Scientific knowledge is only probable, never certain: there are an indefinite number of hypotheses which will explain a given phenomenon. The research worker thus faces the task of falsifying plausible alternatives to his own hypothesis. Psychology is in need of new theory and there are certain lay misconceptions as to the function of theory in science. Experiment, statistics and introspection are discussed briefly in their relation to psychology.

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[1] McDougall 1926, p. 63 ff.

CHAPTER II

Motivation of Behaviour

Motives are psycho-physical processes within the organism that determine its activities. Such activities may be overt, or restricted to the levels of thought, fantasy and experienced but unexpressed impulse. Motives may be distinguished from the sustaining or more negative environmental determinants of behaviour and experience for which Murray (1938) *has suggested the term 'press'. Such press exerts an influence upon behaviour and a more indirect influence upon motivation. Motivation theory is of fundamental importance and will be treated as the point of departure for our inquiries. Important relations hold between motivation and other important aspects of the subject-matter of Psychology, such as perception, emotion, systems of emotional organization, and learning.*

During the last few days of 1946 a ship containing British passengers berthed in Naples harbour. Boats containing Italian merchants drew up alongside and trading began between passengers and the Italians. Orders were given by the Captain that nobody was to be allowed to go ashore. Presumably he feared 'incidents' between the British and Italians who had so recently been at war. Trading took place in full view of evidence of such warfare, the damage which bombing had inflicted upon the port of Naples. Before long hostile 'tension' between the two national groups was apparent. Goods bought were paid for in money or cigarettes, and on a number of occasions the medium of exchange passed over the side of the ship to the boats below and these moved away without the purchases being sent up in return. Some of the Italians found their way to the deck of the ship. Hostile remarks were made by a section of the passengers, such remarks being determined apparently by previous attitudes as well as present provocations. As most of the bargaining occurred in English there is every reason to suppose that the remarks were

heard, understood and resented. Finally the Captain ordered all the merchants off the ship and that hoses be turned upon the boats below. The order was carried out by the crew and a section of the passengers who were very ready to assist. Snow lay well down on the slopes of Mount Vesuvius, and temperatures were cold. The merchants must have suffered severe discomfort as they stood in their boats cold, drenched to the skin, and waving angrily. A large number of the passengers questioned the 'rightness' of the Captain's action. Many stated their disapproval with considerable emphasis. Two of the passengers who disagreed began fighting and were eventually separated by others.

Later in the day another incident occurred. On the nearby wharf a little Italian girl was attempting to sell an ornamental box to one of the passengers, who lined the side of the ship. A policeman was trying to prevent her and to eject her from the wharf, but she persistently eluded him and carried on. Finally he caught hold of her and she was handled rather roughly. The Italian policeman tore the box from her hands and threw it to the ground, so that it was badly smashed. The girl, now weeping bitterly, was driven by him from the wharf. These events were watched from the ship by a large number of the passengers. Collective disapproval of the policeman's actions was expressed by booing and words of abuse. One passenger was overheard speaking to another in very strong terms about 'Latin temperaments'. The incident seemed to have confirmed his attitudes about such 'temperaments'.

The writer was one of the passengers but took no part in the incidents described. Our present concern is not with the passing of ethical judgments about the participants, but rather with the behaviour itself and what determined it. Nevertheless one of the first and most prominent features of the incident is the *phenomenon of moral judgment* itself. Individuals tend to make evaluations of this kind about their own and other people's behaviour and motives. For some the action of the Captain was 'justified'; for others it was 'wrong' or 'inhuman'. The policeman's behaviour towards the little girl was generally disapproved of. Yet it is probable that the Captain and the policeman viewed their behaviour as 'right' and as their 'duty' in the circumstances. Again, many of the passengers indicated by their remarks that they were not merely angry; they were indignant. They appeared to regard their anger as 'wholly justified', and those with whom they were angry as 'in the wrong'.

The ethical assessment which another person makes of the subject's behaviour and motives may differ considerably from the subject's own. Such discrepancies may, as in this case, result in social conflict between two parties each equally convinced that they are right and the others wrong.

Physical factors or psychological processes may restrain experienced impulses from direct expression in action. Such *inhibition* is a frequent accompaniment of the emotion of anger; outward expression of anger may be restrained by factors like fear of retaliation and probable social disapproval. The status and prestige of the object of anger may restrain others even from attacking him verbally. Thus while many of the passengers were extremely angry with the Captain, none of them (as far as could be ascertained) expressed their indignation to him in any way. They tended to find an alternative release of the tension of unexpressed emotion by arguing with other passengers, or by expressing their anger to those with whom they could agree about the incidents.

Another feature was the part which emotion (anger) played in the occurrence. In addition to simple anger there was moralized anger, or indignation. Again, some felt sympathetic emotion for the little girl and for the Italians who had been hosed by order of the Captain. The emotions comprise an important category of human motives. It was held by Thomas Hobbes (1640) that all motives, and all emotions, even pity, are self-interested. This theory is rejected today. We may note instead, and as exceedingly relevant to the incident described, a principle stated by Shand. This might be termed the *law of disinterested emotion*:

> 'Every emotion has a potential disinterestedness, so far as among the stimuli which excite it are some which excite it on behalf of another individual instead of on behalf of oneself.'[1]

Such disinterested emotion frequently arises on behalf of friends and relatives. It may also occur on behalf of strangers as this incident showed. Emotions such as anger, indignation, fear and pity are frequently provoked by some contemporary occurrence. Thwarting, insult, and infliction of acute physical discomfort, all played some part in the provocation of anger-emotion in the example taken. Also of importance was the influence of earlier happenings. These gave rise to the development of *systems of emo-*

[1] Shand, 1914, p. 49.

tional organization, important among which are the sentiments. Thus memory as well as perception gives rise to emotional excitement. In the incident referred to, recent warfare had helped to produce sentiments of negative kinds, such as dislike and hatred. These sentiments increased the readiness of both parties to experience and express anger with but slight provocation. Such emotional systems are a second important category of motive.

The bargaining transactions themselves arose from different kinds of motive. The Italian merchants wanted money and cigarettes, not because they placed intrinsic value upon them, but because they had instrumental value. They were the medium of exchange which made it possible to buy 'basic necessities', the objects which satisfy hunger and other primary *appetites*. Such appetites exert a rhythmical motivational influence upon the organism, and their rhythm has a physiological basis. Appetites are not necessarily innate; the smoker's tobacco-hunger represents a secondary appetite, a learned need which requires periodic satisfaction. Tobacco-hunger, like hunger for food, has its physiological as well as its psychological aspect.

Of the various possible ways in which motives can be classified the most obvious is in terms of what is primary (innate) on the one hand, and secondary (acquired) on the other. Such a distinction is implicit in McDougall's twofold theory of human motivation (1908, 1923). Instincts are 'innate conative tendencies': sentiments are 'acquired conative tendencies'. Among the innate motives illustrated in the incidents described were anger (emotion) and hunger (primary appetite). Acquired motives included dislike and hatred (sentiments) and tobacco-need (a secondary appetite or an addiction). Another basis of classification, independent of the first, may be noted. Appetitive and non-appetitive motives may be distinguished. Hunger and tobacco-hunger are alike in their appetitive qualities, though hunger is primary and the tobacco need is learned. By contrast, anger and hostile or other sentiments are alike in that they are reactions to a particular kind of provocation and do not arise without it. They differ from the appetites which are activated by rhythmically-assertive, internal sensory stimulation. Sentiments resemble habits in an important respect; they involve some object about which the subject has *learned* by perceptual experience. They have an essential emotional component which is presumably primary, but have an equally essential object in relation to which the

emotions are organized. While emotions typically arise from present provocations, sentiments come into being and persist under the influence of past provocations that have left an enduring effect upon the organization of the subject's emotional life.

From the standpoint of introspection all motives manifest themselves as states of tension. Kluckhohn and Murray suggest a formula 'applicable to all needs':

Tension ——————→ Reduction of Tension.

It is 'need tension' which is the general motivational factor.[1] From need tension these authors distinguish 'conation' as the organization of the subject towards attainment of a desired goal. It is argued that it is the *process* of tension reduction rather than the tensionless state which is most satisfying to the healthy organism.[2]

1. Classification of Motives

There has been little agreement among those who have attempted exhaustive listings of innate human motives. Of these McDougall's attempts at such a classification of 'instincts' or 'propensities' have been historically the most important. McDougall's revised list (1923) comprised the following: food seeking, disgust, sex, fear, curiosity, protective or parental, gregarious, self-assertive, submissive, anger, appeal, constructive, acquisitive, laughter, comfort, rest or sleep, migratory, and 'a group of very simple propensities subserving bodily needs'.[3] Bernard opposed this kind of approach to motivation. In a survey of writings on the subject he found no less than four hundred instinctivist theories, and prepared a list of about six thousand postulated human 'instincts' or 'instinctivist activities' (Bernard 1924). Even the more important of the psychologists who supported an instinctivist standpoint used the term in different senses. For example, 'instinct' (McDougall), 'instinct' (Watson), and 'instinct' (Freud) have different meanings. Another reason for the difficulties of instinct theories arose from the fact that motives have a stimulus, a response and a central aspect. This point was to some extent recognized by McDougall. Other theorists and investigators have, like McDougall at times,

[1] Kluckhohn and Murray, 1948, p. 15.
[2] *Ibid.*, p. 14 ff. [3] *Ibid.*, pp. 97–98.

increased ambiguity by placing undue emphasis upon one or other of these aspects of their alleged 'instincts'. The instinctivist movement had the value of stressing the fundamental importance of dynamic, motivational factors. Nevertheless, in the light of the ambiguity which the concept of instinct has acquired it seems better to approach motivation from a more neutral standpoint. Rather than attempt an exhaustive catalogue of human motives we shall draw attention to four important categories illustrated by our previous discussion:

	APPETITES	NON-APPETITIVE
Innate Motives	Primary Appetites (e.g. food need)	Emotions (e.g. anger)
Acquired Motives	Secondary Appetites (e.g. addiction to tobacco)	Emotional systems (e.g. dislike)

The classification is a provisional one, but may help us to view the problem of motivation in its complexity.[1] It suggests, for example, that a single instinctivist 'explanation' of human society by a 'herd' or 'gregarious' instinct, or of social conflict by some instinct of the 'aggression' or 'pugnacity' type are gross over-simplifications. Primary appetites and their satisfaction or frustration, emotions and their expression, the formation and functioning of secondary appetites and sentiments, all contribute to the formation of human society and to conflict between social groups. Freud (and his translators) has not always assisted clarity of thought about motivational problems by employing such a word as 'love' to mean sometimes an emotion, sometimes a simple emotional disposition, sometimes a sentiment, and sometimes even an 'instinct'. The provisional classification given above may assist us to avoid such grosser ambiguities of thought. Categories distinguished may be examined more closely.

(1) *Appetites.* Appetites, primary or secondary, are physiologically inescapable influences upon motivation. They are inescapable since they arise from the psycho-somatic structure and functioning of the organism, though they may be greatly influenced by social factors. Although the subject may attempt to ignore such motives they will continue to exert an internally stimulating effect

[1] The distinction between appetites and non-appetitive motives has reference to Drever's writings on this subject (Drever, 1917).

on his body-system until satisfied, irrespective of environmental happenings. Failure to satisfy primary appetites may result in physiological disturbance, and perhaps even death. Conditions of an experiment or necessity may compel the subject to go without food, drink or sleep for a period of time. In these circumstances he will experience strong impulses to reduce experienced tension by attaining the object of his need. This is equally the case with secondary appetites or addictions. Mild degrees of addiction are frequent in western European society and its derivatives; they are, in the statistical sense, 'normal' rather than abnormal. Such addictions may be to substances like tobacco, tea or coffee. Less attention has been paid to these mild addictions than to the gross and pathological forms.

The term 'addiction' is used here to include the mild and statistically normal forms as well as the pathological types like alcoholism and drug addiction, to which the term has often been unduly confined. 'Habit' is a broader concept than 'secondary appetite' or 'addiction'. As Hebb (1949) rightly points out, there is an important difference between the habit of drinking milk at breakfast and an addiction to coffee. An addiction has an aspect in addition to mere habit, since failure to obtain the substance results in *physiological* want. As Hebb argues, in this appetite aspect addiction, although secondary, resembles primary appetites like hunger rather than mere habit. Sentiments have a 'habit' aspect, but are non-appetitive motives. Experimental studies have been made of the physiological effects of addiction. Thus Winsor and Strongin (1933) found differences in parotid secretion between habituated and non-habituated coffee-drinkers. Such tissue-needs are taken into account in treatment of the grosser drug or alcohol addictions, but more study is needed of the mild addictions of 'normal' people. The housewife may have an unmistakably appetitive need for her cup of tea, and may 'feel better' once she has taken it. One experiment in which the writer was subject required periodic deprivation of both food and fluid. Introspective notes were kept. On the basis of these the subject quite unmistakably missed coffee, to which he was mildly addicted, more than he missed food. The need was prominent to introspective awareness and was not merely for fluid —water would not have done—it was for coffee as coffee (McKellar 1949). Effects of this kind arising from deprivation of tea and coffee are understandable in terms of physiological tissue-need. It was

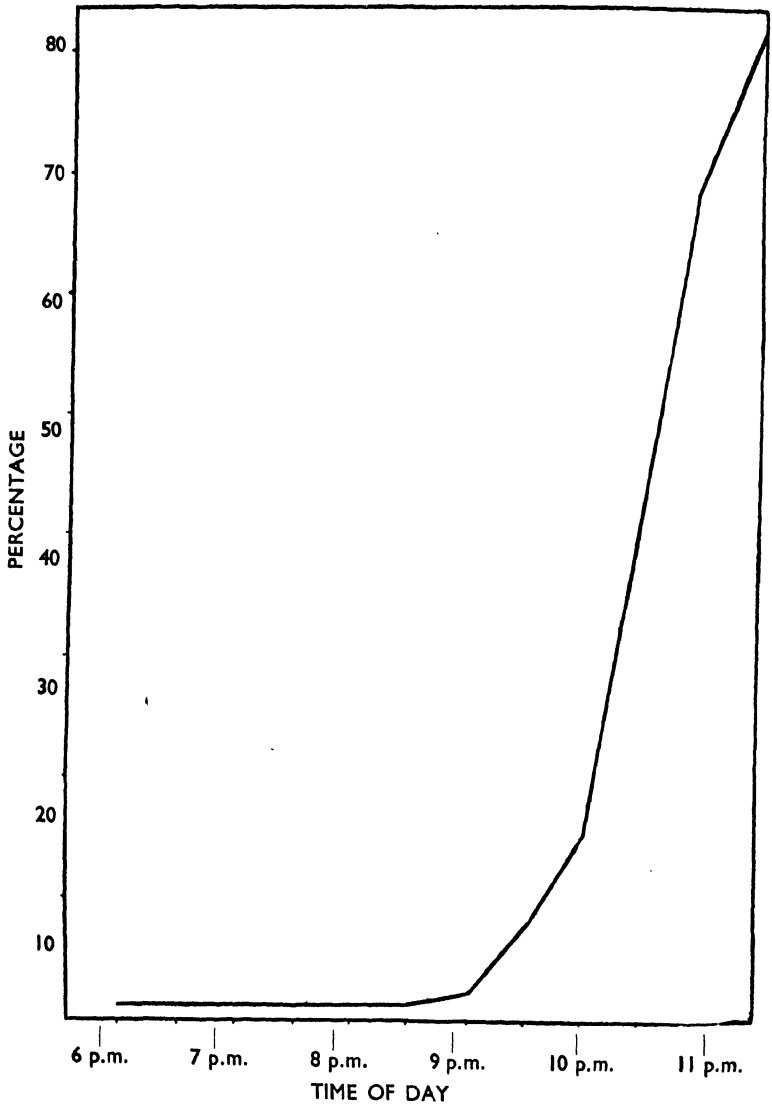

FIG. 1

The Socialized Sleep Appetite:

Graph showing proportion of Britain's population in bed during the period 6 p.m.–11.30 p.m. (N=2,628 individuals). Reproduced by courtesy of the British Broadcasting Corporation and Mr. R. Silvey, Director of the Audience Research Department.

found in experiments by Gilliland and Nelson (1939) that coffee-administered caffein not only increased blood-pressure and decreased pulse-rate, but also had psychological effects. These included improved memory span and facility in mathematical calculation.

Other evidence that a secondary appetite may assume priority over a primary appetite is sometimes of a dramatic kind. The writer is indebted to a former colleague, F. Guest, for the following two instances observed while Guest was a prisoner-of-war: 'I once saw a man pay £115 sterling for one cigarette.' The incident occurred at a time of acute food shortage when the same money could have been spent on food rather than on tobacco. A second case was of a prisoner who arrived at the camp suffering from severe food-deprivation. He exchanged what little food he had for tobacco and a few days later died of starvation. It will thus be seen that the effects of secondary appetites upon behaviour are by no means trivial.

(2) *Non-Appetitive Motives.* Emotions and systems of emotional organization are a different kind of motive and are obviously non-appetitive. Emotions result from present or past provocation. Fear is provoked by situations which are, or are judged to be, dangerous; anger is provoked by such occurrences as thwarting, humiliation and encroachment upon personal possessions. Since provocation implies awareness of external happenings it is apparent that perception theory is of very considerable relevance to the motivation for which emotions are responsible. That a percept may differ markedly from the actual sense-data presented is an important principle of relevance to provocation. It is the meaning which the subject places upon the situation, his perception and judgment about the situation, which is important in emotional provocation. Those assessed as 'unduly sensitive', or 'rather paranoiac', are people characteristically provoked to emotion by features they attribute to social situations, though such features are not in fact present.

In contrast to the emotions like anger and fear are emotional systems. These include emotional dispositions, sentiments and complexes. Such systems are the result of past rather than of present provocations, but of provocations which have been sufficiently strong to leave a marked effect upon the individual. Among the sentiments are love, hate, respect, contempt, friendship and dislike. Differences between these and dispositions, attitudes and complexes will be dealt with in Chapter V. Such sentiments are

among the most important human motives. They are like emotions in being reactive rather than appetitive; they are a reaction called forth by external conditions of certain kinds. Sentiments are important sources of motivational energy and determinants of behaviour, as was recognized by Plato at an early date. In the *Symposium* the philosopher half seriously suggested that an army should be made up of lovers and their beloved. He argued that abandonment of comrades and other forms of cowardice would be unlikely to occur if this were the case; such an army would thus prove a most effective fighting force. In his book *South* the explorer Shackleton told of the hardships experienced by himself and his companions when they went to bring relief to their companions on Elephant Island. He was of the opinion that he and the others would not have kept going had they had only their own safety to think of. They were able to carry on because of their companions on Elephant Island, and the relief which their journey would bring to them.

Hostile sentiments like dislike and hatred may also reinforce motivation. They may induce an individual to perform actions which are inconvenient and disadvantageous from the standpoint of self-interest. As the Naples incident indicates, hostile sentiments may lower the subject's threshold for anger and may make him more ready to experience and express this often highly reinforcing emotion. Another and important kind of sentiment exerted its influence upon the participants in the Naples incident—the phenomenon of moral judgment. This arises from the presence and functioning of the *moral sentiments*. Such sentiments appear to arise from early experiences of social approval or disapproval, from assimilation of qualities of persons taken as ideals, and from anticipatory reactions to punishment. The objects of the moral sentiments are abstract concepts. Prominent among these are 'good and evil', 'right and wrong', 'just and unjust', 'fair and unfair'. There is need for more research on the problems of the development, structure and functioning of the sentiments as one of the most important kinds of human motive.

2. Needs as Motives

Many psychologists have found it desirable to adopt a more neutral term than 'instinct'. As Koffka (1924) has argued, 'instinct' may refer to standardized ways of reacting; in this sense human

beings have few 'instincts'. On the other hand it may refer to basic needs and in this sense there are many human instincts. Man has few pattern reactions, but a more or less indefinite number of needs. It seems better to adopt the concept of 'need' itself, while admitting the wide variety of needs which can be found, and many psychologists have adopted this usage. The negative counterpart of a need is an aversion. It can, of course, be argued that all needs can be regarded as aversions to the lack of the object which satisfies the need (Mowrer 1950). It seems better to preserve a distinction which embraces two of the most elementary forms of behaving: in the making of seeking or withdrawing responses. Motivation can be viewed from this standpoint of the *objects* which are sought or avoided. For example, there is an innate need for food and a probably innate aversion, as Watson's (1919) studies suggest, towards loud noises. 'Need' and 'aversion' are concepts which involve a minimal component of hypothesis and assumption. Environmental objects evoke either seeking responses which indicate the presence of a need, or avoiding responses which lead us to infer an aversion; or they are motivationally neutral. These facts are often observable behaviouristically, but sometimes only introspectively. There are an indefinite number of potential needs since there are an indefinite number of objects towards which the subject may form habits of seeking and avoiding. Despite the number of possible needs their broad classification may be attempted. An adult human being can be considered from three standpoints. He is an organism, a member of a society, and a personality. There are thus three important areas of the psychology of motivation: (1) the general psychology of motivation; (2) the study of similarities and differences of motivation between cultural areas; and (3) the study of the motivation of one personality in contrast to other personalities. Corresponding to the general, cultural and personality aspects of the psychology of motivation are three kinds of needs which may be distinguished:

(1) *Organic Needs.* Uniformities in goal-seeking arise from common psycho-physical inheritance. An organism is life, and life of a particular species. It manifests certain of its motives in common with other members of that species. Some such motives are appetitive: needs for food, drink, sleep and oxygen. Others are reactive: the emotion of fear which leads to danger avoidance, anger which serves self-defence and the reinforcement of other need-determined behaviour when thwarted.

(2) *Cultural Needs.* There are certain conformities of motivation which arise from membership of a society and from exposure to one culture rather than another. These conformities result from assimilation of social norms, from similar reactions to similar social events, and from punishment anticipated or experienced by non-conforming members at the hands of the group. In Western Europe there are needs for such things as telephones, motor-cars, wireless sets and other socially approved objects. Each cultural area has certain substances which are socially accepted as food, and to these hunger-satisfying behaviour tends to be confined. Other cultures place value on different objects, and on different foods. For example, among the New Zealand Maoris there is an influential need for ornaments of greenstone (a form of jade) and on the Island of Santos much social life revolves round the possession and sale of a variety of asexual pig. Bartlett (1932) observed a similar dependence of Bantu culture upon the possession and sale of cattle. European, Maori, Santos and Bantu culture thus differ widely in some of the objects for which the participants manifest such influential seeking reactions.

(3) *Personal Needs.* Every individual is a personality who differs from other members of his species and his community. Needs which distinguish one individual from others may even appear unusual, strange and eccentric to his neighbours and acquaintances. Thus one personality may be dominated by the need which Murray (1938) calls 'harm avoidance'. In his anticipatory reactions to sickness or injury, he may appear so apprehensive, hesitant and fearful that he arouses amusement or even aversion among others of his species and culture whose self-preservative tendencies are more normally developed. Each individual makes what Allport (1938) terms 'unique adjustments to his environment'. The motives which arise in connection with such adjustments are important. The approach to personality in terms of differences between such personal needs is a promising one and will be considered more fully below (see Chapter XII).

3. Drives

As has been explained, the psychologist is concerned not merely with biologically determined uniformities of motivation, but also with cultural and personal differences. 'Instinct' as a sole basis for

motivation theory has the very serious weakness of being applicable only to the first of these three problems. 'Need' and 'aversion' have the advantage of being applicable to the immense variety of objects which are sought or avoided as a result of personal and cultural differences. Yet a more precise and restricted view of motivation is necessary, particularly with reference to its general psychology. For this reason the psychologist requires a second and more finite concept.

The term 'drive' was introduced by Woodworth (1918) to denote a set of physiological conditions inferred to be responsible for the organisms, behaving in certain ways. The word comes from mechanics; the drive of a machine is the supply of energy which puts it in motion.[1] Woodworth distinguished between 'drives' as neural processes and 'mechanisms', which are courses of behaviour that bring about an adjustment (Woodworth, 1918). The term 'drive' has unfortunately acquired several meanings. Young distinguishes six different senses of the term.[2] It has been suggested that drives are causal entities, not psychological phenomena. They correspond to 'need tensions'[3] rather than to 'conations'.[3] McKinnon in a recent textbook defines a drive as 'an intra-organic activity or condition of tissue supplying stimulation for a particular type of behaviour.'[4]

It may be noted in connection with this definition that the *phenomena* involved are physiological, not psychological, and that it implies an *hypothesis* that such physiological events lead to other and psychological events. Hunger, thirst and sex seem to be typical drives. Guthrie (1938) would identify drives as 'disturbing stimulation', arguing that thirst depends upon dryness of mouth and throat and hunger upon stomach spasms. It seems better to recognize other aspects, and to say that drive *includes* a disturbing stimulation aspect, which gives rise to a particular type of consummatory response. In motivation as elsewhere, in addition to sensory there are also central and motor aspects. That different drives are characterized by different consummatory responses seems to be implied in Woodworth's original writings (1918). The disturbing stimulation, the sensory aspect of drive, has been investigated as such. Cannon made experimental studies of the hunger drive, and

[1] Woodworth, personal communication, in Young, 1936.
[2] P. T. Young, 1936, p. 75. [3] Kluckhohn and Murray.
[4] In Boring *et al.*, 1948, p. 114.

used an intra-gastric balloon which permitted the recording of stomach contractions.[1] The three aspects of drives may be summarized, with reference to Kluckhohn and Murray's formula:

Sensory		*Central*		*Motor*
Disturbing stimulus	→	State of tension	→	Consummatory response

Tolman (1949) has suggested the wisdom of treating the criterion of drive as the consummatory response (which removes the disturbing stimulation) rather than as the goal object. As Tolman argues, with this criterion there are a finite rather than an infinite number of drives. There are only as many drives as *ways of behaving towards* goal objects, *not* as many drives as there are goal objects. As has been suggested above, the motive in terms of its goal object may be termed a need. According to this usage there will be an indefinite number of needs, but a finite number of drives. This may be illustrated. The thirsty teetotaller who drinks lemonade or water, the genuinely thirsty beer-drinker who consumes his pint, and the thirsty housewife who pours out her cup of tea are motivated by and satisfying the same drive. They are motivated to reduce drive tension by the same kind of consummatory response. But they manifest different needs, since the goal objects are different and they might reject what would satisfy the others' need. In this example four stages of drive activity can be distinguished:

Lack of fluid→	Dryness of mouth→	Tension—→	Drinking
Tissue-need (Hull)	Disturbing stimulus (Guthrie)	Drive tension (Kluckhohn and Murray)	Single Consummation (Woodworth, Tolman)

Some clarification of motivation theory results from such a distinction between need (criterion: goal object) and drive (criterion: consummatory response). It permits us to describe *individual* and *cultural* differences in motivation. At the same time it leaves the way clear for the eventual listing of a finite number of *general* human motives, since the ways of behaving towards goal objects are not as numerous as the goal objects themselves.

Needs show interesting situational variations under certain conditions of drive tension. Thus an extremely hungry man has a

[1] Short *et al.*, 1948.

need-preference for plain food rather than cream cake. In a sense a person can be 'too thirsty' for coffee, and may prefer water or tea. While the rejected objects would result in the necessary consummatory activity and diminish drive tension, they are avoided when more satisfying need-preferences are available for these levels of drive intensity. Needs vary as a result of other kinds of factors. The hunger drive may be taken as illustration. Some people reject meat as an item of food. Moslem and Jew are confined by their religious norms to certain kinds of meat. A West End Londoner may eat oysters but not like the winkles and jellied eels which the East End Londoner enjoys; the latter may view oysters with similar mistrust. Most Europeans normally confine their meat-eating to the flesh of cloven-footed animals, but as a result of war shortage many Europeans extended their food-needs to include horseflesh. During the Franco-Prussian war Labouchere tells us that he and the besieged Parisians ate an amazing variety of kinds of meat. This included cats, dogs, mice, elephant-flesh, and in fact the flesh of many of the animals of the Paris Zoo. Within the range of available foods preferences nevertheless developed, as in more normal times. Of dogflesh poodle was 'far the best'. Labouchere was advised to avoid bulldog as being 'coarse and tasteless'.[1]

Despite the diversity of food needs the drive remains the same since there is only one form of consummatory behaviour. Whatever human beings eat, and whether they eat it with the refinements and conventions of the fashionable restaurant or the abandonment of extreme hunger, only the one form of consummation which is common to the species will be involved.

4. Theory of Functional Autonomy

Some psychologists have committed what might be called the 'nothing but' fallacy. Freud and, with less justification, McDougall, have been criticized for reducing complex human motives to their primitive origins. Allport opposed the attempt to reduce all motives to 'a limited number of basic instincts shared by all men and presumably innate'.[2] He argued that while all adult motives can be traced back in theory to infancy, 'the tie is historical not functional'.[3] With this judgement it may be agreed that the adult human need is complex and should be studied as such, rather than

[1] Pearson, 1946. [2] Allport, 1938, p. 193. [3] *Ibid.*, p. 194.

identified with its early, and sometimes highly hypothetical, origins. It seems to be equally correct to assume, as McDougall does, that while an adult organism can have 'functionally autonomous' motives (Allport), it can also be motivated by primary motives (McDougall's 'instincts'). The difficulty appears to be met by the distinction between need and drive suggested above, adopting Tolman's criterion of drive. Need (Murray) would seem to be a suitable concept in terms of which the characteristic and 'unique' features of the personality, with which Allport is concerned, can be dealt with motivationally. Again there seems no reason to abandon the very necessary task of examination of motives common to the species. Nor are we justified in denying the importance of these innate drives.

Allport supports his argument that adult human motives are functionally autonomous by making reference to Woodworth's (1918) statement that 'mechanisms may become drives'. That objects and activities first valued instrumentally tend to become valued intrinsically was noted by Bain at an earlier date (1863). There seems to be no reason to question this important observation, provided that the place which primary motives (e.g. appetites and emotions) can and do play in adult life is adequately appreciated. They are influential when severe stress and hardship, danger and deprivation of the extreme types lead to regression in behaviour.[1] Allport takes good workmanship as an example of functional autonomy. The craftsman may do his best work irrespective of the praise, reward or necessity which once determined his actions. As Allport writes: 'What was once an instrumental technique becomes a master motive.'[2]

Other examples taken include sentiments. Allport suggests that such a variety of autonomous interests distinguishes the 'mature' personality. The mature individual can lose himself in work, in recreation, in loyalty to others, and in the remote issues with which he has identified himself. Two of the categories of motive whose importance has been noted in the previous pages would seem to illustrate well the phenomen of functional autonomy. These are the sentiments to which Allport refers and the secondary appetites. Sentiments of parental love for a child, loyalty to companions, liking for his work and for the groups with which the subject identifies himself, constitute one of the most important cate-

[1] See for example, Sherif 1949. [2] Allport, *op. cit.*, p. 196.

gories of human motive. The observation has been made by such diverse thinkers as J. J. Rousseau, von Hartmann and Groddeck (1928) that (the sentiment of) love may have effects harmful or disastrous to personal survival. An illustration has been taken also of an instance in which a secondary appetite took precedence over hunger itself, and in this way led to the death of the individual concerned. As is suggested by Sargent (1949), functional autonomy applies to *habits* more generally. The same standpoint, thought not stated in Allport's terminology, plays an important part in the earlier thought of William James (1891).

5. Strength of Motives

(In addition to the qualitative problems of the different *kinds* of motives there are important quantitative problems of differences in the *strength* of motives.) McDougall (1908) favoured the hypothesis of innate difference in the strength of instinct between the Japanese and Chinese, the Germans and other peoples. (Most psychologists would probably prefer to place emphasis upon the influence of cultural factors.) The weakness of the 'instinct of pugnacity' which McDougall believed distinguished the Chinese from the Japanese probably depends mostly upon tradition and ideology. Buddhism is a religion less conducive to pugnacity than Shintoism. Schjelderup-Ebbe[1] nevertheless presents evidence for apparently innate differences in aggressiveness between different species of the lower animals: the pecking behaviour of the parrot seems to attain to the extremes of aggression and malevolence to be found among the birds. The same investigator notes that secondary motives like rudimentary equivalents of friendship and dislike may influence the birds' pecking behaviour. Pugnacity and aggressiveness seem to be composite rather than simple motives. One of the most interesting investigations of differences between drives in terms of their strengths was that of Warden (1931). The investigator used white (albino) rats as his experimental animals. The task involved crossing an electric grill in order to attain a goal object. Such crossings measured the amount of punishment the animal would accept in the service of the drive, and thus permitted an assessment of the strength of each drive. Order of drive strengths obtained with these animals was: maternal drive, thirst, hunger, sex, exploratory drive.

[1] Murchison 1934.

It is tempting but dangerous to draw conclusions about human beings from such experiments. The study showed the extreme strength which the maternal drive may assume. In the experiments this appeared to be even stronger than that of hunger and thirst. Interesting questions relate to preference for the satisfaction of one important drive rather than another, and are raised by such experts. Viewed in terms of Warden's investigation, the question concerned the number of crossings of the grill the animal would make to satisfy its strongest drive before it would show a preference for an alternative goal object. A very hungry man will give much for a first piece of bread, less for a second, still less for a third and fourth and fifth. A sixth and seventh may interest him little or not at all. He may prefer to drink, smoke or sleep, rather than eat even the fourth. Such other needs may be present together with the food need which takes precedence. Maslow (1943) contends that man is a perpetually wanting animal, ordinarily in a state of partial satisfaction and partial frustration. His motives form a hierarchy in the order of which he seeks to satisfy them. A hungry man may not be greatly interested in the esteem in which he is held by others, but once his hunger is satisfied this need for esteem may assume priority over all other motives. Such a hierarchical view of motivation is a useful one. The most 'prepotent need' (Maslow) in the hierarchy will tend to monopolize consciousness until satisfied, and will then give place to the next most prepotent need, and so on. In order to be able to predict probable behaviour it is necessary to know not only the kinds of motive present, but also their respective places in such a hierarchy. An illustrative introspection may be taken.

The writer was one of a mountaineering party of six tired, cold and hungry men who were making their way across a glacier late one evening. To introspection it was evident that the motive most prominent to consciousness and most relevant to the determination of immediate behaviour was one of a self-preservative kind. Though exceedingly cold, tired and hungry, the men did not pitch their tent in an exposed part of the glacier or stop for a meal or lie down to sleep. Instead they sought a place of safety before they attempted to satisfy their other nevertheless pressing needs. Once a safe and sheltered spot had been reached behaviour was determined by motives, formerly less prepotent, which now became the most influential. They pitched the tent and were thus able to

obtain some degree of warmth. Then they sat down inside the tent and had their meal. Finally, when the needs for safety, warmth, food and drink had been satisfied, they lay down to rest and to satisfy, last of all, the need for sleep.

It is not strictly correct to say that the most prepotent need will necessarily monopolize consciousness. No less than five conscious motives were introspectively observable during these events. They formed, however, a hierarchy of the kind suggested by Maslow. The incident described illustrates five such influential needs, their differences in importance as behaviour determinants at different times, and the inhibitory influences originating in the hierarchy which the needs assumed. Many possibilities of research arise from Maslow's approach. As in the incident described, situational factors may be mainly responsible for the hierarchical order. On the other hand, individual personalities and cultural and sub-cultural groups show differences in the habitual organization of motives in these respects. What are in the biological survival sense the most 'important' motives are not necessarily the most influential determinants of behaviour under normal conditions. Social groups tend to organize things in such a way that some of the most important biological motives are habitually satisfied and their influence thus minimized. When society breaks down in some way, through catastrophe, social change or revolution, motives like hunger, self-preservation and cold-avoidance may predominate in the hierarchy. For the time being these may replace and largely exclude the biologically unimportant motives which are nevertheless probably the more 'important' determinants of behaviour under 'normal' conditions.

6. Conscious Intention

The usual concepts of the psychologist—instincts, appetites, needs, drives and motive hierarchies—do not coincide with those of the layman. Behaviour is often regarded by the layman as caused by conscious intentions and the 'reasons' given for action. Relations between the two approaches may be examined. Freud and McDougall place emphasis upon the irrational rather than the rational determinants of behaviour, and both advance the view that reasons given for behaviour are in themselves a far from satisfactory causal explanation. It will be apparent to introspection that

intentions, rational reasons and ethically respectable motives are a prominent part of consciousness and motivation. They are perhaps better regarded as introspectively observable *phenomena* which accompany motivation than as the principal determinants of behaviour. A man motivated by the hunger appetite, and manifesting a need for what is acceptable to him as food, may consciously intend to obtain a meal at the earliest possible opportunity. But in other cases there may be a very considerable discrepancy between conscious intentions and the account of motivation which the psychologist would give. Such discrepancy is particularly likely to occur when motives, notably those of the aggressive or sexual kind, are contrary to the mores and taboos of the community. Conditions are then favourable to self-deception; the subject may ignore or 'deny' these motives, rationalize or moralize them. Nietzsche (1887, 1888) showed much insight into the ways in which aggressive and anti-social impulses can find expression through conscious intentions of the 'dutiful' and 'humanitarian' kind. Freud adopted the more extreme view that *all* human values, ideals and reasons are nothing but rationalizations. Yet Nietzsche outlined, and Freud overstated, a viewpoint which is a fitting commentary on at least *some* of the kinds of human behaviour which appear to the subject himself as 'reasonable' and 'right'.

It is necessary to make a distinction between 'motives' which are introspectively observable to the subject and those which an impartial observer assesses from the subject's actual behaviour. If that observer is not impartial and an opponent or enemy, he may be unduly ready to assess the motives as 'foolish' or 'self-interested', or assert their intellectual or ethical inferiority in some other way. It seems reasonable to assume that the subject himself will tend to make errors of the converse kind. We frequently hear charges of 'insincerity' made about the behaviour and motivation of other individuals. One of the few investigators who has attempted a psychological analysis of 'sincerity' and 'insincerity' is Doob (1949), who regards 'sincerity' as involving little or no discrepancy between the goals which an individual seeks and the goals which he claims to be seeking. He adds, however, that the layman's judgment of 'insincerity' often underestimates the power of the human being for self-deception. Such deception may result from one or other of the ego-defensive mechanisms of which rationalization is the most obvious. Doob's own contribution relates more speci-

fically to the motivation of the propagandist, and his thesis is that the propagandist is particularly liable to become his own propagandee.

This may occur indirectly through susceptible persons who assimilate the propaganda and exert a subsequent and reinforcing influence upon the propagandist himself. Doob appears to be correct in his observation that among the first to assimilate propaganda originally known to be untrue or merely part of a policy, is the propagandist himself. He further contends that the concepts of 'sincerity' and 'insincerity' which have a prominent place in the layman's thought about motivation need further analysis. Doob himself tentatively accepts the extreme view that such analysis may reveal the concept of 'sincerity' or otherwise to be meaningless, because of the extreme influence of self-deceptive psychological processes like rationalization. To Doob's analysis we may add the observation that the term 'insincerity' is often applied to a marked discrepancy between stated or apparent conscious intentions and the obvious consequences of the individual's actions. There is little doubt that ego-defensive processes have much to do with many such discrepancies. In any case we may note that the habits of thought and the concepts of the scientific psychologist and layman will differ somewhat, and there is need for further examination of the relations between the two alternative conceptions of motivation.

7. Motives as Behaviour Determinants

Motives have been described as factors 'within' the organisms which determine behaviour. With motives we may contrast a second determinant of behaviour which is, in an important and obvious sense, 'outside' rather than 'within' the organism. The term 'incentive' has sometimes been used to denote environmental factors which facilitate (positive incentive), or restrain (negative incentive), behaviour. For example, in his text-book Thouless (1923) contrasts incentive and drive. Unfortunately there are ambiguities of usage; Young (1936) distinguishes five senses in which the term 'incentive' is used in psychology. Lewin's field theory adopts a somewhat different approach and regards behaviour as a function of organism and environment and as something which occurs within a total field. 'Field' (Lewin) comprises the organism itself, together with its apprehension of environmental factors. Emphasis is placed upon organism-environment relations as deter-

minants of behaviour. A third alternative approach is that of Murray and his colleagues (1938, 1943) who distinguish 'needs'—forces from within the organism—from 'press'—forces from the environment. Many of the terms used to describe specific needs are used also to describe specific press, the abbreviations *n* and *p* being used. For example '*n.* aggression', such as wanting to attack, insult or criticize another person, is distinguishable from '*p.* aggression'—being attacked, insulted or criticized. This approach permits study of the specific social influence to which a personality has been subjected in the course of its development (see Chapter XII).

Whichever of these alternative approaches is adopted, it is necessary to pay due attention to the fact that an account of motivation is only a partial explanation of the causation of behaviour. The point is well put by Sargent (1949) who accepts Lewin's general standpoint that behaviour is a function of an organism in a situation. Any significant change either in the organism or in the situation will produce a change in resulting behaviour. On the whole the psychologist of today is more reluctant than his colleague of an earlier period to adopt a simple view of the causation of behaviour. The general principle that the causation of a phenomenon is the 'history of the world till the moment of its occurrence' is a useful corrective against the over-simplified views of simple causes and one-factor theories of motivation which marred the early history of psychology. Nor does such a guiding principle commit us to the 'nothing but' historicist fallacy against which Allport rebelled. An adequate explanation must involve examination of immediately preceding events whether of the need or press kind—events within the organism and within the situation. The field theorists (Lewin, Tolman) have placed emphasis upon the importance of contemporary as opposed to purely historical causes; this emphasis has been a desirable and necessary one.

Again, the occurrence of behaviour of a certain type does not necessarily mean that motives contrary to that behaviour are absent. They may be present, and acutely apparent, to introspection as the writings of such people as religious ascetics show. Thomas à Kempis wrote:

> 'It is harder work to resist vices and passions than to toil bodily labour. . . . Be watchful over thyself. The more violence thou usest against thyself, the greater shall be thy profiting.'[1]

[1] À Kempis, 1470, trans. 1613, p. 61.

If we leave aside the self-punitive ethical code of the ascetic, what is apparent is an emphasis upon 'vices and passions' and the difficulty of resisting them. Such motives are principally primary needs of the types discussed above. Although present, they are resisted as being incompatible with another more general purpose which the individual concerned has accepted. These organic needs correspond to what Spinoza called 'desire', as opposed in this philosopher's terminology to what the ascetic 'wills'. Such conflicts between 'will' and the 'temptations' of contrary motives or 'desires' play an important part in novels like Reade's *The Cloister and the Hearth* and Anatole France's *Thaïs*. It is self-evident that an individual who behaves in a certain way is sufficiently motivated for such behaviour to occur. On the other hand the non-occurrence of behaviour may arise from two different patterns of motivation. Either the individual is not motivated (or not sufficiently motivated), or else he is perhaps quite strongly motivated, but more than equally strongly inhibited. Hertzberg's analysis of the behaviour of the philosopher will illustrate the second kind of situation. From a biographical study of a group of the best known European philosophers Hertzberg comes to the conclusion that the great philosophers tended to seek ideational, intellectualized solutions to the problems of their personal lives. On the whole they were markedly unsuccessful in ordinary living, and in professional and marital affairs and money matters. A by-product of this was the creation of intellectual, philosophical systems. Failure in practical matters did not arise from weakness of impulse. On the contrary, the investigator concludes that the great philosophers tended to be men of strong impulse. The ineffectiveness was the result of strong impulse *plus* equally strong inhibition; the combination rendered them, as a group, less able to deal with affairs on the overt behavioural plane than the non-philosopher. They excelled, however, in solving derivatives of their real problems in an ideational way (Hertzberg 1929).

The theory advanced is one worthy of further investigation; it may be noted that Hertzberg's method was empirical, involving biographical and statistical analysis. Whether valid or otherwise, the theory illustrates the way in which inhibitory processes operating in ways contrary to strong impulses may lead to ineffectual

action. Projective tests like the TAT provide suitable techniques for investigating contrary motives and inhibitory processes such as these (see Chapter XII).

An acute analysis of motivation in terms of its inhibitory complexities was provided by Butler at an early date (1726). Butler is wholehearted in his abandonment of theories which reduce motivation to a single factor. Action results rather from the interaction of a number of influences. First, there are primary passions or impulses (appetites and emotions). These in turn are subordinate to higher principles of conduct. The principle of benevolence or altruism exercises censorship in terms of the possibly harmful or beneficial effects upon others. Again, the principle of prudence or self-love exercises a censorship, but in terms of the ultimate, long-term self-interest of the individual himself. Finally, there is the principle of conscience, which permits or restrains in terms of the 'rightness' or 'wrongness' of actions to which the individual is motivated. These principles are not identical, though prudence and altruism do not necessarily conflict; what is conducive to the welfare of others is often in accord with the welfare of the subject. The censorship of conscience does not always need to operate in view of the tendency of the individual to form habits of conduct. It might be suggested that Butler's principles are approximate equivalents of what the English psychologist would today call sentiments, particularly, in this case, the moral sentiments. The acuteness of Butler's analysis might be investigated profitably in terms of more modern motivational concepts. His account of motivation in its complexity has considerable relevance to the psychological processes which tend to occur in ethical judgments and in major decisions of long-term importance.

While it is assumed that the motivation must be adequate for behaviour to occur, behaviour which does occur may be, in Freud's terminology, 'over-determined'. There can be a surplus of motivation; motives may be more than enough to determine the behaviour which occurs since some of these motives may have been quite sufficient to determine the course of action taken without the reinforcement of the others which were also present. The conception of over-determination is methodologically a valuable one as it leads the investigator to continue his analysis rather than be content to record merely one or a few of the more obvious of the motives involved. A good illustration of over-determination may be taken

from an ethical problem and relevant psychological observations made by a leading modern moral philosopher. The ethical problem is whether more moral worth is attributable to the husband who brings home a present for his wife because it is his 'duty' than to the one who does so simply because he loves her. The latter may be quite unmotivated by duty; he simply wants to bring her presents. In connection with this type of problem Ross (1930) points out that love *and* duty may incline an individual to the same act. On the ethical problem Ross concludes that the dutiful husband is morally superior to the non-dutiful one in the instance cited, but that the individual who acts *both* from a sense of duty and a virtuous inclination is a still better man.[1]

The psychological issue which concerns us in this kind of situation is this. It is reasonable to suppose that in the third case, where both duty and inclination are prominent, the action might still have occurred from the one motive without the other. In such a case the action is over-determined. Nor is this type of situation an unusual one since moral sentiments may coincide with sentiments of love or interest. Again, the same decision might still be made in the absence of some of the motives which, when added to others, render a decision 'easy to make'. A person employed in some occupation might do the work quite willingly even if not paid to do it; his habits and interests are 'functionally autonomous'. But subsequently he may lose interest in his work, yet continue to do it. In such a case there is evidence that his previous working behaviour has been over-determined and was the product of at least two influential motives. With one of these removed the behaviour continues. He may not work so well, as his motivation has lost the important support of autonomous interest; nevertheless his working continues. The admittedly hypothetical example taken illustrates over-determination in motivation and the interesting kind of problem which awaits fuller investigation now that simple and inadequate theories in this field have been generally rejected.

Two such theories may be noted. *Hedonism* was a theory with a long history; it reduced all motivation to pleasure-seeking and pain avoidance. The second theory—of *egoism*—held that the basic human motive is self-interest. Butler, whose work has been referred to, did much to show the weaknesses of both hedonism and egoism. These and a number of other alternative 'one-factor theories' of

[1] *op. cit.* pp. 164–5.

some historical interest are considered and dealt with critically by Wallas (1936). A new and intrinsically interesting criticism of the hedonist standpoint is implicit in the thought of Flugel (1945) who argues that, in his self-punitive and self-destructive activities, man merits the title of a 'pain-seeking animal'. Of some relevance to this thesis is the experiment of Pavlov's student who first demonstrated the establishment of a positive, seeking reaction to pain, under controlled laboratory conditions.[1]

Summary

Behaviour is a function of organism and environment, and motives are determinants of behaviour from within the organism. Emotions, emotional systems, primary and secondary appetites are four important categories of motive. 'Need' is a widely used concept in contemporary theories and seems particularly applicable to motivation viewed from the standpoint of goal objects sought. 'Functional autonomy' is illustrated by such motives as sentiments and secondary appetites. Differences of strength and hierarchical organization of motives are distinguished. The layman's and the psychologist's views on motivation differ and the problem of their relation needs further examination. Behaviour may occur in the presence of contrary motivation; on the other hand motivation can be more than sufficient and behaviour may be over-determined motivationally.

RELEVANT READING

Butler, J. (Bishop), 1726, *Sermons on Human Nature.*

McDougall, W., 1908, *Introduction to Social Psychology.*

Murray, H. A. *et al*, 1938, *Explorations in Personality.*

Young, P. T., 1936, *Motivation of Behaviour.*

Much important recent work is to be found in articles in journals. The articles by Maslow (1943) and Tolman (1949) are recommended as reading. Because of both the contribution it contained and the reaction it provoked, McDougall's book is historically one of the most important books on psychology ever written.

[1] Pavlov, 1927; see Chapter VI.

CHAPTER III

Perception

All cognition depends originally upon excitation of one or other of the sense organs. Whether the events are those occurring in the external world or within the subject's own body, knowledge of these can only arise through perception. Past and present perception limit thinking and imagery; they impose limits upon even the possibilities of the dream and waking fantasy. Emotion depends upon perception; the subject is provoked by what he perceives in the situation which confronts him. Selectivity of perception exerts its influence upon learning and remembering; what has been learned and remembered in turn influences subsequent selectivity of perception. Impulses, appetites and drives are motives which influence the subject by way of internal (interoceptor) stimulation. Primary motives are modified by learning and learning pre-supposes perception. Secondary motives relate to objects about which the individual has learned through sense perception.

All knowledge originates in perception. That this is the case and that there are no innate principles of knowing is a viewpoint on the whole acceptable to modern psychology. These postulates had their historical origin, as influences upon psychological thinking, in the philosopher John Locke.[1] An individual's awareness of his material and social environment, and of his own conscious processes, depends upon the integrity and functioning of his sense organs. Previous perception—what is remembered—combines with present perception to equip him to make judgments, to assess meaning, to classify and to solve problems. Even the fantasy of sleep (dream) and of waking life is limited by what has been perceived in the past. A consideration of these facts leads us to an awareness of the basic importance to psychology of an adequate theory of perception.

[1] 1690, Bk. 2., Ch. 2.

Perception occurs as a result of stimulation of a group of receptors associated with a sense organ. A stimulus is energy which excites such receptors. *Adequate stimuli* are those appropriate to the sense organ—the adequate stimulus for auditory perception is sound waves; for vision, light waves. Sense organs may be activated also by inappropriate or *inadequate stimuli.* An interesting instance of inadequate stimulus perception is 'paradoxical cold'. This may be produced by heat stimulation of the 'cold' skin sense receptors.[1] A familiar illustration of inadequate stimulation of the sense of vision is 'seeing stars' as a result of a blow in the face. The philosopher-psychologist of earlier times recognized five senses: the two 'higher' senses of sight and hearing, and the three 'lower' senses of touch, taste and smell. This classification was an over-simplification. What was formerly called 'touch' we now know to embrace specific sense organs which give the experiences of pain, heat, cold and touch. The modern classification of the senses is threefold: exteroceptors, interoceptors and proprioceptors.

Exteroceptors are the 'external' sense organs of the body. The traditional five senses, together with the sub-divisions of 'touch' noted above, are all of the exteroceptor kind. Exteroceptors are located in places appropriate to their function of giving information about environmental events; they are located on the external surfaces of the body. *Interoceptors* are the 'internal' sense organs; these give information about the physiological and biochemical state of the body. They are closely associated with such visceral organs as the stomach, and give rise to what may be called the 'internal' perceptual experiences which accompany appetite and emotion. Examples of interoceptor sensory experiences are the 'pangs of hunger' and the 'epigastric sensations' which may occur with fear, nausea and disgust. The *proprioceptors* are situated within the body tissue itself, for example in the muscles. Their function is to enable the subject to perceive (other than by vision or exteroception of alternative kinds) the position of his limbs in space. They enable the organism to be aware of the nature of the stresses and tensions to which it is subjected in the course of carrying out bodily activities. Proprioceptors play a part in assessments of differences between two weights and in the awareness (other than by exteroception—vision or touch) that the legs are crossed or the knees bent.

[1] Woodworth, 1938, p. 466.

The word 'perception' is commonly used by the layman to refer only to vision. As the doctrine of the five senses indicates, it has also sometimes been unduly confined by the early psychologists to *exteroceptor* perception. Again, the importance of the internal senses has not always been recognized in the construction of psychological theory. A corrective has been provided by Freud (1923), who regards the ego (the 'self' in the narrower sense) as subject to stimulation from both the outside world and from the impulses of the unconscious within. The distinction is basically that between perceptual experiences of the exteroceptor and interoceptor kinds. From this standpoint it will be apparent that perception has reference to 'orectic' processes (feeling, emotion and impulse) as well as to those of a 'cognitive' kind (thinking, 'perceiving', and judging). On the whole psychological theory in the field of perception is well advanced, though somewhat orientated towards exteroception. What has been established in the laboratory and elsewhere has noticeably failed to support either the habits of thought of the layman, or those of the early philosopher-psychologist. Perception is creative, not merely reproductive; what the subject cognizes perceptually is not necessarily a reproduction of the sense data presented.

The most obvious illustration of this principle is to be found in illusions. If the index and second finger are crossed and some object like a pencil or a marble placed between them, an illusion of touch will be experienced. Not one but two objects will be perceived. Another kind of discrepancy between stimulus objects and perceptions of them is known as 'Fechner's paradox'. If two stimuli of unequal brightness are brought close to the eye they are perceived as a fusion—one object, not two, is perceived. There is also a change in perceived brightness; the brightness of the fusion is perceived as less than that of either of the two objects viewed separately. Another reason for discrepancies between objects and perceptions of them is selectivity. Among the determinants of selectivity in perception are interests and presuppositions. Such selectivity in perceiving and remembering is illustrated if an attempt is made to recall the appearance of an object of a well-known kind, or an object recently perceived. The reader may choose his own home, or this book which he has perceived just before closing his eyes. Subsequent inspection will reveal that certain characteristics present

in the sense data have been omitted, others inaccurately perceived or recalled.

1. Behavioural and Geographical Qualities

Koffka (1935) makes an important distinction between the 'geographical' (actual) and 'behavioural' (perceived) characteristics of the environment. The first important fact about perception is that

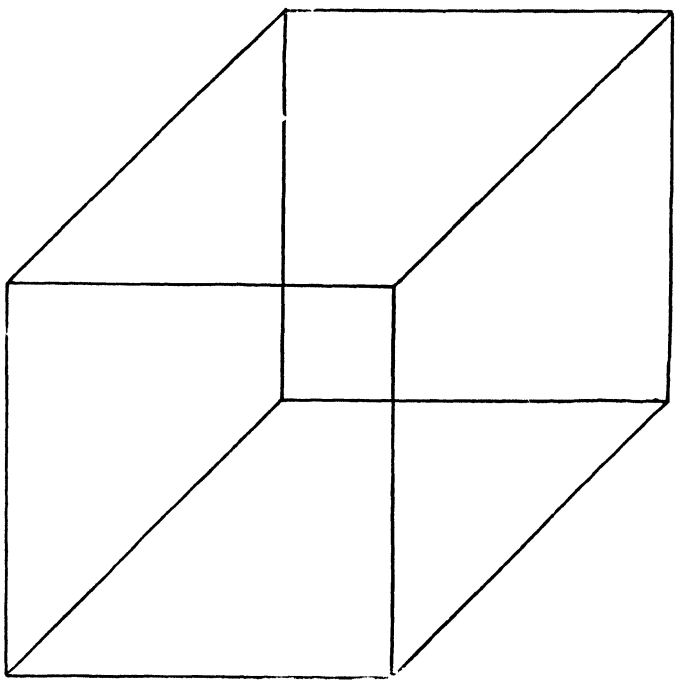

Fig. 2
The Necker Cube

there can be a very considerable discrepancy between these. Koffka's distinction and this discrepancy may be illustrated by an illusion of the reversible figure type. In fig. 2 it will soon become apparent that there are several alternative perceptions of the cube diagram. The lines permit perception of mutually exclusive configurations or 'wholes'. Geographical characteristics of the figure remain constant, but the behavioural (perceived) qualities change,

and with a little practice may be made to alternate. An illusion can be regarded as involving a marked discrepancy between such geographical and behavioural characteristics. Numerous other well-known illusions illustrate this basic and important distinction. What are geographically parallel lines may appear not parallel, straight lines may appear curved, curved lines straight, equal lines unequal, and so on. Good collections of visual illusions are to be found in Katz (1948) and Fraser (1908), as well as in the principal writings of the gestalt psychologists. The writer is indebted to H. H. Ferguson for an account of an interesting unpublished experiment relating to taste (gustatory) perception. (Personal communication, 1941.)

Subjects were presented with a set of jellies and asked to give a report on their 'taste'. The jellies used were specially prepared and their colours differed from the conventional taste-associates. For example, raspberry-flavoured jelly was coloured green, and red-coloured jelly was flavoured not raspberry but lemon, etc. Many subjects perceived 'taste' in accord with colouring and not flavour. A control experiment, the subjects being blindfolded, revealed ability to perceive flavour correctly under conditions which excluded visual interference. Again, and in another sensory department, the hiatus between what is perceived and what is presented to the subject as sense data is illustrated.

Another source of discrepancy is a result of the limitations of the sense organs themselves. In 1834 Weber observed that the ability to discriminate differences between two stimuli is unequal at different intensities of stimulation. A difference 'just noticeable' at a low intensity would not be distinguishable at a higher intensity. In order to retain awareness of difference it is necessary to increase the magnitude of the actual difference between the stimuli. This principle, *Weber's Law*, holds at intermediate, but not at extreme, intensity. At a later date Fechner formulated the principle that the increase necessary to preserve discrimination is proportionate to the logarithm of the stimulus. Weber's and Fechner's laws both indicate that discrepancies between stimulation and psychological experience resulting from such stimulation manifest a certain regularity, at least at intermediate intensities.

One of the strongest illusions with which the writer is acquainted appears in fig. 3. The diagram is not, as it appears in its geograph-

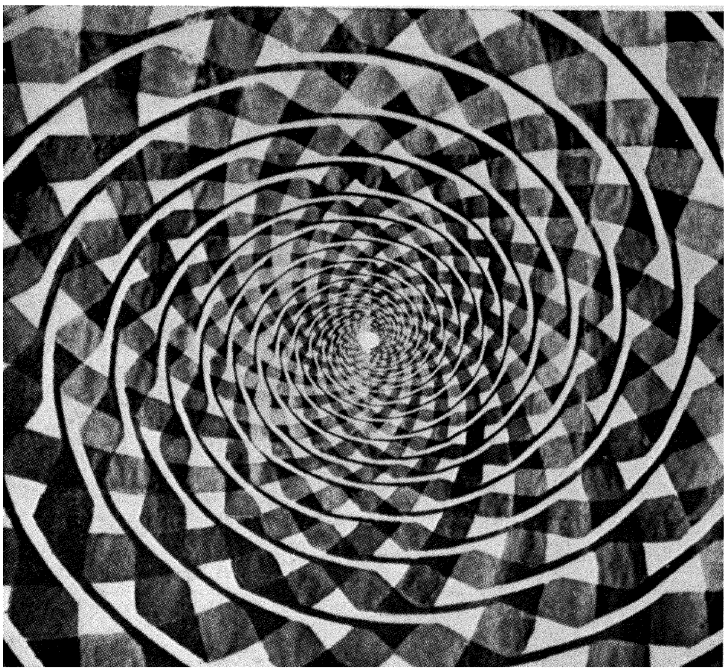

FIG. 3

FRASER'S SPIRAL ILLUSION I

Figs. 3 and 4 reproduced from Fraser, J., 'A New Visual Illusion of Direction', *British Journal of Psychology*, **2**, 1908, by permission of the Editor

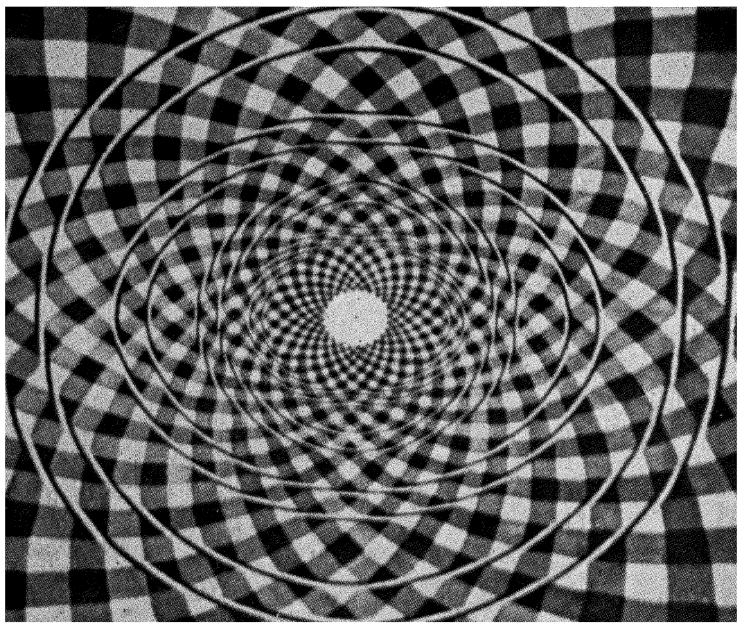

FIG. 4

FRASER'S SPIRAL ILLUSION II

ical qualities, a spiral. On the contrary it is, in its actual, geographical qualities, a series of concentric circles. A tracing of the outline of one of the circles will demonstrate that this is the case. Fraser, the author of this illusion, presents a number of variations, of which fig. 4 is an example. The rings which appear irregular and elliptoid are geographically perfect circles. The reason for the discrepancy so apparent in these illusions is to be found in the setting in which the circles are placed. Such a setting favours distorted perception; a more neutral setting would result in a closer approximation of the percept to the actual sense data.

Since perception precedes other psychological processes such as thinking, judging, remembering and emotional experience, Koffka's distinction is one of fundamental importance. This investigator regarded failure to make such a distinction as a basic weakness of early behaviourist (Watson) thought. The behaviourist often seemed to proceed on the assumption that it was the actual (geographical) qualities of the environment which determined reaction, without making allowance for subjective perceptual factors. It has been noted in the previous chapter that emotion is provoked by perception of external events. Koffka's distinction has important relevance to such provocation which depends, in the last analysis, upon the subject's *perception* of a situation, not on its actual qualities. Anger may arise from an 'insult' which has no basis in fact, while fear can be provoked by 'danger' judged to be present but lacking a real basis. Emotion may be the result of perception of social situations which are neutral in respect of provocative characteristics. What is important is the subject's own assessment of the situation, however inaccurate this may be. If emotional provocations are regarded in an external way, from the standpoint of a naïve behaviourism, the fact that emotion is provoked by many neutral situations remains unexplained. What is or is not an 'insult' and, to a lesser extent, what is or is not 'frustration', cannot always be assessed from an examination of the situation. It can be assessed by an examination of the 'behavioural qualities' (Koffka) of the situation, that is from a study of the situation as apprehended by the subject who is provoked to anger (McKellar 1949 (*a*)). Opportunities await the research worker in the extension of Koffka's thought on perception of illusions to the question of emotions and their provocation.

2. HALLUCINATION

Hallucinations of the various sensory departments occur with normal individuals under abnormal circumstances, as well as in the insanities (psychoses). Illness of the fever kind, as well as drugs like mescal, may produce hallucinations (Klüver 1928). Again, in the transitional mental states between sleeping and waking hallucinations occur. A definition of 'hallucination' may or may not include what seem to be related phenomena. Among these may be noted the extremely vivid visual images which may occur in the sleeping-waking state, the kinaesthetic after-experiences of movement of a ship, or the motions of such activities as skating or tennis-play, of which the subject may have vivid imagery just before sleeping. The sensory basis of hallucinations may be of this after-image type, it may be entirely non-existent, or it may have a contemporary basis in what is geographically present. In this last case the sense data are perceived in a grossly distorted way, but available sense data are nevertheless utilized. As Shaw's Saint Joan says: 'It is in the bells that I hear my voices.' Such a principle of economy seems to operate in certain 'hallucinations'. The subject responds to but misinterprets geographically present sense data.

On one occasion an individual who was severely ill was lying on a sun-porch overlooking a garden. He experienced the hallucination of seeing large numbers of his relations and friends who had come to visit him. Subsequent investigation revealed that there was a sensory basis for the hallucination in the outlines of the trees and shrubs in the garden outside the sick-room. Another patient, a psychotic, declared that the doctors and nurses of the institution were 'torturing' him. A third patient complained that his enemies were passing 'wireless-waves' through his body. There was evidence in the last two cases that hallucinatory meaning had been placed upon interoceptor bodily sensations.

The second and third examples taken are interesting as illustrating the way in which hallucinations may have the same relation to delusion as normal perceptions have to belief. A vicious circle may be set up in which hallucination gives content to delusion, and delusion in turn forms a basis for hallucinatory perception. Some psychologists would choose to term the instances in which such sense data are present 'illusion' rather than 'hallucination'. This usage is, of course, permissible, but would seem to prefer refine-

ment of classification to understanding of the psychological processes which may be involved in many hallucinations. We would define hallucination as being a false perception, involving a highly distorted or non-existent sensory basis. It differs from illusion in that it is specific to a particular personality at a particular time, rather than (like an illusion) something which others will perceive given the same sense data. The conditions favourable to its occurrence tend to be, in one way or other, abnormal. Although hallucinations of touch, taste, smell, etc., occur, the commonest hallucinations are auditory; the next commonest, visual. Hallucination represents the extreme case of subjective, as opposed to sense-data, determination of perception.

3. The Gestalt Theory

Illusions, and possibly hallucinations, represent good illustrations of the principle that the relation between the sense-data presented and the resulting perception experienced is not necessarily a simple one. This principle is implicit in the gestalt theory of perception of which it forms part, and to which we may next turn. In 1912 Wertheimer was investigating the illusory perception of movement which occurs with successive presentations of stationary stimuli. (This phenomenon forms the basis of the modern film entertainment). Wertheimer used a number of experimental set-ups. In one of these parallel lines were presented in succession. In a second experiment the stimuli were discs, in a third lights. Rapid successive presentations of two similar stimuli resulted in the perception of a moving object. Wertheimer named the effect the *phi-phenomenon*. He was concerned to discover the conditions under which the illusion did and did not occur. The time interval between presentations appeared to be important; if the interval was too long no movement was perceived, merely a 'quiet succession' from the one to the other stimulus. Again, if the alterations were too rapid the apparent movement did not take place. An optimal distance as well as an optimal time between the two stimuli was necessary for the occurrence of the phi-phenomenon.

These experiments were of great theoretical and historical importance. They gave rise to a new conceptualization of the problems of perception. As has already been noted with reference to the

spiral illusion (fig. 3), what is perceived depends on the total conditions under which the perception is made. If the same figure is presented in a different setting, a very different kind of perception may occur. On the basis of his study of the phi-phenomenon Wertheimer denied that a perception was an experienced reproduction of the sense data presented, or a mere sum of the sensations which occurred. Perception was regarded rather as an immediate response to complex stimulation. Such stimulation had properties

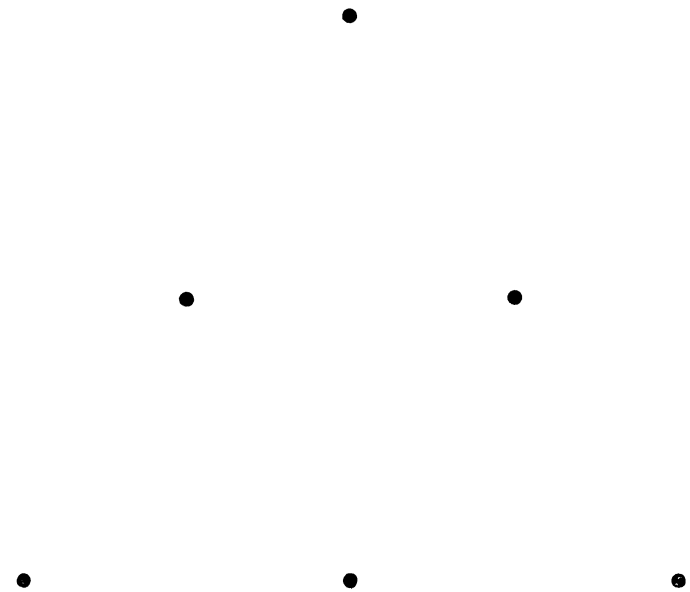

FIG. 5.—Strength of Gestalt I

of its own not to be found in the part-sensations. As the phi-phenomenon showed, under one set of 'prevailing whole conditions' movement is perceived, under another set of conditions there is no such apparent movement. Such configurations, with properties additional to those of their parts which as wholes themselves determined the nature of the parts, were called by Wertheimer 'gestalten'. Gestalten differ in strength. The *strength of a gestalt* is the extent to which the nature of the whole determines the nature of the parts.

Thus fig. 5 is a gestalt in that the dots tend to be perceived not as unrelated dots but as parts of a whole triangle. Yet fig. 5 is a rela-

tively weak gestalt because of the large gaps between the dots. It is a weaker gestalt than fig. 5a. In this the dots are closer together and it is more difficult to see them as elements unrelated to one another. The perceived qualities of the dots in fig. 5a are strongly determined by the nature of the whole which they comprise. Such a whole has qualities other than those of the parts in, for example, the *angles* of the triangle. A third triangle drawn of dots which are even closer together than in fig. 5*a* would be a still stronger gestalt.

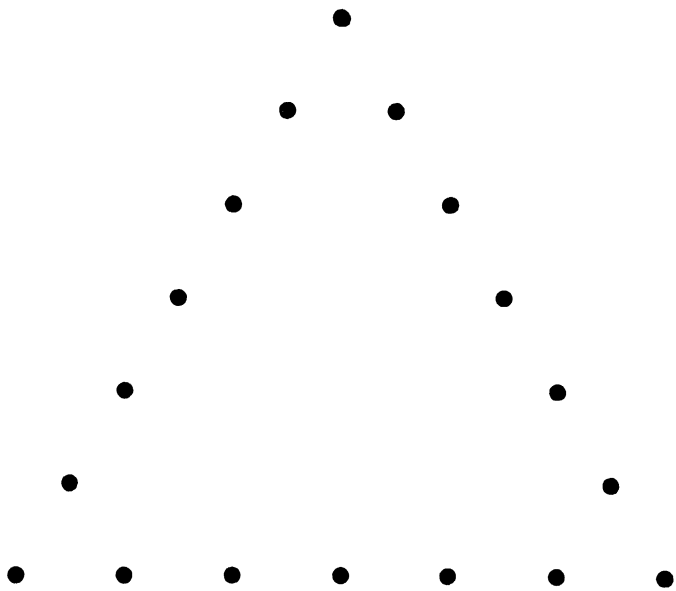

Fig. 5*a*.—Strength of Gestalt II

The factor of *proximity* is, then, an important determinant of gestalt strength. Another such factor is *similarity*; similar parts are more readily perceived as constituting a whole than dissimilar parts. The Ishihara test of colour vision depends on the factor of similarity. In this test the colour blind and the normal subject differ markedly in what they perceive as 'similar' and 'different'. Difference in grouping enables normal and abnormal colour vision to be distinguished. The basic contention of gestalt psychology was well stated at a later date in a principle formulated by Krech and Crutchfield:

'The perceptual and cognitive properties of a substructure are

determined in large measure by the properties of the structure of which it is a part.'[1]

The measure of such determination relates to the dimension of strength of gestalt which we have discussed. An excellent instance of a strong visual gestalt is given by the authors quoted, as illustrating their principle, in fig. 6. In this diagram the angles about point O may be taken as 'substructures'. Inspection will reveal that these angles are obtuse (geographically) and appear obtuse to perception (behaviourally). Let us take, for instance, the angle BOC.

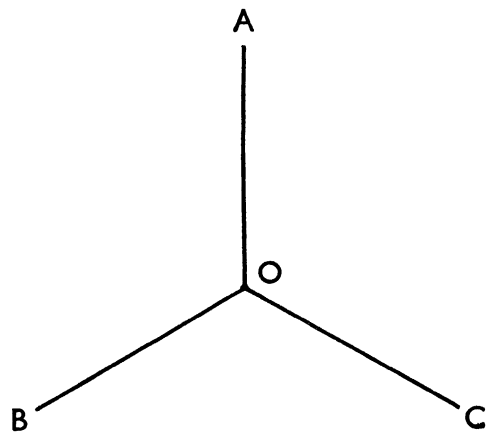

FIG. 6.—Visual Gestalt I. (See also Fig. 6*a*.)[2]

If the reader turns to fig. 6*a* (p. 60) he will again find the angle BOC. This angle now appears as part of a different and suitably chosen total structure. BOC appears in fig. 6*a* either as a right angle or as a close approximation to a right angle; all three angles about O appear in this second figure in this way. Geographically they are, of course, still obtuse angles. The geographically identical angles are perceived as obtuse angles in their different setting of fig. 6.

At the time of Wertheimer's experiments (1912) the contrary view was maintained and generally accepted. Under the influence of atomistic ways of thought it was held that a perception could be

[1] 1948, p. 94.

[2] Figs 6 and 6a reproduced from Krech, D. and Crutchfield, R. S., *Theory and Problems of Social Psychology*, 1948, by permission of the McGraw-Hill Publishing Company Limited, London.

analysed into its component sensations, and was nothing more than the sum of these. This 'sensationist' standpoint was attacked by Wertheimer and his associates Koffka and Köhler. For example, Koffka (1935) explicitly denied what had been equally explicitly asserted by James Mill, that in the perception of a house and a tree the subject has x sensations corresponding to the house and y sensations corresponding to the tree. As Koffka pointed out, it is simply not correct to say that in such circumstances there are, say, '189 house and 124 tree sensations'. The subject simply experiences a house and a tree as such. Koffka referred to this atomistic, sensationist way of thinking which had preceded the gestalt movement as 'brick and mortar psychologizing'. In this Koffka reiterates the thought of Wertheimer that perception is an immediate response to complex conditions. Perception depends upon such whole-conditions and is not a mere sum of a large number of sensations.

4. Principles of Gestalten

Wholes which stand out perceptually, and which are thus cognized as segregated from a perceptually less important setting, are termed 'figure'. In contrast, their background is termed 'ground'. Everyday visual perception yields numerous illustrations of the gestaltist's *figure-ground phenomenon.* Chairs, tables, houses and motor-cars are perceived as figure against a ground of less important other objects. A tune or melody is the standard example of an auditory gestalt. The same tune may be played in another key, yet although all the notes are different it remains the same tune since it is the nature of the whole which determines that of the parts and not *vice versa.* Music also affords illustrations of the figure-ground phenomenon. For example, in the sonata and the fugue the listener perceives the theme as a figure against a ground of more incidental notes. Similarly, in a lecture the speaker's voice may be figure, an auditory gestalt which is perceived as segregated from a ground of more incidental lecture-room noises. In standard experiments in the laboratory the skin senses will give illustrations of the figure-ground phenomenon. The pressure of an aesthesiometer may be figure against a ground of other touch stimuli. Ground and figure in the field of taste undoubtedly play some part in the art of the imaginative cook as in the appreciation of the gourmet.

The most obvious and apparent examples are nevertheless in the field of vision. In the case of map-reading, land is usually perceived as figure, sea as ground. With a little practice the subject may be able to reverse this and secure perception of unusual sea shapes as figure against a ground of land mass. Sometimes such reversal occurs spontaneously in unsatisfactory maps in which black sea makes a stronger appeal to perception as figure than the white land mass which is perceived as ground. In the case of reversible visual illusions what happens is that figure becomes ground and

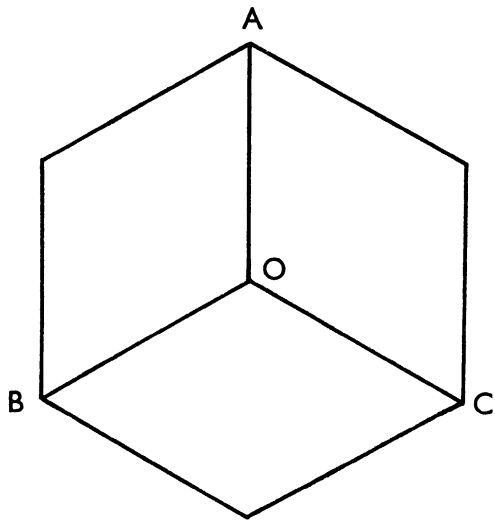

FIG. 6*a*
Visual Gestalt II. (See also Fig. 6, p. 58)

ground becomes figure. Such alternation may occur spontaneously, or as a result of a mental set given to the subject. Fig. 7 illustrates both figure-ground reversal and the influence of mental sets. The subject may be asked whether he can see in the diagram the letter Z, again the letter X, and the letter M, etc. From the same sense data under the influence of a series of mental sets the following figures may be distinguished: N, M, X, Z, H, W, E, F. For each of these perceptions the remainder of the diagram constitutes ground, but becomes figure in a subsequent perception. Mental sets are of considerable importance in relation to experimental technique. An investigator needs to exercise caution against un-

witting introduction of a mental set which may determine the subject's response to ambiguous sense data.

The nature of perception and the organization of gestalten is determined also by other principles. One of the most important is the *principle of pragnanz*, which states that perception tends to be in the direction of simplicity and stability, other things being equal. This is illustrated in fig. 2, which is also a reversible figure. As a result of the principle of pragnanz it is probable that it will be perceived as one or other of the alternative cubes. It is unlikely that, until the appropriate mental set is given, the diagram will be

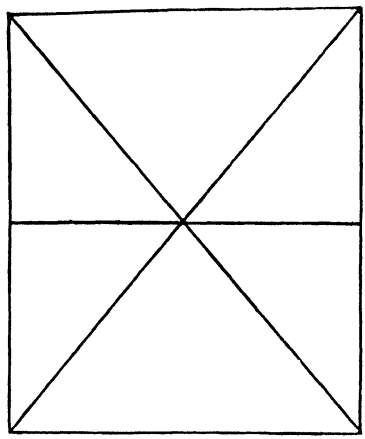

FIG. 7. The Influence of Mental Set

perceived as seven irregular-shaped figures. Geographically the same lines permit the perception of seven such shapes, yet the perceptual preference is for the simpler and stabler alternatives. The *principle of closure* is a special case of pragnanz, but of sufficient importance to be considered separately. It is the tendency to perceive figures as closed even though gaps are geographically present in the lines presented. Our illustrations of triangles composed of dots (figs. 5 and 5*a*) also illustrate closure. Such dots are perceived as triangles despite the gaps. Brief presentations of incomplete geometric figures with the tachistoscope may also be used to illustrate closure. On presentation such figures tend to be perceived as complete as a result of closure. Another interesting illustration is the 'shadow printing' often used in signwriting. In this the effect of completed letters is secured by skilful use of gap as well as of

line. The letters appear as complete although large gaps are present in the actual sense data.

Among other gestalt principles are those of *similarity* and *proximity*, which have been mentioned above. It may be noted that gestalt theory is somewhat nativistic in its emphasis. Too little stress has been placed upon the important part which past perception plays upon present perception. Past experiences of the subject which enable him to assign meaning to the sense data may determine what is perceived as figure or what is perceived as ground. Past perception may exercise a powerful influence upon what is perceived in the sense data presented. A small dot on a hillside may appear to a naïve observer simply as a dot with no meaning. Another individual with equal visual acuity may 'perceive' it as a house, or as a church, simply because he has been there and knows what it really is. Mountaineers will know that a peak tends to 'look' different after one has been on it or climbed it. What appears to a tourist as a short slope may be 'perceived' by the mountaineer with something of its real qualities of length and steepness. A mere black line on the mountain may be 'perceived' by the climber as the crevasse, the crossing of which occupied him some time and caused some expenditure of emotion.

In recent years Köhler has been concerned with investigation of the effect of an immediately preceding stimulus upon a subsequent perception. Previous perceptions seem to affect subsequent perceptions by some process of interference. The phenomenon is known as *figural after-effect*, and has been called by other investigators the 'Köhler effect' (Walthall 1946). Köhler holds that the phenomenon depends upon central processes in the brain rather than upon the sense organs involved. An electric field is set up in the brain by the perception. This field has a greater density of circuit than the surrounding area and thus interferes with the currents set up by the subsequent perception. The areas previously stimulated are now areas of obstruction. Prolonged inspection of any closed visual object gives rise to this phenomenon on subsequent visual perception of another object. Other investigators such as Weitz and Post (1948) have suggested alternative explanations to Köhler's brain electric field theory. That alternative hypotheses cannot be excluded at this stage is admitted by Köhler.[1] On the other hand, the fact that the closed figures or gestalten when perceived may have a

[1] Köhler 1948, 1950.

neurological accompaniment in an electrical field (homogeneous surfaces do not give rise to figural after-effects) is an important finding (Köhler 1950). It was contended by the gestalt psychologists at a much earlier date that, if perception itself is more complex than previously supposed, then the physiological processes accompanying perception are of equal complexity. The investigation of figural after-effects has provided empirical evidence that this is the case, that the neurological processes which underlie 'figure' perception differ from those underlying 'ground' perception, and that the difference between the two can be measured with some degree of precision.

Applications of gestalt thought and experiment to other branches of psychology may be noted, with illustrative examples. Early gestalt work was largely preoccupied with visual perception. Systematic applications of these principles in other branches of perception study are being made at the time of writing by Katz and others. Katz (1949) has applied the notion of whole-determination to mental and muscular work. In an interesting series of experiments on mathematical calculation it was demonstrated that speed within sub-tasks is dependent upon the length and other qualities of the total task. Wertheimer applied gestalt theory to logic. Koffka (1935) has suggested very important applications to personality and social psychology. Köhler has advanced the contention that there are physical gestalten, for example electrical fields and soap bubbles. Schulte and others have dealt with psychopathology from this standpoint.[1]

5. Apperception

The relevance of meaning to perception has been noted. Yet it is apparent that there may be a considerable time interval between perceiving something and apprehending its meaning. Herbart spoke of 'apperceptive mass' to denote the fund of knowledge to which new perceptions are related in the process of being understood. The term 'apperception' denotes the process whereby meaning is assigned to a stimulus in other than sensory terms. 'Apperception' is taken by Murray (1933) to include such processes as understanding, interpreting and classifying. The way in which apperceptive mass, or previous organizations of perception, may induce inaccuracy in a new perception is illustrated in an experi-

[1] See Ellis, 1938.

ment by Wilkins (1917). The experimenter exposed a series of two-word phrases for periods of 50–100 milli-seconds. The syllables were such as to permit, when re-arranged, the 'perception' of a more familiar phrase. Misreadings occurred, and tended to be in the direction of the familiar rather than reproductions of the stimuli presented. Examples may be taken:

Stimulus	*Words read*
Shakesbeth	Shakespeare
Macpear	Macbeth
Washout at	Washington
Irvington	Irving

It is apparent that the actual stimulus words presented would be incompatible with the subjects' previous fund of knowledge. Such knowledge exerted its influence in determining the meaning which the subject placed upon the stimuli presented.

Since perceptions and memories may be emotionally toned to a considerable extent, it would seem likely that affective processes and states will exert an influence upon present perception. Murray (*op. cit.*) carried out an investigation which demonstrates the effect which emotion and its after-effects of emotional mood may have upon apperception. Five girls all aged eleven years were asked to make an assessment of the 'malevolence' of the faces shown in a series of thirty photographs of people. Estimates were made under two sets of conditions, before and after two fear-provoking games of 'Murder' had been played in the dark. The investigator presented rather convincing independent evidence that the two games played had been effective in producing fear emotion in the subjects concerned. Analysis of the data revealed that 72 per cent of the photographs were estimated as more malicious after the experimentally induced fear. There were individual differences. Murray concludes that under some conditions fear will induce some subjects to increase their judgments of the malevolence of other personalities. The experiment has relevance to the tendency which insecurity, uncertainty and fear probably have to induce the subject to overestimate the hostile, aggressive and threatening characteristics of others. Bettelheim (1943) has found evidence that such over-estimation occurred also under conditions (of concentration camp life) in which actual threatening qualities were present. The

part which fear may play in over-estimations of the hostile attributes of other individuals or groups merits further investigation. Judgment and apperception appear to be strongly affected by such orectic factors as these. The second Naples occurrence (Chapter II) was an instance of interpretation of a happening in terms of previously established emotionally-toned standards of judgment about 'Latin temperaments'. Murray's study suggests avenues of experimental approach to this kind of problem.

6. Selectivity in Perception

At any one moment of time an individual's sense organs are exposed to a very large number of stimuli. Selectivity must occur in the interests of satisfaction of vital needs and avoidance of gross physical harm. The central nervous system and its psychological equivalent, attention, exercise some such selection. Voluntary control results in attention to some percepts and some ideational processes rather than others. These are said to be at the 'focus' of attention in contrast to other thoughts and sensory experiences of which there is but a 'marginal' awareness. Again, there are certain qualities implicit in the sense data which bring these from the margin to the focus of attention. Movement is one such quality. Intensity of a stimulus is another. Intensity often results in pain sensation or pleasure feeling. Shand states the general principle: 'Bodily pleasures and pain, after they have exceeded a certain intensity, tend to attract attention to themselves.'[1]

The figure-ground phenomenon involves further perceptual selectivity of a kind which may be sensory rather than central. Fluctuations which occur in reversals of figure and ground do not necessarily depend upon voluntary (cerebral) control. Theories differ as to whether such fluctuations have their origin in the central nervous system or in the sense-organs themselves. In any case an important kind of perceptual selectivity is that which determines the perception of some sense data as figure, others as ground. Gestalt principles, like the laws of pragnanz and closure, govern further selectivity in perception. Finally, the interoceptors which make the subject aware of his appetites, emotions and other such orectic processes, exert a selective influence upon cognition. The view is implicit in Freud's thought that unpleasure exerts an influ-

[1] 2714, p. 194.

ence not only upon memory, but also upon perception. In the latter case the mechanism of 'denial' is involved (see Chapter XI). Emotions and moods exert a selective influence; the very phrases 'blind fear' and 'blind rage' are suggestive of this. Not least in importance are the subject's values, interests, prejudices and sentiments. Two individuals may undergo the same experience, but if the organization of their emotional systems is different it is probable that they will perceive, retain and recall very different objects and incidents. A simple example will illustrate.

On a recent visit to London the writer visited the National Gallery. His interests are in portraiture and he happens to have a strong preference for Spanish, Flemish and Dutch art, together with negative sentiments towards painters of the Reynolds and Gainsborough school. Introspections during the visit showed the way in which these standards of taste influenced what he actually saw. He found himself hurrying through the galleries devoted to Gainsborough, and spent time saved on a more detailed examination of some of the portraits of Velazquez. Much disappointment was felt on learning that the main Rembrandt paintings were not on display. As a result his memories of the gallery are tinged with negative and hostile emotion. What was perceived and remembered bore no simple relation to the composition of the gallery; it contains more paintings by Reynolds than by Velazquez. The pictures perceived and remembered differ from those which would have been selected by the different standards of taste of other visitors. We may, for example, contrast another visitor whose interests were primarily in landscape rather than in portraiture. Again we can contrast a hypothetical third person who disliked Rembrandt and Velazquez and believed Gainsborough to represent the highest achievement of the art of portraiture. Even within such an obvious influence on perception and memory as 'an interest in art', there are more specific selective principles at work. Selectivity arising from negative and hostile emotion may operate at a stage earlier than retention and recall. What arouses negative emotions may be inadequately perceived, or quite actively avoided and thus not remembered.

It will be apparent that it is such principles of selectivity as have been stressed by the gestalt school and other psychologists which make for discrepancy between the 'behavioural' and 'geographical' features of the environment (Koffka). In view of this necessary dis-

tinction, and of Wertheimer's assertion that perception is an immediate response to complex stimulation, it is evident that 'sensation' as an asserted 'experience' resulting from the stimulation of some sense organ needs further examination. It seems better to regard 'perception' as the experience, and 'sensation' as an abstraction of an aspect of that experience. As Vernon has suggested, the term 'sensation' is very frequently used to denote the aspects of perception 'which are more immediately determined by the intensity, duration, extensity and wave-length of stimulation, and the retinal area stimulated'.[1]

As a result of the contributions of the gestalt school and those influenced by these investigators, it is apparent that the view can no longer be maintained that perception can be analyzed into such 'sensations'. Gestalt psychology has shown reductive analysis to result in loss of some of the most important characteristics of the experience involved. This does not, of course, mean either that gestalt theory in the field of perception is without faults, or that 'sensation' is a conception with which psychology is no longer concerned.

7. Psychological Theories of Cognition

It is the ultimate task of scientific thought to achieve a general integration. Such topics as vision, hearing, and the other 'special senses' are also the concern of sciences other than psychology. Four categories or levels of scientific theory may be distinguished in transition from the molar phenomena with which our science deals to the molecular phenomena which concern such a subject as physiology. Examples may be taken:

Levels of Theory	*Example*	
(*a*) General theories of Cognition.		Noegenetic theory (Spearman).
(*b*) General theories of Perception.	Gestalt theory.	Atomistic-sensationist theory.
(*c*) General theories of Vision, Hearing, etc.		Duplicity theory of Vision (von Kries). Helmholtz theory of Hearing.
(*d*) Specific theories of Vision, etc. (e.g. Colour Vision).	Young-Helmholtz theory.	Willmer theory.

[1] M. D. Vernon 1937, p. 5.

A distinction between four such levels will assist clarification of what seem at first sight to be endless opposing systems of theory. While Helmholtz held to a general perceptual theory of the sensationist type, the fact that such a theory is on the whole discredited does not necessarily discredit the same investigator's theories about hearing and colour vision. Modifications may, of course, have to be made, particularly in the case of theories at adjacent levels. Thus, for example, McDougall proposed a modification of the Young-Helmholtz theory (of colour vision), designed to make it more compatible with the duplicity theory (of vision). Again, as a matter of history, Spearman was opposed to gestalt theory, particularly to extensions of gestalt thought into other fields of cognitive psychology. Such distrust was not a logical necessity; another theorist might have adopted the alternative course of reconcilation. The noegenetic theory (Spearman) was an attempt to give an account of the principles on which all cognitive mental life, all knowing, depends: it will be discussed in Chapter IX. The importance of gestalt theory on the subject of perception has been noted. From this we may turn to general and more specific theories relating to the special senses. To illustrate, the duplicity theory of vision is a largely acceptable and important contribution, though modification of its original statement is necessary. Finally, there are a number of opposing theories which deal with specific aspects of one or other of the special senses. For example, there are various alternative theories of colour vision, with which the reader will be acquainted.

Apart from the historically important Young-Helmholtz theory there are the more recent alternative viewpoints of Willmer and Hartridge. Intricate physiological experiments by Granit support an alternative theory. Reference may be made to the excellent account of these and other theories of the special senses to be found in Morgan and Stellar (1950). It will be apparent that the verification and falsification of alternative hypotheses in this field belongs to physiology and its methods rather than to psychology. It seems better, therefore, to confine ourselves to an account of some of the important psychological *phenomena* of colour vision rather than attempt to deal with alternative theories which belong to an area of rapid development in another science. In general the duplicity theory of vision is largely acceptable to both psychologist and physiologist, though some modification of the original statement of this is admittedly necessary. To this we may first turn.

8. Visual Perception

The phenomena of light and dark adaptation were known to Plato; they are discussed by Socrates in connection with the famous Metaphor of the Cave (*Republic*, Bk. 7). The duplicity theory of von Kries is an explanation of these and other phenomena. On the inner surface of the human retina are to be found two structurally different kinds of receptor cell, the rods and the cones. Stated briefly, the theory is that these differ in function. Von Kries advanced the view that the rod cells are responsible for vision under conditions of low illumination (scotopic vision) while the cones are responsible for vision at normal illuminations (photopic vision). Since the dark-adapted eye appears to be insensitive to colour it followed that the rod cells were sensitive to brightness alone; the cone cells sensitive also to hue. The changes from night vision to day vision, and from day to night vision (light and dark adaptation) are regarded as involving a change over from the functioning of one kind of cell to that of the other. Light adaptation is a relatively rapid process, a matter of minutes. Dark adaptation is rapid for the first 15 to 20 minutes, but reaches a more gradually sloping plateau, if graphed, at 30 to 40 minutes. Careful investigation has shown that a very gradual increase of adaptation continues for about 24 hours. These observable phenomena are interpreted on the duplicity theory as involving a slow change of cone to rod vision and a relatively rapid change from rod to cone vision.

If vision arises from the activity of two kinds of cell which differ in structure and also (as the theory assumes) in function, it seems probable that they will differ also in their point of maximum sensitivity. Such a difference of sensitivity between photopic and scotopic vision as would be predicted from the theory does occur, and is known as the *Purkinje phenomenon*, after its early investigator. The light-adapted eye is most sensitive to a point in the spectrum within the yellow region. Yellow is experienced as the brightest hue; red is also a bright hue. When the eye is dark-adapted both yellow and red lose their brightness. To the dark-adapted eye red appears very dark indeed. It is now the green area of the spectrum which appears brightest. On the occasion of some night vision testing one of the subjects reported that he had been impressed by the light appearance of the grass which he noted when he went out into the fields in the early morning before sunrise. The subject,

who was a farmer, also mentioned the difficulty he had encountered in locating the cows which needed to be milked. These were red-brown in colour. This curious occupational difficulty, involving the Purkinje effect, was confirmed in interviews with other subjects. In terms of the duplicity theory the Purkinje phenomenon is explained by the differences of sensitivity of the rod and cone cells. The point of maximum sensitivity of the rods is in the green, that of the cones in the yellow, area of the spectrum.

A second phenomenon of interest is *peripheral (night) vision.* It was first observed by the astronomer Arago (1786–1853) that faint stars, scarcely visible when looked at directly, were perceived more readily if looked at at an angle. When dark-adapted the subject has a better perception of objects looked at 'out of the corner of the eye'. The effect is explained by the duplicity theory in terms of the distribution of rod and cone cells. The maximum area of rod distribution is in the vicinity of 20 degrees from the centre of the retina; this is also the area of maximum night visual capacity. In contrast the fovea, not the periphery, is the area of greatest sensitivity in the light-adapted eye. This is rod-free but contains about 150,000 cone cells. There are a number of additional, otherwise apparently unrelated, facts which are in accord with the duplicity theory; the superior night vision of nocturnal animals, their inferior day vision, and the weakness of daylight and colour vision of albino individuals.

The phenomenon of night blindness may be noted. This is believed to involve deficiency or malfunctioning of the rod cells. The dark-adapted eye has been shown to be inferior in depth perception, and it seems probable that the rods, which are more rudimentary organs than the cones, are inferior in their functioning in this respect.[1] A number of factors have been shown to influence and affect rod vision.

While extreme oxygen lack affects all vision, night vision is particularly affected (Armstrong 1943). Gastric disturbance and dietary deficiency affect night vision. Night blindness was particularly prevalent among the fishermen of Scotland until it was learned that relief could be obtained by eating the liver of seagulls and fish (Duke-Elder 1938). Not only vitamin A, but also the B and C vitamins, when deficient, seem to result in poor night vision. Advanced age, lack of sleep, fatigue and the common cold also seem

[1] Dickman *et al.*, 1944.

to induce such defects (Stewart 1941). The converse condition to night blindness is *day blindness*. In this the patient sees poorly in good illumination but normally in twilight. This is believed to be due to cone malfunctioning or deficiency. The worth of a theory may be gauged from the number of otherwise unrelated facts it will embrace. In terms of this criterion the duplicity theory is one of the most satisfactory of those to which we shall have occasion to refer. It incorporates a large number of phenomena relating to day and night vision, chromatic and achromatic vision, light and dark adaptation, and various specific effects such as peripheral vision and the Purkinje phenomenon. Some modification is nevertheless necessary, and the theory may be summarized with such modification as follows: Daylight vision (chromatic) is *primarily* the result of cone-functioning; night vision (achromatic) is *primarily* the result of rod functioning.

Illustrative evidence necessitating such modification may be noted. Dark adaptation of the fovea of the retina has been demonstrated, though this area appears to be deficient in rods. Such adaptation is limited and occurs only in the first 5 to 15 minutes (Adams 1929). Again, such investigators as Wentworth (1930) and Boyes (1937) have shown that the cone-free periphery of the retina is by no means insensitive to colour stimuli, provided these are of high intensity. There is evidence both that the cones play a minor part in night vision and that the rods function also in daylight vision; these appear, however, to be sub- rather than primary functions.

9. The Colour Pyramid

The physical basis of colour is the spectrum, the area of 400 to 800 millimicrons of the electromagnetic wavelengths. It is on the whole a desirable procedure to define colours used in experiments in terms of their spectral range and point of maximum sensitivity. For example, the 'red' used in an experiment might have a spectral range of 569–735 millimicrons, with a point of maximum sensitivity at 600. From these figures a luminosity curve for the filter used may be drawn. Two colours which appear the same to perception may have very different spectral composition. Again, as has been stressed by such investigators as Katz (1935), there is an interaction between 'colour impression' and 'linguistic expression' which is by no means unimportant. Colour-naming systems may

be highly relative to one culture rather than another, as has been pointed out by Sherif (1936). These linguistic, perceptual and cultural intrusions are eliminated by use of the spectroscope. However, there is a difference between the physical and geographical on the one hand, and the psychological or perceived attributes of colour on the other. Colour from the perceptual and experience point of view has three main qualities which are summarized in the traditional *Colour Pyramid*, reproduced in fig. 8.

All visible colours may be placed at some point on this diagram. There are three main dimensions, of hue, brightness and saturation. *Hue* is the 'colour' perceived in a stimulus. Differences between the primary hues of red, green, yellow and blue, and between compositions of these are differences of hue. The hue dimension of the figure is round the widest part of the pyramid. Perceived objects also differ in *brightness*. This may be regarded either as presence of white or absence of black. The brightness dimension for achromatic shades lies through the pyramid in a vertical line connecting white with black. Intermediate between these are varying shades of lighter or darker greys. At a point central on this line is 'neutral grey'. Hues also differ in brightness; such different hue brightnesses lie on the surface of the pyramid between the black and white reference points. The brightness of, for example, a red will depend upon its proximity to white or distance from black on this surface of the pyramid. The third dimension is *saturation*. Saturation is represented by distance from the central line through the pyramid which connects white with black. It comprises the amount of chromatic rather than achromatic component in the perceived 'colour'. From this it follows that the colours of greatest saturation are at the widest part of the pyramid, that is round the red-yellow-green-blue square.

It is not always apparent that two colours of equal saturation may differ in brightness. An example may be taken. There may be two reds, each equidistant from the widest part of the pyramid, the red reference point. They will be of equal saturation since each will be equidistant also from the white-grey-black line through the pyramid. Their brightness will be different since the one will be above red, i.e. nearer white, the other below red, i.e. nearer black. The former is perceived as a 'bright', the latter as a 'dark' red.

It has been noted that the colour pyramid has reference to the perceived qualities of colour. There *may* be a physical basis for the

dimensions of hue, brightness and saturation in the actual sense data. Colour perception can be investigated by numerous experiments with the rotating colour wheel. What appear as perceptually

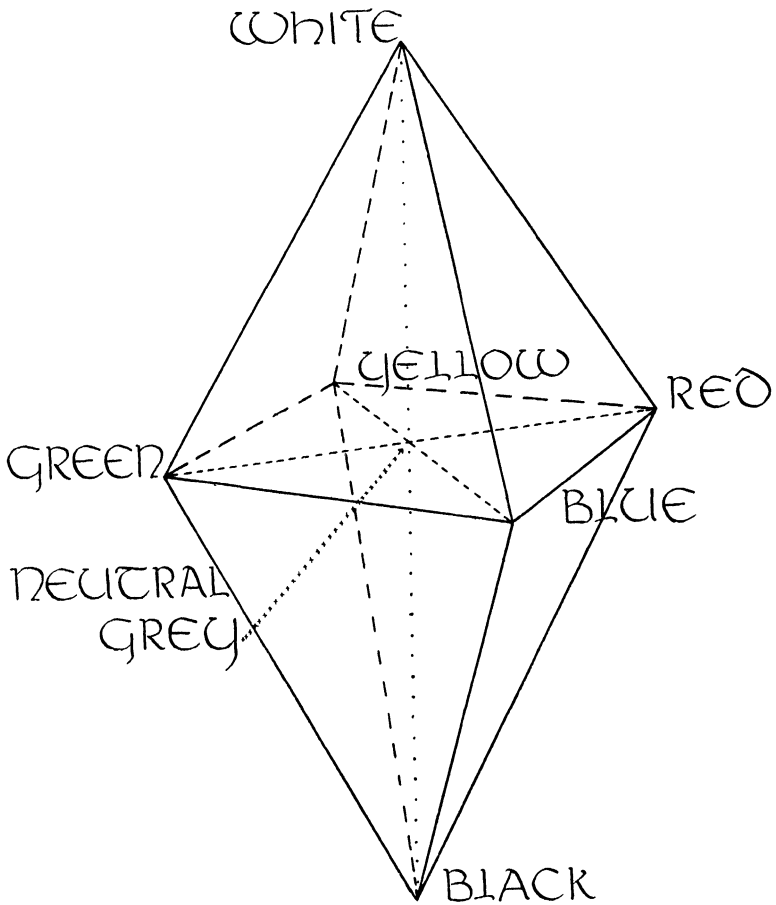

FIG. 8
The Colour Pyramid

identical hues, brightnesses and saturations may be produced in different ways, and from differing proportions of chromatic and achromatic components. Colours may be saturated and desaturated (geographically) by the addition or subtraction of chromatic and achromatic components. The subject will perceive desaturation,

without change in the actual geographical qualities of the object observed, on continued fixation of a coloured surface. With such fixation over a period of some minutes the colour assumes a 'bleached' and desaturated appearance. The phenomenon is known as *chromatic adaptation.*

The perceived colour qualities of a surface can be shown to depend upon the setting in which it is placed. For example, if a small square of neutral grey is cut and placed on a surface composed partly of yellow and partly of blue, so that it rests on both, an interesting effect occurs. Geographically the grey is, of course, homogeneous. Perceptually this is not the case. The part resting on the blue appears lighter and may assume a (complementary) yellow hue. The part resting on the yellow appears darker, and may assume a correspondingly complementary blueness of hue. The relation between complementary colours and neutral grey may be noted. Neutral grey can be formed either from admixture, on a colour disc, of black and white, or of complementary colours. For reasons of simplification the words 'red', 'green', 'yellow' and 'blue' are used in the colour pyramid and our discussion to denote complementary colours. It may be noted, however, that spectrally pure colours appropriate to such names are not complements. For example, the complement of red is a slightly bluish green. It is complementary colours which tend to be confused with each other in colour vision defects. They are also important in connection with negative after-sensations, in which they appear.

10. After-Sensations

There are two kinds of after-sensations ('after images'). These are 'positive' when the after-sensation is of the same hue as the original perception, and 'negative' when the after-sensation is of the complementary colour. Negative after-sensations are readily obtained when the subject is first stimulated by some hue under conditions of reasonable illumination and then fixates an achromatic surface. Neutral grey is often used as such a suitable surface. A law of the negative after-image is stated by Boring and others:

> 'When two stimuli are viewed successively under certain conditions, the colour of the second is modified by the previous stimulation.'[1]

[1] 1937, p. 19.

The previous stimulation referred to is, of course, of geographically present hue; the hue which appears in the after-sensation is a 'behavioural' (perceptual) after-effect of this previous stimulation. Positive after-sensations are readily obtained by fixation of a chromatic stimulus and a subsequent closing of the eyes. The resulting after-sensation tends to fluctuate in its hue and other qualities, but will include an experience of the *same* hue as the original percept.

Another kind of after-sensation is obtained by exposure to coloured light followed by subsequent darkness. In one investigation it was found that of lights of similar intensity spectral blue yielded the most apparent and intense after-sensations (positive). These fluctuated considerably and had an inhibitory effect on subsequent night vision and the dark adaptation process (Ferguson and McKellar 1944). Previous stimulation with colours from the violet-blue rather than red end of the spectrum appear to have a negative effect on dark-adaptation, as has been shown by a number of investigators (Adams 1929). These have been confirmed by Semeonoff (1941). It seems probable that the intensity of the fluctuating after-sensations which follow exposure to light of short wave-lengths is at least in part responsible for this phenomenon (Ferguson and McKellar, *loc. cit.*). The short wave-lengths of light seem to have more general adverse effects upon vision, photopic as well as scotopic. This was found by, among others, Baird in his early experiments on television when using light of violet hue (Swift 1950). There is room for more research into the relations between after-sensations and the dark-adaptation process, and there is some evidence to suggest that after-sensations of greater intensity may occur with the dark-adapted eye.

11. Colour Blindness

It has been noted by Burt (1937) that difficulty is encountered in assessing the incidence of 'colour blindness'. It must be decided what degree of colour weakness is to be categorised as actual colour blindness. Tests differ in their discrimination. Many who would be classed as colour blind on the Ishihara test have had little difficulty in passing the unsatisfactory Holmgren wool test. The Ishihara test is on the whole satisfactory, but as an illustration of the problem it may be noted that the writer, who passes as normal on the

Ishihara, fails on the Nagel's anomaloscope test, which gives very fine discrimination between the normal and minor degrees of colour weakness. There are a number of classifications of colour blindness which have reference to one or other of the theories of colour vision. Commonly used is that postulating trichromatic (normal vision), dichromatic (partial colour vision), and monochromatic (complete colour blindness).

This classification has reference to a trichromatic theory of colour vision of the Young-Helmholtz kind. Red-green blindness is the commonest, yellow-blue blindness less common, and total colour blindness (monochromatic vision) exceedingly rare. Of the commoner red-green blindness we may distinguish two types: (1) Red blindness or protanopia, (2) Green blindness or deuteranopia. There is a sex-difference in the incidence of colour blindness, which is found in approximately 8 per cent of males and only 0·5 per cent of females. Evidence in favour of ethnic differences in incidence of colour blindness has been presented by Geddes (1946) and noted in Chapter I. Monochromatic vision has an hereditary basis, like the typical forms of the more common kinds of colour blindness. Colour blindness may, on occasion, be an acquired condition and may be induced by nicotine and other drugs. The normal subject can obtain a close approximation to the experiences of the various types of colour blind individual by using one or a combination of sheets of cellophane of the same hues as those for which he wishes to induce the abnormality. It is an instructive experiment to perform one or more of the standard colour vision tests, using such sheets or coloured glasses. Standard experiments with the perimeter apparatus will demonstrate the colour blindness of the outer zones of the retina. It has been found by such investigators as Wentworth (1930) that the periphery of the retina is not insensitive to hues of high intensity. In connection with perimeter experiments the phenomenon of *tunnel vision* may be noted. In this the subject's field of vision itself is limited, and does not include the peripheral region which would be sensitive, in the normal subject, at least to achromatic stimuli. Tunnel vision, like colour blindness, is an obvious handicap in certain occupations, and its pressure needs to be considered in vocational guidance and selection.

12. Synesthesia

The phenomenon of synesthesia has relevance to vision and other sensory departments. Synesthesia involves the tendency to experience images of one sense with perceptions of another sense. For example, a person may have auditory images when perceiving colours of different hues. A common form of synesthesia relates to hearing, and is called chromesthesia (or coloured hearing). In this an imagery of colour accompanies auditory perception. Chromesthesia is experienced by some individuals when listening to music; colours imaged with the notes heard may assume characteristic shapes and patterns. Vernon (1937) distinguishes two kinds of musical synesthesia (chromesthesia). One form is encountered mainly among those who are poor musicians and is characterized by an imagery of graded colours corresponding to the percepts of a scale of notes. The second kind is found mainly among good musicians and is based on tone. Musically related keys produce colour images of related wave-lengths. Each key has its characteristic colour and when this key changes the colour imagery changes. The same investigator notes that the colours which accompany such perceptions tend to approach 'eidetic' rather than normal images in their vividness (see Chapter VIII).

13. The 'Higher' and 'Lower' Senses

As has been noted, the doctrine of the five senses regarded sight and hearing as 'higher' and touch, taste and smell as 'lower'. This distinction is one of psychological interest. Sight and hearing are proportionately of greater importance in the perceptual life of man. With the lower animals this is not necessarily the case. The visual perceptions of the dog, for instance, are achromatic (Pavlov 1928). Smell is proportionately a very important sense. The behavioural environment of man and certain of the lower animals can differ in such respects as these. Again, it appears that the behavioural environment of 'civilized' and more 'primitive' man also differs. Civilized habits like smoking serve to diminish the acuity of the senses of taste and smell, while the conditions of civilization may not be such as to call forth the exercise and development of certain aspects of even the visual sense. Russell Pasha records his own inability to perceive and utilize visual cues which enabled the Arabs

of the desert to follow the trail of other individuals. He notes also that, in visual data which were apparent to him, the desert-dwellers were able to perceive additional features. Finally, he records how he learned to make use of these abilities, which were a normal feature of the ordinary perceptual environment of the Arabs (Russell 1949).

The term 'higher' would seem to have some reference to the proportionate importance which man and 'civilization' place upon visual and auditory perception. The demands for conformity which society makes upon the individual tend to be mainly auditory and visual. Beliefs and attitudes relate to objects about which the subject learns primarily through auditory and visual perception. Mass media of communication such as the wireless, the cinema and the printed word extend powers of vision and audition. Another feature distinguishes the 'higher' from the 'lower' exteroceptor senses. The products of human 'higher thought' processes such as art, religion, philosophy and science are, on the whole, vision- and audition-centred. There are no taste, smell and touch arts comparable to painting, sculpture and architecture (vision) and music (audition). Such special techniques as logic and mathematics depend primarily upon associations of visual and auditory stimuli. That this is not the only possibility is shown by the ingenious experiments of Galton (1883) into the possibilities of teaching arithmetic by smell and by taste. In the case of defects of the two higher senses the others play a larger part in the perception of the external world and in the transmission of culture. For example, in the case of the blind senses other than touch and kinaesthesis may become important. Orientation in space can be assisted by the temperature sense; the subject may perceive where he is as a result of experienced coldness arising from the 'temperature shadow' of a building. Nevertheless the 'higher senses' of vision and hearing are normally of proportionately greater importance in human perception. The activity of perception involving primarily these senses is implied in numerous other more complex concepts of psychology like 'assimilation', 'introjection', 'suggestion', 'sympathetic induction of emotion', 'rapport', and the general 'process of socialization'.

SUMMARY

The organism's awareness of the external and of its own psychophysical processes depends initially upon sense experience. What has been perceived imposes limits on thought, judgment, imagination and imagery. Sense organs are classified. The behavioural and geographical qualities of the environment may be distinguished; the gestalt theory of perception and related gestalt principles are discussed. 'Apperception' denotes the process whereby 'meaning' is assigned to percepts. Selectivity in perception has certain sensory, central and emotional determinants. Different levels of theory as between molar and molecular phenomena are distinguished. A modification of the duplicity theory forms a generally acceptable standpoint from which visual perception may be considered. The perceptual attributes of colour are summarized in the colour pyramid, in connection with which such phenomena as chromatic adaptation, after-sensations and colour vision abnormalities are dealt with. Visual and auditory perception play the predominant part in social interaction and cultural transmission.

RELEVANT READING

Ellis, W. D. (Ed), 1938, *A Source Book of Gestalt Psychology.*

Katz, D., 1935, *The World of Colour.*

Koffka, K., 1935, *Principles of Gestalt Psychology.*

Morgan, C. T. and Stellar, E., 1950, *Physiological Psychology.*

Ellis contains contributions by Wertheimer, Koffka, Köhler and other principal gestalt psychologists. Reference is recommended also to the excellent illustrations given in Katz's *Psychological Atlas*, and in the appendix of Fraser's *British Journal of Psychology* article (1908) cited in the chapter.

Another important development of recent years has involved a group of psychologists who have been greatly concerned with individual differences in perception. These investigators of *functional* perception have studied relations between motivation and perceiving, and the possible application of the principles that govern perception to the less developed field of personality psychology. A good account appears in Bruner, J. S. and Krech, D. (Eds.), 1950, *Perception and Personality: a Symposiam.*

CHAPTER IV

Emotion

The organism is 'affected' by what it perceives. What it recalls to consciousness by memory has an emotional tone. Feelings, emotions, affective tone and systems of emotional organization comprise the subject-matter of the psychology of 'affection'. Emotions are provoked by immediate perception of external events or by ideational recall of previously perceived provoking circumstances. Subsequent perception and remembering are selective; important influences upon such selective activity are emotions, emotional systems and emotional moods. Emotions and emotional systems are among the most important human motives. Our concern is with the phenomena of emotional life and their stimulus (provocation), response (expressive) and central (conscious) aspects.

William James (1892) emphasized the unsatisfactory character of many previous writings on the subject of emotion. Descriptive accounts of innumerable varieties of emotion he regarded as 'one of the most tedious parts of psychology'. Existing classifications proved to be equally unsatisfactory, the sub-divisions introduced being 'either fictitious or a sham'. In place of descriptions, classifications and subdivisions of emotions which 'merge endlessly' into one another James proposed a unifying 'causal theory' of emotion. While the James-Lange theory would have met the difficulty encountered and would have explained the 'innumerable gradations' of emotion, it has on the whole failed to achieve support from subsequent experimental investigations. The problem of classification remains, and must be solved in some alternative way.

As instances of 'emotion' James listed: anger, fear, love, hate, joy, grief, shame, pride and their varieties, the 'coarser emotions'. From these were distinguished the 'subtler emotions' such as those associated with religious, aesthetic and intellectual experiences.

This distinction between the *coarser* and *subtler* emotions is a profitable beginning for a task of classification. A second distinction must be made between *emotion* and *sentiment*. Love and hate, though listed by James as emotions, would today be regarded rather as systems of emotional dispositions or sentiments (Chapter V). A third distinction may be drawn between *emotion* and *feeling*. Feeling or hedonic tone, pleasure-unpleasure, is an important aspect of emotion, but is not identical with emotion as such. It seems possible to classify the 'coarse' emotions in terms of two important dimensions. Emotions differ in *degree of intensity*. Thomas Reid (1788) suggested that the term 'passion', then treated as a synonym for 'emotion', should be restricted to emotions which showed a 'degree of vehemence'. For example, we may distinguish an intensity series of anger emotions—irritation, annoyance, mild anger, intense anger, rage, fury. A second dimension is that of *duration*. Again, in the case of anger the emotion may be short-lived or resentful and of lasting duration. The distinction is of some importance since there is some evidence that resentful anger of the enduring kind tends to result from threats to values and self-esteem rather than from mere thwarting or frustration. The latter kind of provocation appears to be associated rather with short-lived anger (McKellar 1949). Emotions of short and long duration give rise to somewhat different impulses to action. Impulses to revenge rather than the mere overthrow of obstacles seem to be associated with long-persisting, resentful anger.

Finally, emotions differ from *moods*, which are essentially affective mental sets (Goodenough 1934). Moods predispose the subject to experience one kind of emotion rather than another. It is desirable to distinguish emotions from affective states and processes—the more general category which would also include feelings, sentiments, complexes, moods, etc. Young (1949) holds that 'emotion' necessarily involves acute upset and 'disorganization', together with autonomic involvement. This seems to be an attempt to limit 'emotion' to what can better be regarded as emotions of the higher degrees of intensity (passions). The view that emotions are necessarily disruptive and disorganizing in their effects is questionable. It is difficult to reconcile either with the biological functions of emotion or with their obviously important place in motivation.

1. Emotion as a Disorganizing Factor

Emotion is a complex reaction of the organism in which the affective aspect is introspectively prominent. It arises from some sudden change perceived in the stimulus situation which confronts the subject. The 'coarser emotions' have prominent objective, physiological accompaniments, in which the endocrine glands and the autonomic nervous system appear to play an important part. Cannon (1929) regards these physiological changes as 'directly serviceable' in making the organism more effective in the display of energy which the situations that call forth emotions may require. From the standpoint of biological survival emotions may be regarded as hereditary pattern reactions which serve to adapt the organism to the changed conditions which confront it. These pattern reactions may not be present at birth, and are in any case subject to modification by learning and conditioning. The conception of emotions as adaptive and adjustive, which we have adopted, was strongly supported by Leeper (1948), who opposed the whole conception of emotion as a 'disorganized' and 'disorganizing' process. Emotions occur at all degrees of intensity. Leeper would agree that it is only in cases of extreme emotional intensity that disorganization occurs. In their more typical forms emotions are held to be organizing: 'Disorganization occurs ordinarily merely as the price of achieving some dominating organization, and . . . consequently it is not truly disorganization.'[1]

He goes on to adopt a thoroughgoing motivational view of emotions as processes which arouse, sustain and direct activity. Emotions are held to be the fundamental means of motivation of the higher animals. At an earlier date Thouless (1923) similarly suggested that the emotions serve the rational, variable and adaptive activities of man in very much the same way as instincts serve the stereotyped and less variable activities of lower animal life. This same motivational view of emotions has independent support from such other investigators as Duffey (1948; summary of earlier work), and will be apparent in our own treatment. The motivational function of emotions is particularly apparent when sudden changes in the environment occur and demand immediate adjustment. As has been noted, some psychologists have adopted a different conception of 'emotion' and have limited the term to mal-

[1] Leeper, *op. cit.*, p. 17.

adaptive reactions, which we should prefer to regard as resulting from extremes of emotional intensity or 'passion'. Thus Young took this opposing view in controversy with Leeper, and held that marked physiological upset is a necessary criterion of emotion. It may be admitted that some of the more intense manifestations of such emotions as fear and anger involve upset and failure to achieve a satisfactory adjustment to the situation which provokes emotion. In his account of animal responses to danger Rivers (1920) drew attention to five kinds of reaction. One of these was 'collapse', a failure to make an appropriate adaptation to a threatening situation, accompanied by intense fear; what we should call the 'passion' of terror. Even Darwin, whose descriptions tended to centre on passions rather than the more moderate intensities of emotion, regards these maladaptive reactions as a-typical variants.[1] In its more usual forms, fear motivates the organism to make an adjustive response, to flee, or if flight is impossible, to defend itself. Anger serves a similarly adjustive motivational function of obstacle-destruction or reinforcement of effort. As Darwin emphasized, the immediate facial and other expressions of such emotions as fear, anger and disgust naturally have, or acquire through association, involuntary accompaniments that are appropriate to the kinds of situation which call forth these emotions.

The Leeper-Young controversy may be summarized as affording evidence that emotions of slight and moderate intensities are motives which adjust the organism to meet sudden and unexpected changes in the immediate environment. Emotions of high intensity or passions tend to be maladjustive rather than adjustive. On the whole it is undesirable to confine the term 'emotion' to affective states and processes involving acute psycho-physical upset. Leeper would seem to be correct in his emphasis on the motivational character of emotions.

2. Emotions as Phenomena

Although we may agree with James that much sterile description of emotions has been attempted, there is nevertheless need for more study and description of the various emotions as psychological phenomena. As examples of emotions we may take states described by words like amusement, shame, pity, anger, joy, fear,

[1] Darwin 1904, p. 250.

compassion, gratitude, disgust, sorrow and disappointment. Some of these may be primary, others secondary blends, of primary emotions. Anger is both a typical and an important emotion. It is, moreover, an emotion the primary innate character of which has seldom been seriously questioned. A fuller consideration of anger as an emotion will also be of value in demonstrating the effectiveness of the method of introspection in the hands of one of its ablest exponents. Of anger Titchener wrote:

> 'The emotion of anger seems, at first sight, to be a single experience; it has a single name. Really it is highly complex. It contains, for example, the idea of the person with whom one is angry; the idea of the act of his, at which one is displeased; the idea of the retaliatory action on one's own part; a mass of bodily sensations, attending the flushing of one's face, the tendency to clench the fist, the bracing of the whole muscular system—one 'feels stronger' when angry. It begins with a feeling of displeasure, of pained surprise or wounded pride; but this soon gives way to the pleasantness of anger itself, the delight in the idea of retaliation and the fact that one is strong enough to retaliate.... These processes—themselves by no means simple—all take part, crossing and re-crossing, shifting and recombining, in the emotion. They need not all be present together in the angry consciousness of a given moment; but all have their share in the experience of anger.'[1]

Although such an emotion can be described as an affective state, it is apparent, as the introspection shows, that it has important cognitive and conative aspects, together with prominent physiological accompaniments. The motivational aspect of emotion is suggested in the reference to the 'idea of retaliatory action', and the reinforcing effect of anger implied by the feeling of strength experienced. Titchener notes that anger can be both unpleasant *and* pleasant in its hedonic tone and that pleasantness relates to an awareness of the added reinforcement which the emotion brings. Introspection provides additional data about impulses to action that might not be apparent to a purely external observer. Titchener refers to retaliation. Other kinds of anger have different aims. In some cases the subject is primarily concerned with achievement of his original goal, but does what is necessary to remove an obstruction to that

[1] Titchener 1896, pp. 13–14.

goal. This is not the same as retaliation, which may involve impulses to hurt and humiliate an enemy or rival as an end in itself. Anger against a close friend may be different again, and involve a rather characteristic kind of withdrawal. The withdrawal is histrionic rather than intended to be effective; it involves a show of withdrawal plus a waiting for the other person to make the first move of reconciliation. What an angry person actually does in action may not be a simple expression of these various kinds of impulse.

Titchener refers to 'pained surprise', 'wounded pride' and 'retaliatory action'. These expressions indicate some of the kinds of provocation which give rise to anger. Aristotle noted the part which slighting plays in anger provocation, and analyzed the kinds of situation in which slighting was *most* likely to lead to anger; the presence of rivals, of those we admire, or of those whom we want to admire us.[1] There is no reason to accept the widely held view that anger provocation is necessarily of the thwarting or 'frustration' kind. Flugel (1939) and Bigger (1948) among others have emphasized the aggression and hostility implicit in thwarting. Shand (1914) lists among anger provocations threatened or actual attack, painful blows, insults, deceptions and thefts. Murray (1938) lists dominance and aggression on the part of others, rivalry, rejection, repulsiveness and restraint. Encroachment upon the subject as a personality on the one hand, and upon his goal-directed activities on the other, would seem to embrace two important categories of anger provocation (McKellar 1950). Introspective studies of emotion like that of Titchener provide data of considerable relevance to the formulation of hypotheses. These can be submitted to subsequent testing by more objective techniques.

Emotional phenomena may be viewed alternatively as molecular, physiological processes. It has been assumed that any psychological occurrence has such physiological accompaniments (Chapter I). In the case of emotions these accompaniments tend to be prominent and obvious. The James-Lange theory placed the emphasis upon the perceptual awareness of such physiological changes, and the emotion was identified with cognition of these. This view was opposed by the Cannon-Bard theory, which arose from physiological experiments which failed to support this contention.[2] The hypothalamus was held to be the emotional centre. A cutting of

[1] *Rhetoric*, Bk. 2, Ch. 2.

[2] Cannon in Ed. Murchison 1934, Cannon 1929.

the spinal cord of animals which would exclude sensation did not prevent occurrence of emotion. Injection of the hormone adrenalin into human subjects produced apparent signs of emotion, but not the subjective phenomena of emotion. On the basis of such experiments it was contended that emotion could not be held to be a mere awareness of bodily changes since: (*a*) it could occur when the possibility of such awareness was removed; (*b*) such bodily changes could take place without experienced emotion. There are interesting analogies between Cannon's sub-cortical (hypothalamic) processes, and Freud's impulses from the id, which is viewed by the psychoanalyst as the seat of the emotions.[1] Such points of similarity are suggestive of the ultimate synthesis which psychology and neurology must eventually achieve. On the other hand there are difficulties in the thalamic as in the James-Lange theory. Neither theory seems to take sufficient account of the fact that emotions are provoked by specific kinds of external situations, and perform the function of psycho-physical adjustment to these. Emotion is neither a mere experience of physiological changes nor a mere product of hypothalamic impulses; there are also important external stimulus (provocation) and response (adjustive) aspects.

It has been shown by Masserman (1946), working with cats, that electrical or drug stimulation of the hypothalamus results in such reactions as 'sham rage'. Although dramatic sympathetic and motor accompaniments occur, the latter are 'mechanical, stereotyped, and stimulus-bound'. Reactions of sham fear and sham rage are unadjustive—the animal does not attempt either to escape or to attack the experimenter's hand. They thus do not appear to be truly adaptive. On the basis of his observations Masserman contends that such reactions are 'pseudo-affective' and differ significantly 'from those in motivationally determined emotional states'.[2]

Again, and from the standpoint of animal experiment, Masserman emphasizes the motivational character of true emotions. It may be assumed that emotions have important stimulus, central and response components. Early introspectionists like Titchener have emphasized the central processes which are prominent to conscious awareness; the James-Lange theory emphasizes these and the internal stimuli from the organism's own body. More emphasis is needed upon the place of external perception, that is of awareness of a provoking situation, and upon the function which

[1] Cannon 1929 Freud 1921, 1923. [2] *op. cit.*, pp. 35, 37.

emotional response performs in adjusting the organism to such a situation. Both the James-Lange and the Bard-Cannon theories of emotion draw attention to important aspects. Neither is acceptable in preference to a more complex theory embracing all these aspects, though such a theory still awaits formulation.

3. Emotional Development

While the kinds of emotions found in the adult human organism are numerous, it does not follow that all of them are innately determined. A distinction between primary (innate) and secondary (composite blends of primary) emotions has been prominent in psychological writings on the subject. Three types of theory may be held about innate emotional endowment. It may be held that there are an indefinite number of innate emotions, a finite number of such emotions, or a single undifferentiated emotion rather than specific emotions. James appears to have held a theory of the first type. Many psychologists have held the second kind of theory, that there is an innately determined but finite number of distinct emotions. Watson (1919) postulated three such primary emotions, fear, rage and love; Shand (1914) asserted four primary emotions, joy, sorrow, fear and anger. McDougall (1932) presented a longer list of primary emotions and distinguished these from secondary emotions, which he held to be blends of these. The third view of a primary undifferentiated emotion is apparent in Suttie's 'general directing purpose', held to be present at birth, from which more specific emotions and affective states develop through early experience (Suttie 1935). At the present stage of our limited knowledge of human genetics it is difficult to decide between these alternatives.

Difficulties arise from the fact that what is innate may not be present at birth, but may maturate at a later stage. Again, all that is present at birth may not be innate. As Goodenough (1934) has emphasized, the birth-process itself often inflicts minor but definite physical injuries on the child; some time must be allowed for recovery from these and their accompanying psychological effects. On the whole, evidence favours the view that at birth the infant is capable only of undifferentiated emotional response; it favours, that is, some form of 'monarchical' theory (Spearman) of emotion. Watson on the basis of observational study accepted the theory that the three emotions of fear, rage and love were present at birth 'or

shortly afterwards'. A subsequent investigation failed to confirm this. Sherman (1929) found that when unaware of the provoking stimulus external observers were unable to agree about the kind of emotion manifested by the infant. Films were shown of the emotional reactions of infants after being dropped and caught by an assistant. On Watson's hypothesis removal of support leads to fear emotion in the infant. Sherman showed that the reactions were more often interpreted as anger than as fear by judges who were unaware of what had previously happened to the infant. When, however, the judges were permitted to observe the stimulus as well as the response they showed considerable agreement about the kind of emotion. Sherman concluded that Watson's earlier work had involved an unwitting reading of presuppositions about the kind of emotion likely to occur into what had been observed.

Careful observation of infants from birth onwards led Bridges (1931) to a developmental theory of emotion. Intensive observation afforded evidence that the new-born infant manifests only an 'original undifferentiated emotion' and 'emotional excitement' as such. This continues to be present throughout life, but between birth and three months differentiates also into the positive emotion of delight and the negative emotion of distress. Each of these likewise persists, but each gives rise to further differentiations. Thus, between three and six months from distress there develop the more specific emotions of fear, disgust and anger. Between six and twelve months delight gives rise to the specific emotions of elation and affection. Between two and five years still further differentiations occur, and other emotions develop during childhood and adolescence. Bridges specifically refers to the earlier hypothesis of Stratton (1928) that there is such an initial undifferentiated emotion. This hypothesis finds support from investigations carried out the same year by Dashiell (1928).

At this point we may return to our earlier question of whether emotions which develop after birth are innate or acquired. The alternatives are that such emotions are secondary and learned, that they develop through maturation, or that they are the products of interaction of both learning and maturational factors. Sandiford (1938) raises an objection to Bridges's theory that the view of learned differentiations of emotion is incompatible with the evidence of biology that there is continuity between man and the lower animals. Such evidence of continuity in emotional life has

been presented by investigators from Darwin to Yerkes (1929). Nevertheless Sandiford's objection is not a valid one since, as we have seen, those who accept such a theory as that of Bridges have a choice of three main hypotheses as to how such differentiations occur. Bridges herself adopts the third of these alternatives, that *both* learning and maturation are important in this emotional development. While she denies the assertion that emotions are pattern reactions present from birth, the innate component of emotion is not denied. Bridges is very far from being a doctrinaire

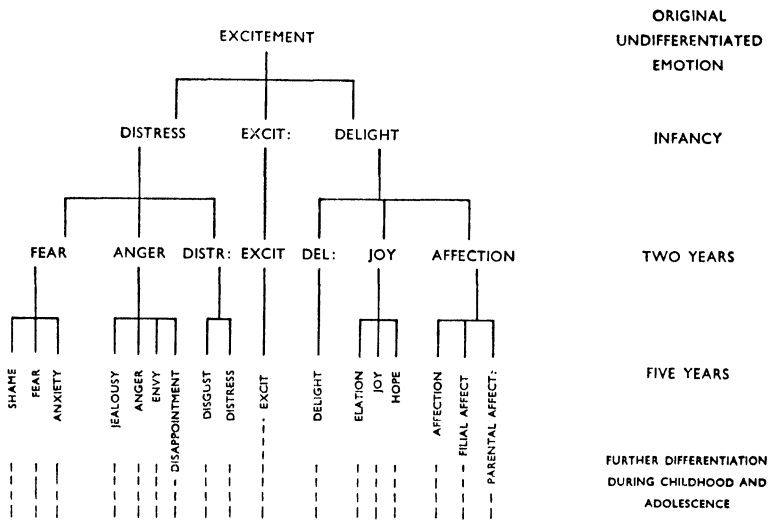

FIG. 9
A Diagrammatic Representation of the Genesis of the Emotions[1]

environmentalist and she goes so far as to postulate such instincts as pugnacity, and the possibility of innate differences towards sympathetic rather than para-sympathetic emotional functioning. While the evidence of Bridges and others supports the view that distinct emotions are not present from birth but develop subsequently, the very large variety of distinct emotions observable in the adult human being cannot be denied. More investigation is needed of these and of the ways in which their development

[1] Reproduced from Bridges, K.M.B. (1931), *The Social and Emotional Development of the Pre-School Child*, by permission of Messrs. Routledge and Kegan Paul Limited.

occurs. The hypothesis accepted by Bridges that learning (and conditioning) and maturation are both important, seems to be a plausible basis for such further investigation.

If there is at birth a presumably innate, undifferentiated emotional excitement, one would expect there to be individual differences in such emotionality. Jung's concept of 'libido', McDougall's 'hormé' and Freud's later concept of 'cathexis'[1] appear to have reference to the concept of available undifferentiated emotion. On the basis of a factor analytic study of adults and children Burt[2] presents evidence for such a variable. While Burt cautiously emphasizes that factors are, in the first instance, statistical concepts and principles of classification, he nevertheless proceeds to a subsequent psychological identification of this general factor. This was found to correlate highly with direct assessments of emotional instability, and Burt named it 'general emotionality'. The factor accounted for 56 per cent of the variance. Burt holds that general emotionality is, like general intelligence, innate; he identifies it with the innate basis of Webb's general conative factor 'W'.[3] In addition to a general emotional factor with its individual variations, Burt found a second and bipolar factor which had reference to tendencies towards either asthenic or sthenic emotions. The asthenic individual was inhibited, repressed and introverted. Saturations at the asthenic pole of the factor were with submissiveness, tender emotion, disgust, fear, sorrow and curiosity. In contrast the sthenic individual was aggressive, unrepressed and extraverted. Factor saturations were with sociability, assertiveness, anger, joy and sex. The study is compatible with Jung's clinical evidence for undifferentiated libido and its two attitude types of introversion and extraversion. These are regarded by Jung as representing direction of libido, an inward or an outward turning of mental energy. Subsequent investigations from the factor analytic standpoint by Burt, Eysenck and others confirm the existence of an asthenic-sthenic or introversion-extraversion bipolar factor.

The further question arises whether these two kinds of individual temperament difference are the result of genetic endowment, of secondary factors, or of both. On the whole much of the clinical evidence accumulated by the psychoanalysts suggests an important influence of early experiences upon subsequent emo-

[1] See Note 2, p. 106.
[2] 1937, 1939, 1940.
[3] Webb 1915.

tional development. In short, it is contrary to the implicit assumption of many factor analysts that temperament is very largely a matter of hereditary individual differences. Nevertheless it is difficult to evaluate such clinical evidence as the attitudes of many depth psychologists towards maturation are not always clearly stated. These apparently incompatible views may perhaps find ultimate reconciliation in a theory which postulates hereditary predispositions that are subject to considerable modification by early environmental happenings. Such temperamental differences as relate, for example, to emotional thresholds have probably, at least in part, a physiological basis in individual variations in degree of resistances at the synapses. These different resistance potentials of the tissue between conducting neurones may have a genetic predetermination. Nevertheless they can be changed by environmental happenings, and in fact experimentally varied. Removal of the parathyroid glands or induced calcium deficiency can be shown to lower synaptic resistance and thus increase emotional behaviour. Administration of the drug curare increases, while administration of prostigmin decreases, such resistance (prostigmin is a synthetically-prepared analogue of a substance normally present in the parasympathetic nervous system—physostygmin). Many of the forms of physical treatment of the neuroses are believed to change reaction potential at the synapses, and thus alter emotional threshold. One of the leading investigators in this field is Meduna, who writes:

> 'Thus the existence of a psychoneurosis can be explained by an abnormally low threshold of stimulation with respect to low stimuli, or by a relatively low threshold of stimulation with respect to stimuli of exceptional strength. In either case the logical biological treatment consists of raising the threshold of stimulation to the normal level of resistance.'[1]

Meduna believes that this is what is accomplished by the carbon dioxide treatment, and to some extent by administration of the other gases that are used psychiatrically. Thus Lorente de Nó found that the 'ether abreaction' treatment induced changes which were a consequence of increase of threshold of membrane potential. There is no reason to reject the view that similar or converse synaptic changes can take place under the influence of early or

[1] Meduna 1950, p. 156.

later happenings of emotional importance. The 'traumatic' occurrences emphasized by psychoanalysts may bring about such changes. It seems probable that the neurological accompaniments of psychic trauma will ultimately be more fully understood and integrated with psychological theory.

4. Emotional Moods

In addition to the possibilities of innate and secondary influences upon emotional thresholds (both general and specific), there is the influence of mood. Mood is defined by Goodenough: 'A mood is not an emotion but a state of readiness, a "set" towards some particular kind of emotional reaction.'[1]

She adds that moods 'sway the balance' in favour of certain types of emotion, and notes that an emotion may have after-effects in the form of a mood. Any form of emotional after-effect appeared to be absent in the case of the 'pseudo-affective states' produced by Masserman, to which we have referred. That moods are affective states, typically of low intensity and longer duration than emotions, is noted by Young. Goodenough herself (1931) contributed an interesting study of moods in children in their relation to anger threshold. She found a relation between frequency of occurrence of anger responses and length of time since food was last taken. This finding is in accord with what would be expected, since anger threshold is likely to be dependent upon the satisfaction or otherwise of the more pressing ('prepotent') primary needs. One investigation of the same emotion yielded some relevant introspections from the various subjects: 'I think my immediate reactions would vary greatly with my physical condition—when well-fed and not tired I am much more tolerant.' Another subject wrote: 'I am unusually sensitive to annoyance when tired or lacking sleep. When not tired I am more than normally placid.' A third subject recorded the effect of pain experienced at an earlier date as a result of a duodenal ulcer: 'I flew into terrible tempers and got frightfully annoyed over next to nothing in a way that now appears almost inconceivable' (McKellar 1949).

In the case of the sleep need a paradox appears to occur in that a person may feel 'too tired to be angry'. This paradox disappears if a distinction is drawn between threshold for *experience* and

[1] 1934, p. 200.

threshold for *expression* of an emotion. A tired person may experience emotion of some intensity, but may feel too fatigued to allow himself to express that emotion. Again there are different kinds of tiredness, the one favourable to, the other unfavourable to, experiencing and expressing the emotion of anger. Pleasant, healthy tiredness of the kind conducive to sleep is associated with a contented mood unlikely to lead to violent emotional expression. On the other hand the unpleasant, 'jaded' tiredness which is, on the whole, not conducive to sleep makes for moods of ill-humour rather than good-humour. The manic-depressive psychosis, in its classical form, is characterized by periodic alternations of elated and melancholy moods. In the last stages of tuberculosis the curious phenomenon of an elated, happy mood may occur. Experimentally-induced oxygen lack results in a mood of a somewhat similar kind. Since death is accompanied by anoxia it is probable that death, when not involving actual physical pain, occurs with a pleasant rather than unpleasant diffuse emotional state or mood.

A number of investigators have been concerned with the relations between moods and associative processes. A compatibility between the emotional tone of associations and the mood experienced would be expected. Baxter, Yamada and Washburn (1917) found an inverse relationship between estimated cheerfulness of mood and speed of recall of unpleasure-toned memories. With the word-association technique Morgan, Mull and Washburn (1919) found a positive relation between cheerfulness of mood and the proportion of pleasure-toned associations with stimulus words. In more recent years Bousfield (1950) investigated and supported the hypothesis that moods of the pleasant types facilitate the tendency to have pleasure-toned verbal associations. He found, however, a less marked tendency for unpleasant moods to facilitate associations with negative affective tones. These findings are in accord with more general principles stated by Shand (1914) about the selective influence of moods upon cognitive activity. 'The "joyful temper" (mood) tends to make us nervous or quick in our response to stimuli of joy, hope, and confidence, but phlegmatic or slow in our responses to stimuli of sorrow, despondency and despair.' Again: 'The joyful temper lowers the threshold of sensibility for joy, hope, and confidence, but raises it for sorrow, despondency, and despair.'[1]

[1] Shand, *op. cit.*, p. 154, laws 16 and 17.

Emotional moods seem to operate in these selective ways in relation to both perception and remembering. They thus have considerable relevance to emotional provocation. Thus at an early date Thomas Reid wrote of the disposition (mood) of 'bad humour': 'It takes offence where none was meant, and disposes to be discontented, to jealousy, envy, and in general to malevolence.' [1]

Under the influence of mood which results in such distortions of perception and judgment, emotional experience and expression may be of greater frequency and intensity than actual provocation justifies. We may turn from mood to the question of such provocation more generally.

5. Emotional Provocation

Young (1943) holds that there are three main exciting causes of emotion. These are: marked increase or decrease of intensity of sensory stimulation, thwarting of goal-directed activity ('frustration'), and sudden release of tension or complete satisfaction of an appetite or desire. It does not seem to matter whether such happenings really occur; provided that the subject cognizes such sensory changes of intensity, regards himself as being thwarted, or believes his need to be satisfied, such emotions are likely to occur. Under the influence of moods, sentiments, prejudices, complexes, and mechanisms of the projection kind cognition of a situation may be a highly distorted version of actual external happenings. On the other hand real and catastrophic happenings do not, unless cognized, result in emotion. As our quotation from Reid indicates, it is the subjective rather than the objective aspect of a situation which constitutes emotional provocation. Real danger not cognized as being present will not provoke fear, as is shown in the following experiment.

Observations and introspections were obtained in a decompression chamber under conditions of oxygen lack approximating to those of 25,000 feet altitude. Introspections carried out by the writer on the psychological effects of such anoxia revealed a mood of the elated type, together with loss of powers of judgment. Neither he nor any of the other subjects experienced or expressed fear emotion, although (but for the presence of others with oxygen masks available), the danger was, objectively-speaking, very real.

[1] Reid 1788, p. 576.

The experiments were carried through to the stage of onset of unconsciousness before the oxygen masks were put on the subjects. Emotional states throughout were of strongly pleasant hedonic tone.

In this case physiological factors affected judgment and realistic assessment of the situation. Failure to appreciate the realities of a situation may, however, occur as a result of denial or some other ego-defensive mechanism (Chapter XI). Alternatively such mechanisms as projection may lead to emotion since neutral situations are endowed with provoking qualities. Again, ignorance of cultural or sub-cultural standards may result in provocation by a 'neutral' social situation.

The African explorer Sir Samuel Baker (1866) relates how the native chief Kamrasi agreed to allow him to proceed on his journey, but asked for Baker's wife as a present. Both the explorer and his wife were highly indignant at the apparent 'insult', but their indignation surprised the chief, who thereupon explained that he was perfectly willing to give up one of his own wives in exchange. What was to the African merely a socially accepted giving of presents was wrongly interpreted by the Europeans as an 'insult'. The Japanese smile, which is sometimes an expression of being sorry, must have frequently provoked the anger of Europeans. Klineberg reports a case in which a European was so provoked by the Japanese smile of regret that he struck his servant. The latter expiated this 'insult' by committing *hari-kiri*.[1] Sub-cultural differences also may lead to innocent provocation of emotions like anger. On one occasion a wife who came from another part of England was provoked into striking a woman who had addressed her husband as 'love'. After it had been explained to the court that the expression used was a socially sanctioned mode of address to a stranger or acquaintance, the wife was bound over and ordered to pay costs.[2]

Emotional systems such as sentiments, prejudices and complexes may give rise to emotional excitement which seems wholly out of keeping with external happenings as viewed by an observer. Negative hostile sentiments may lead to anger whose intensity is partly a reaction to previous rather than present provocation. The same may occur as a result of the influence of sentiments of a positive, friendly kind. Such sentiments may lead to non-expression of hostile feelings towards the object of the sentiment until the

[1] Klineberg 1940, p. 195.

[2] *Daily Mirror*, London, 8th July, 1950.

heightened threshold of expression is eventually reached. Then some very slight provocation results in an emotional outburst of an intensity wholly inappropriate to the immediate circumstances as viewed from outside. The daily work of the psychoanalyst reveals that emotions like fear, sorrow, anger and disgust are aroused by free-associative recall of past happenings, even without present provocation. An individual can often talk quite dispassionately and emotionally about early childhood, past dangers, insults or bereavements. Emotion tends to occur when *details* of such happenings are recalled. Emotion does not seem to occur without provocation, though such provocation may be remembered rather than perceived in the immediate situation. The psychoanalytic session seems to involve recall of details relating to specific occasions of provocation which gave rise to the original emotion, now reactivated.

On the whole, emotions tend to be provoked most frequently by actions of living human organisms. Nevertheless emotion is occasionally provoked by inanimate objects. Such provocation often has obvious reference to some person; sorrow may be provoked by perception of an object which belonged to a deceased friend. In other instances any reference to a person may be highly indirect or apparently unimportant. Reid (1788) advanced the view that in such cases there occurs a return to an 'animistic' mode of thinking. There is a regression to the developmentally earlier viewpoint of the child who is unable to distinguish between the living and the inanimate. The inanimate object is for the moment treated as though it were endowed with life.

6. Emotional Response

Darwin (1904) approached the problem of emotional expression in terms of three principles. The *principle of serviceable associated habits* represents a special case of association by contiguity (Chapter VI). Some complex actions are held to have the direct or indirect function of relieving or gratifying certain states of consciousness. Whenever the same state recurs there is a tendency for the same responses to occur through association. The *principle of antithesis* defines the strong involuntary tendency to perform movements of an opposite kind when an antipathetic state of mind occurs, though such responses perform no useful function. The *principle of direct action on the nervous system* refers to release of the nervous energy

generated by the emotion through all available channels of motor response. Each of these principles has an important bearing upon emotion as viewed from the response aspect. It may be noted that there is some ambiguity in the concept of 'emotional expression' in terms of which these principles are often discussed. At least three of the senses in which the phrase is used are of some psychological importance.

A subject may be unwilling to express the emotions he experiences either in speech or in action but, nevertheless, may give an *unwitting expression* of them. Subtle visual and auditory cues often enable another person to make quite surprisingly accurate assessments of the subject's present feeling experiences, and of some of his more enduring sentiments. For example, individuals who dislike one another rarely remain unaware of this fact despite all efforts to maintain outward standards of conventional politeness. Knowledge of the kinds of situations which are likely to provoke emotion would seem to be of considerable assistance in making these judgments. As Sherman (1927, 1929) showed, there was little agreement among independent external observers about even gross manifestations of emotion, if they were ignorant of provoking circumstances. On the other hand many individuals experience the strong impression that their assessments of moods, sentiments, emotions and the more general 'atmosphere' of a social situation are, on the whole, accurate. More work in this field awaits the research worker. There is the question of the accuracy of a lecturer's assessment of the 'atmosphere' of his class both generally and during a particular lecture. The validity of judgments of this kind, which are of very considerable importance in daily life, would seem worthy of more attention. Galton (1883) was interested in these expressions of emotion. Freud (1904) has paid explicit attention to unwitting revelations of emotion and sentiment. Again, silence during a psychoanalytic session is often interpreted correctly by the analyst as evidence of strong emotion, particularly of hostile emotion towards himself that the patient either consciously or unconsciously tries to conceal.

More is known about the grosser manifestations of the presence and *expression of emotional tension*. To such expression Darwin's three principles and other observations have considerable relevance. Wallas (1936) holds that in civilized societies a person may miss the normal provocations to such an emotion as fear; the phen-

omenon of the 'baulked disposition' may occur. The subject is restless and unhappy, and manifests a need not only for emotional expression but also for emotional experience. Such baulked dispositions are held by Wallas to contribute to the motivation of the soldier, the small boys who run across the road in front of motor cars 'to enjoy the resulting sensation', and the people at exhibitions or fairs who pay for a few minutes of experienced fear on the aerial railway. That there may be a need to seek out and experience an emotion like fear is an interesting contention about which more evidence is needed. There is little doubt that the need to express experienced but unexpressed emotion may assume great urgency. Darwin's principle of direct action on the nervous sytem relates to such expression of the more or less involuntary kind—for example, the shivering which may accompany fear. There are, however, two additional modes of expression of emotional tension to be found in laughter and weeping. These may assume conventionalized forms or may operate in involuntary ways. Young, who emphasizes the disorganizing and mal-adaptive characteristics of emotion, contends that theorists who hold the alternative view of the utility function of emotions have been 'at a loss to discover use for the responses of laughing and weeping'.[1] Laughing and weeping have important though not obvious functions. As Young himself admits, they perform the useful function of releasing emotional tension. We should emphasize the very considerable importance of this function. The somewhat related service which laughter may perform of mastering anxiety has been emphasized by Kris (1938). Denial of anxiety by laughter is illustrated in the phenomenon of 'drunkard's wit' to which Hart (1912) draws attention.

The similar and dissimilar features of laughing and weeping were noted by Hobbes. Both are ways of releasing emotional tension. Laughter involves sudden awareness of some superiority in ourselves, while weeping results from appreciation of defect in ourselves in respect of something we want.[2] Spencer (1863) similarly recognized the tension-releasing character of laughter, and that laughter can be an expression of 'acute pain' as well as of 'acute pleasure'. He concludes that 'strong feeling, mental or physical', is the 'general cause' of laughter.[3] So far as mirth is caused by the 'gust of agreeable feeling' that follows allocation of mental strain, it

[1] Young 1943, p. 58.
[2] Hobbes 1640, Chapter IX.
[3] *Op. cit.*, p. 111.

is in accord with his general view of laughter. Darwin's various writings include some observations of great insight on the rather curious characteristics of weeping as a form of emotional expression. He notes that giving sympathy will tend to evoke further tears. On the other hand, the advice to continue and to 'have a good weep' tends to the cessation of tears. An explanation of this paradox will become apparent as we proceed.

Of related relevance are the 'fits of hysterics' in which there is release of emotional tension by both laughing and weeping; both ways of expression are used more or less indiscriminately. What seems to be important is not the kind of expression, but rather the immediate release of emotional tension, in accord with Darwin's direct action principle, in any way possible. Again, it may be noted that the forms of expression which occur involuntarily in the extremes of ecstasy and anguish resemble one another closely and may be easily confused. There appears to be an expression of undifferentiated emotion which is itself undifferentiated. That there can be undifferentiated expression of emotion is in accord with Bridges's theory that original primary emotion is of this kind and that it persists throughout life. Darwin has noted a case of grinding of teeth in an animal suffering intense pain, and refers also to the conventionalized belief that there is 'gnashing of teeth' in Hell.[1] The same form of expression is held conventionally to arise from anger. Again, there is clinical evidence that mistakes may be made by doctors and midwives in assessing the character of the emotion expressed by a woman during childbirth. The conventional opinion that these are invariably expressions of pain is apparently—at least sometimes—incorrect. The numerous superstitions which surround childbirth provoke much anticipatory fear and apprehension. These produce tension, which results in additional and avoidable pain. Medical observations which have been made on this point would seem worthy of more attention by psychological investigators.[2]

There is considerable evidence that the outward expressions of grosser emotional states may be mistaken for one another. Again, very similar kinds of expression can result from what are introspectively entirely different emotional states. There is evidence also that the commonly accepted theory that laughter occurs with joy and weeping with sorrow is an over-simplified view of the real state of affairs. On the basis of a study of weeping Lund (1930)

[1] Darwin 1904, p. 247. [2] Read 1948.

comes to a different conclusion. He advances the theory that weeping appears typically when a distressing or otherwise unpleasant situation gains a redeeming feature; weeping is an expression not of pure sorrow but rather of mixed emotional states. In terms of this theory Darwin's observation that sympathy (such a redeeming feature) may provoke further tears becomes more readily understandable.

Lund finds support for his theory in a study of psychiatric cases. For example he found no case of weeping in any instance of pure depressive psychosis, but tears were a very frequent accompaniment of transitions from depressed to elated phases. The pathological conditions most favourable to weeping appeared to be those of mild euphoria and mixed emotion. In normal individuals neither sorrow, joy, dejection nor elation, in their pure forms, proved to be very effective in producing tears. Lund finds that the weeping which occurs during dramatic performances accords with his theory; this is an expression of mixed emotional states in which the pleasure element is predominant. Most favourable to weeping is the situation in which a character in the drama with whom the subject has identified himself comes into his own after a series of adverse circumstances. Lund contributes an introspective analysis of the kinds of occurrences involving other people which incline him to tears, though such tears are ordinarily restrained.

This theory seems to be in accord with the main facts of introspection. Impulses to weep as well as actual weeping are embraced by such an hypothesis. Since the roles which society assigns to the two sexes tend to inhibit weeping in man, but permit it in women, the sex difference which is so apparent is understandable. The situation involving receipt of bad news seems to accord with Lund's view. As a result of the mechanism of denial (Chapter XI), there tends to be some lapse of time between receipt of news and actual tears, when these occur. Such delay may be momentary or prolonged. In either case the offering of sympathy—that is the introduction of an alleviating factor—tends to provoke a flow of tears. Lund's theory seems to embrace not only this instance but also psychotic weeping, weeping at dramatic performances and on witnessing 'real life dramas', Darwin's 'paradox', the occurrence of weeping in hysterics, and many related happenings. As the investigator himself notes, a ready acceptance of the apparently obvious explanation of weeping has resulted in neglect of this field,

and more research is needed. The reasons for tears are not simple but complex, and on Lund's theory relate to *mixed* emotional states. The possibilities of admixture of certain emotions seem to be limited by the character of these emotions. Thus Shand holds that fear and anger tend to exclude one another from simultaneous presence in consciousness.[1] More work is needed on the question of which emotions are mutually compatible and may co-exist, and which tend to exclude one another from consciousness. The writer has obtained introspections of subjects who have experienced anger and amusement both of high intensity at the same time; yet on the whole such instances are rare, and it is probable that there is a general incompatibility between these two emotions also.

A third and important aspect of emotional response relates to *voluntary and socialized emotional expressions.* The occurrence or otherwise of such expressions and the character they will assume tend to depend largely upon past and present social influences. Fear produces impulses to escape which it is obviously inexpedient for the soldier to express overtly. He may not merely inhibit expression of such impulses, but seek to persuade himself that he does not even experience such emotion. The presence of companions whose opinion he values, self-respect and awareness of his own part in maintaining morale lead him to inhibit and deny or repress his fear. Under other conditions it may be inexpedient to express emotions like anger, disgust, joy, relief, sex and sorrow. Conventions may permit some kinds of expression and not others. A citizen may be permitted to release the tension of unexpressed anger by displacing the hostile emotion on to some criminal for whom he demands vindictive punishment, or on to some other scapegoat. Sorrow expressions sometimes assume highly conventionalized forms, as in the ritualistic weeping, which may go on for hours or days, of the New Zealand Maoris, and in the somewhat similar phenomenon of the 'keening' of the Irish peasants. Conventionalized expressions of emotion are distinguishable from the more biological expressions of emotional tension to which Darwin's principles have greater relevance.

Darwin's view of emotional expression has been criticized as placing too much emphasis upon biological and too little upon cultural influences. There seem to be two somewhat distinct problems involved. Some kinds of 'emotional expression' an individual

[1] Shand, *op. cit.*, p. 256, law 39.

shares with other members of his species. These are often involuntary and not particularly subject to cultural influence. On the other hand, there are kinds of 'emotional expression' which tend to distinguish one area of culture from others. These are often conventionalized, and in the broad sense a part of the 'language' of such a culture. Many investigations in this field, by superimposing additional conventionalized forms of expression, have not assisted clarification of the problems involved. Subjects have been presented with sets of pictures of actors and actresses who have posed with what are conventionally accepted in their society as 'expressions' of the various emotions. The extent of research in this field has, on the whole, exceeded the importance of the subject-matter involved. That human beings living in one society form stereotyped concepts of facial expressions of emotion, and that sometimes these concepts can be recognized, has been established. On the other hand, the finding has very little relevance to Darwin's theory about the actual expressions of emotion which occur in real people and are held to be common to all cultures. Nor are such judgments particularly relevant to actual assessment of emotions, as Sherman's investigation (1929) would suggest. Despite this intensive concern with posed photographs, much work remains to be carried out on numerous problems of a more realistic and basic kind. Important questions remain: consideration of the factors which provoke the different emotions, the relations between emotion and motivation, the organization of emotions into such important motivational systems as love, hate and respect, and the influence of these systems upon human affairs.

7. Anxiety

Anxiety is not itself an emotion. It is rather a diffuse affective condition, maladaptive in its functions, and differing from fear in lacking a well defined object. Anxiety was regarded by Freud (1936) as originally a reaction of helplessness to a threatening or otherwise traumatic situation. It recurs when a present experience reminds the subject of a traumatic experience previously undergone. Anxiety is typically absent in the classical conversion hysteria neurosis; the physical symptoms that occur in this condition can be regarded as a defence against consciousness of anxiety. On the other hand, it is the predominant symptom in the anxiety states in

which such defences have not been established. Freud has stressed the anticipatory character of anxiety: 'One feels anxiety *lest* something occur.'[1]

Anxiety tends to manifest itself during the course of psychoanalytic treatment as a result of the removal of repression, projection and other ego-defensive mechanisms (see Chapter XI). In the light of these clinical facts it will be apparent that anxiety and its transformations are of central importance to psychopathological theory. Understanding of anxiety is of relevance to the analysis of the nature of neurosis and maladjustment, and also to any appreciation of the character and influence of the important anxiety-defensive processes of normal mental life. These ego-defences were regarded by Freud (1926) as mechanisms by which the subject attempted to protect his ego against anxiety. Other investigators have shown that anxiety plays a part in the causation of certain organic disorders, for example, the peptic ulcer (Alexander 1939). Experience of the 'epigastric sensations', introspectively observable in the region of the stomach with apprehension or during prolonged subjection to danger, will assist us to appreciate the effect which anxiety and chronic fear may have upon gastric disorders. Such psychological factors as these, together with anatomical structure and physiological allergy, play a part also in respiratory disorders. For example, impulses associated with unexpressed emotion have been shown to contribute to the causation of certain kinds of asthma. In his survey of psychosomatic disorders of this and other kinds, Saul[2] notes the 'especially intimate' interrelations of psychological and endocrine gland factors. Anxiety is a phenomenon of considerable relevance to normal and abnormal psychology, to psychotherapy, and to psychosomatic medicine. Ernest Jones has suggested that the most satisfactory criterion of psychiatric normality and adjustment is absence of irrational fear and anxiety. Nevertheless, in therapy of the analytic type it is necessary to release anxiety in order to assist the patient to achieve such adjustment and abandon his unrealistic anxiety-defensive mechanisms.

Similar emphasis is placed upon anxiety by Horney (1937, 1939). She holds that what Freud regards as biologically determined, instinctive drives and their effects are simply personality traits which have developed for the sake of psychological safety as defences against anxiety. Such traits are acquired as a result of cultural influ-

[1] 1936, p. 146. [2] In Ed. Hunt 1944.

ence; they are not biologically determined. In her own society (America, and presumably also Western Europe) there are four principal ways in which an individual protects himself against anxiety: by securing the affection of others, by submissiveness and conformity, by achieving power, and by withdrawal, thus achieving independence of others. Accumulation of material possessions is regarded as a form of 'withdrawal' and achievement of independence. Horney places emphasis upon the anxiety-avoiding need to receive affection; this is accompanied by an inability to give love to others. Love is accordingly over-valued, and the anxiety is mastered by such an over-evaluation. At the same time the individual faces the dilemma of having a great need for affection but finding difficulty in obtaining it. This difficulty may be related to Suttie's observation (1935) that there is a taboo on the expression of tender emotion. Suttie believes this taboo to be as strong as, if not stronger than, that which withholds expression of sexual emotion.

Mowrer (1950) approaches the problem from the very different standpoint of animal psychology, but adopts explicitly the view that anxiety is an influential acquired drive. He suggests that the concept of conditioning (Chapter VI) should be applied to the type of learning whereby emotional responses are acquired. He suggests tentatively that 'fear from a sense of helplessness' is one of the most important motives in the learning of a language. By acquisition of language the infant masters his insecurity and achieves an enormous sense of relief by diminishing the intensity of this influential drive.[1] Animal experiments by Mowrer and various colleagues have supported Freud's view of the kinds of situation which give rise to anxiety. Experiments on rats showed that when the amount of pain experienced by the animals was kept constant, the total experience proved to be more 'punishing' when physical pain was accompanied by fear. The investigators emphasize that 'it was surprising how strikingly different the fear was in the two cases'. Lack of control on the part of the animal over the pain stimulus was shown to increase fear and apprehension. Mowrer comes to reject his own earlier view (1939) that fear is a 'conditioned form of pain reaction'. His later conclusion he regards as a close parallel to Freud's original hypothesis. Mowrer concludes:

'Fear tends to occur as a direct reaction to pain itself, which may

[1] Mowrer 1947; Mowrer and Viek 1948.

then be transferred, through conditioning or associative shifting, to any stimulus which is premonitory of the pain.'[1]

The phenomenon of anxiety, and the forms of control of anxiety by ego-defensive operations, maladjustive personality traits and symptoms, is of central importance to modern clinical psychology. Encouraging evidence of development of theory in this field is to be found in the degree of integration achieved between psychoanalysis and its derivatives on the one hand and laboratory experiments on the other.

Summary

Emotions are classified and distinguished from related affective phenomena. While emotions of high intensity are maladaptive in their effects, emotions are important human motives, usually with more positive functions. They tend to adjust the organism to sudden and unexpected changes in its immediate environment. More descriptive studies of emotions as psychological phenomena are needed. As physiological phenomena they have their sensory, motor and central aspects; the James-Lange theory places somewhat undue emphasis upon the first of these. Evidence is contrary to the view that distinct emotions are present at birth; they appear to develop from an original undifferentiated emotional excitement. Factor analytic studies have contributed to the investigation of individual differences in emotional traits (temperament). Moods are emotional mental sets. Among other factors moods contribute to discrepancies which can occur between the actual and perceived qualities of situations which provoke emotion. Three aspects of the problem of emotional response are discussed. Laughter and weeping perform the important function of enabling release of emotional tension to occur. Influences of cultural factors on emotional expression are considered. Anxiety is not an emotion, but a related affective state. It plays an important part in the theory of the psychopathologist. Some integration has been achieved between the hypotheses of the clinician and the results of animal investigations in relation to anxiety.

RELEVANT READING

Bridges, K. M. B., 1931, *The Social and Emotional Development of the Pre-School Child.*

Darwin, C., 1904, *The Expression of the Emotions in Man and Animals.*

[1] Mowrer and Viek, *op. cit.*, p. 197.

Masserman, J. H., 1943, *Behaviour and Neurosis* (Ch. 3).

Munn, N., 1946, *Psychology; the Fundamentals of Human Adjustment* (Ch. 15).

Shand, A. F., 1914, *The Foundations of Character.*

Young, P. T., 1943, *Emotion in Man and Animal.*

Darwin (1904) remains an important classic in this field. Masserman (1943) has carried out some important recent experimental work, of relevance to the physiological aspect of emotion. Shand (1914) comprises the most comprehensive attempt which has been made to formulate laws of emotional life.

Note 1. Since the preparation of this chapter Mowrer (1950 (*a*)) has developed and somewhat modified his original theory. In this more recent work Mowrer advances the hypothesis that anxiety is a conscious manifestation of repressed guilt. Guilt itself is held to result from fear occasioned by punishment; it occurs when the person feared is also loved.

Note 2 (see p. 90). Freud's term 'cathexis' carries the additional meaning of attachment of emotion to an object. It involves, however, as well as this notion of direction the idea of undifferentiated emotion; in this it resembles 'hormé' (McDougall) and 'libido' (Jung).

CHAPTER V

Systems of Emotional Organization

Emotional reactions are to some extent predictable. Such predictability arises partly from the tendencies of individuals to form emotional dispositions—tendencies to experience specific emotions in the presence of certain objects. Emotional dispositions may form larger systems of dispositions. Among such systems are sentiments and complexes. The personality is a still higher integration of these systems of dispositions. A knowledge of the structure of a personality, as of sentiments, dispositions and complexes, makes it possible to predict, with some degree of accuracy, the subject's emotional experiences in a variety of circumstances.

Fear of enclosed spaces, love or hatred of a particular person, preoccupation with inferiority or guilt are not emotions; they are emotional habits. Such emotional organizations differ in degree of complexity; the simplest emotional habits are called emotional dispositions. Among the more complex organizations of emotion, which are themselves systems of dispositions, are sentiments and complexes.

1. Emotional Dispositions

An emotional disposition is a tendency to experience a certain kind of emotion in the presence of a certain object (Stout 1913). Thus while fear and disgust are emotions, the tendencies to experience fear in an enclosed space, or disgust in the presence of a certain food, are emotional dispositions. In the case of simple emotion the subject remains acutely aware of the object (or situation) which has provoked the emotion; emotional dispositions persist even when the subject is not aware of the object of the disposition. A disposition makes its presence felt, however, when the

subject perceives or thinks about that object, and the result is a characteristic emotional toning of the thought or percept.

2. Sentiments

Introspection shows that such important motives as love, dislike and hatred are complex *systems* of emotional dispositions rather than simple emotional dispositions. A sentiment is 'a system of emotional dispositions having different conative tendencies, connected with a common object and subordinated to a common end'.[1] A sentiment imposes on the subject more than a mere tendency to experience a specific emotion in the presence of the object. It involves a whole range of emotional experiences in a variety of circumstances relating to the object. The term 'interest' has sometimes been used as synonymous with 'sentiment'. Shand (1896) analyses love as involving pleasure in the presence of the object, desire in its absence, hope or despondency in anticipation. There is fear in expectation of loss, injury or destruction, and anger on behalf of the object and its interests. An earlier account of love suggestive of a similarly complex range of emotional experiences is that of St. Paul of Tarsus. The kind of love which Paul advocated as an ethical and religious ideal involved patience, kindness, a certain incompatibility with envy, and an unreadiness to anger against the object. The negative sentiments of the dislike and hatred type impose a range of emotions towards the object. As Hume wrote: 'A rival has almost as close a relation to me as a partner. For, as the pleasure of the latter causes me pleasure, and his pain my pain; so the pleasure of the former causes me pain, and his pain my pleasure.'[2]

Sentiments may be classified as positive or negative. Positive sentiments such as love, liking and respect give rise to a *range* of sympathetic emotions towards the object; negative sentiments such as hatred, dislike and contempt lead to a *range* of antipathetic emotions towards the object (Shand 1914). Alternatively, sentiments may be classified in terms of their objects. Thouless (1923) distinguishes concrete particular sentiments (e.g. hatred of a particular person), concrete general sentiments (e.g. hatred of a particular class of people), and abstract sentiments (e.g. hatred of evil). Finally, sentiments may be classified in terms of the dimension of

[1] Shand 1922: p. 128. [2] Hume 1739, Bk. 2, § 3.

intensity, or degree of emotional involvement with the object. Objects of like or dislike have a lesser degree of emotional involvement for the subject than have the objects of love and hatred. The presence or absence, welfare or otherwise, of persons we merely like or dislike matter less and involve a lower intensity of affective experience than objects of love and hatred. Thus Spinoza[1] suggested that, if love changes to hatred, that hatred will be in proportion to the degree of previous love. While there are degrees of love and of hatred, they may both be distinguished from mere liking and disliking. As McDougall (1923) contends, sentiments may themselves become objects of sentiments in the case of the sentimentalist. Sentimentalism may be, as James noted, a way of avoiding action. Ibsen's well-known play *The Wild Duck* contains a particularly penetrating study of such a sentimentalist in Hjalmer Ekdal. Sentiments can also be formed for fictional persons and non-existent categories of people (see Chapter XIV).

The question arises whether sentiments are wholly conscious organizations of emotional life or may involve unconscious components. It is contended by Pear (1922) that the development of some 'powerful and important sentiments' in our society involves 'not a little repression'. A distinction can be drawn between repression (active forgetting) and denial (inability to perceive or otherwise cognize as a result of emotional factors). Both denial and repression may occur in the service of the sentiment. Thus the lover or the patriot may be characteristically 'blind' towards the demerits of his beloved or the policy of his government. Again, the person who is negatively prejudiced, who dislikes or hates, may be equally unable to recognize any ethically desirable qualities present in the object. Both the positive and the negative sentiment may impede memory as well as perception and judgment, the result being an inability to recall events or qualities of the object incompatible with the sentiment. In his account of the relation of repression to sentiments Pear emphasizes failure to remember undesirable qualities of the objects of positive sentiments. Studies of hostile sentiments have provided evidence that hostility is itself a factor particularly favourable to the occurrence of repression.[2] For example, dislike may not only lead to avoidance of the object, but also to ideational avoidance, a reluctance to *think* about the enemy or rival. One of the subjects studied reported that she had not

[1] 1677, p. 138. [2] McKellar 1949; 1949 (*a*).

'thought about' the disliked person in question for a period of about a year. Such ideational avoidance is probably a stage of transition to actual repression.

But repression of affect rather than memories may occur. Psychoanalytic treatment commonly results in release of such repressed affect, and the intensity or even presence of such emotion may be a matter of some surprise to the subject himself.

A group of 30 normal adults was subjected to a period of prolonged interview, supplemented by techniques of the free associative and projective testing kind. Each interview centred on one sentiment alone, its nature, origins, and the ways in which it functioned in the subject's emotional life. The investigation was confined to negative, hostile sentiments. At the outset subjects tended to talk in a relatively unemotional way about the object. As the interview, aided by the special techniques, progressed and details of the relationship with the object were recalled, there tended to be an expression of often extremely intense emotion. Subjects showed at times almost unbelievable heights of malevolent emotion towards the other person, and fantasies of hurting and humiliating him were common. A subject who began by asserting mere aversion or dislike for the other person might end the session by declaring his intense wish to cause pain to or kill the object of his negative sentiment.[1]

The aim of the investigation was first to explore the emotional system at its superficial, conscious level, and then to proceed to the more unconscious and unrecognized aspects. An interesting difference between the emotion of anger and the resentful emotion component of the hostile sentiment was apparent in the above study. Verbal expression of simple anger seems to lead to its extinction within a relatively limited period of time. The resentful anger which forms part of the hostile sentiment appears to be fed from a more inexhaustible store of emotional energy. Procedures of the psychoanalytic kind also appear to lead to the ultimate extinction, or at least reduced intensity, of such resentment, but the process is a lengthy one. It involves progress from lesser to greater emotional intensity before this diminution or extinction occurs. Further empirical analysis of hostile and other kinds of sentiments is needed. Too little is known of the nature of sentiments like respect and contempt, love and hate, the factors which give rise to their de-

[1] McKellar 1949, 1949 (*a*).

velopment and the part which they play in the organization of emotional life.

3. 'Relative Ethics' of the Sentiments

One of the most interesting of Shand's laws relates to what he terms the 'relative ethics' of the sentiment. As illustration he cites the proverb: 'All's fair in love and war.' This rationalization enables the lover or the soldier to feel released from duties and moral principles inconsistent with his sentiment—with his love or his hatred. Shand's statement of the *law of relative ethics of the sentiments* states: 'Every sentiment tends to acquire the virtues and vices that are required by its system.'[1]

The exceptions which we are so ready to make in favour of friends and others for whom positive sentiments are held may be taken as illustrations of this principle. In connection with the negative sentiments, of which hatred is the prototype, Shand states the law: 'Hate, so far from developing, like love, a relative ethics of its own, tends to destroy all virtues, ideals and duties that restrain it from its ends.'[2]

Such a principle is illustrated in the unrestrained excesses of cruelty of civilized human beings towards persons representative of groups against which they have a prejudice.[3] When asked about the character of the object of their hostile sentiment, no less than 25 of the 30 subjects of the investigation mentioned above insisted on his moral inferiority. In 11 cases this assertion was made with considerable emphasis. One person went so far as to regard the individual she hated as so 'evil' that she formed a sort of negative moral ideal—the 'wickedness' of her actions and character gave 'meaning' to human goodness. This general tendency to assert an absence of adequate moral standards in the object of a hostile sentiment seems to have direct bearing upon the subject's feelings of release from his own moral standards when dealing with this other person.

Apart from the phenomenon of relative ethics of the sentiments, it will be apparent that abstract sentiments may be formed about feelings of obligation and moral values themselves. These *moral sentiments* correspond to the more general ethical standards of the

[1] Shand 1914, p. 110. [2] *Op. cit.*, p. 119.
[3] Compare Cantril's studies of negro lynchings (1948).

subject, to Butler's 'principles of benevolence' and 'conscience', and to at least one aspect of the psychoanalytic 'superego' (Chapter X).

4. Ambivalence

The term 'ambivalence' was originally employed by Bleuler and Freud to denote presumably equal components of love and hate towards the same person. But sentiments, like emotions, also differ in degree of intensity. There are possible degrees of ambivalence. This does not mean more hate than love or more love than hate, but rather different degrees of emotional involvement with the object. While the child may experience a love-hate ambivalence towards one or both of its parents, as is suggested by the psychoanalysts, there are also what might better be described as 'liking-disliking ambivalences'. The child may have such ambivalence towards a relative who matters considerably less to him emotionally than does his father or his mother. Alternatively such ambivalence of lesser intensity can develop towards a business acquaintance, who at times enhances and at times threatens self-esteem. Both love and hate entail a high degree of emotional involvement with the object—the welfare or misfortune of the other person is likely to involve considerable emotion on the part of the subject. The writer has observed speakers in Hyde Park and elsewhere who have preached Fascism and anti-Fascism, Socialism and anti-Socialism, religion and atheism, Communism and anti-Communism. The expenditure of effort and emotion involved was such as to indicate that, irrespective of whether the creed was upheld or opposed, it was of considerable emotional importance to the speaker. In Nietzsche's most violent attacks upon Christianity two things are apparent: (*a*) Christianity mattered, and mattered a great deal, to Nietzsche. (*b*) This high degree of emotional involvement had an ambivalent character (Nietzsche 1888).

Opposed to the hypothetically 'pure' sentiments of high intensity, love or hatred, is complete indifference towards an object.[1] It has been asserted that sentiments *tend to be* ambivalent rather than pure: 'Love, however constant, is rarely undiluted; and hatred, however unrelenting, is rarely pure, unmixed aversion.'[2]

[1] Such indifference is, of course, distinguishable from the histrionic 'indifference' which may mask hostile or tender emotional dispositions.

[2] Burt 1925, p. 538.

That repression plays some part in the sentiment would be in accord with this contention; the tender or hostile aspect may be apparent to introspection and its logically, but not psychologically, inconsistent counterpart repressed. This view is supported by clinical psychoanalytic findings. Yet much could be done to integrate psychoanalytic thought with academic psychology in these matters. *The concept of sentiment could profitably be introduced into depth psychology.* There is, for example, much overlap between 'sentiment' and the highly controversial concept of 'introjected object'. Melanie Klein (1932, 1945) and others of her school postulate a multiplicity of 'introjected objects'. This seems to involve a complex and unnecessarily controversial statement of what could be said in a more generally acceptable way, namely: (*a*) Individuals form sentiments for objects and aspects of objects. (*b*) such sentiments are usually, or always, ambivalent, and exert considerable influence upon subsequent mental life.

The first assertion is undeniable; the second assertion is highly probable, and would have the support of many academic psychologists. What is being asserted tends to be lost, however, in terminological obscurity and resulting controversy, neither of which is entirely necessary. The stimulus qualities of emotionally significant individuals tend to be complex. Parents and children at times satisfy each others' primary and secondary needs, but nevertheless inevitably thwart one another. Those upon whom a subject depends emotionally sometimes fulfil the roles expected of them; they support and sustain the subject, his self-esteem and his values. At other times the same individuals constitute the most serious threats to his ego and values that the subject encounters. That ambivalence rather than pure sentiments should develop as a result of these happenings seems a not unreasonable assumption. But persons who 'matter' less to the subject, his more casual acquaintances and lesser friends, may also be complex in their stimulating qualities. Ambivalences of lesser degrees of intensity can develop towards such individuals.

A classification of human sentiments emerges from our discussion, and is illustrated in the accompanying figure. At the points on the left-hand side of the triangle are the probably hypothetical extremes of 'pure love' and 'pure hate'. Between these are various ambivalences of this maximum degree of emotional involvement, representing different proportions of hostile and tender emotion.

Between the extremes of emotional involvement and indifference may be placed sentiments of greater or lesser degrees of intensity. Varying intensities of liking and disliking stretch from the extremes of hatred and love to the extreme of emotional indifference. Within the triangle are ambivalences of greater or lesser degrees of intensity of liking-disliking. One or other component may be the stronger, yet it would seem, on the basis of the clinical data of psychoanalysts and others, that sentiments tend to be other than

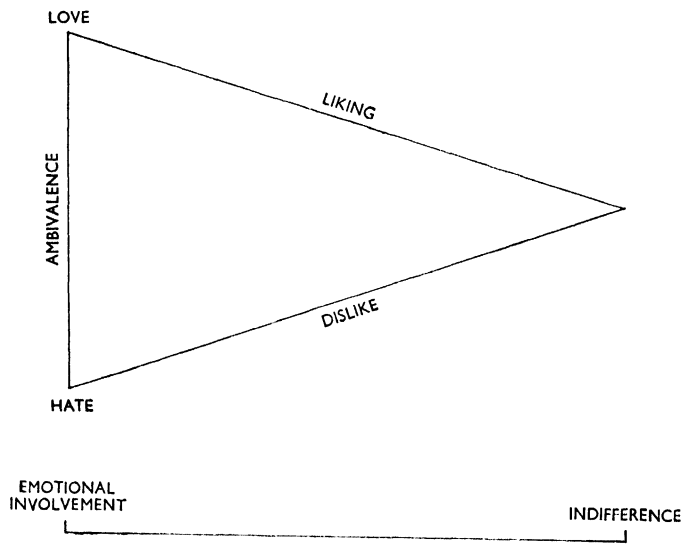

FIG. 10
Classification of Sentiments

what they seem to superficial introspection, and repression may play a not unimportant part. In their projective test study of anti-Semitism Frenkel-Brunswik and Sanford (1945) found interesting discrepancies in the case of the prejudiced group. Superficial investigation revealed conventionally approved, positive sentiments towards parents. Projective testing demonstrated that such sentiments were highly ambivalent, with strong components of repressed hostility. The discrepancy was not apparent in the case of the non-prejudiced group. More empirical research into the structure of human sentiments with the word-association and projective test and other such techniques is needed. It is probable that these

investigations will show that the ideal reference points of love, hate and indifference are hypothetical extremes, and that existing sentiments in any individual tend to fall *within* the surface of the triangle of our diagram. Such sentiments may prove to be ambivalences of greater or lesser degrees of intensity. Less intense ambivalences would involve less concern about the welfare or otherwise of the object of the sentiment, his presence or absence, and his good or bad fortune.

5. Complexes

Some psychologists have chosen to treat 'sentiment' and 'complex' as synonyms (e.g. Hart 1912, 1922). Current usage on the whole supports a distinction. A British Psychological Society symposium held in 1922 served to clarify the difference between the two. Since there are grounds for assuming that some or all sentiments have unconscious components, the view held by Knight (1948) that complexes are merely 'repressed sentiments' is very questionable. At the same time it may be admitted that unconscious factors play a more important part in the complex than in the sentiment. Rivers (1922) suggested that complexes manifest the 'all-or-nothing' character, which is far from being typical of the sentiment in its more usual form. The most satisfactory basis of distinction seems to be that of Pear (1922) who suggests that the two concepts 'sentiment' (Shand) and 'complex' (Jung) arose from the study of respectively the 'tidy' and 'untidy' aspects of mind. This well chosen metaphor may be examined. The complex, as a system of emotionally toned ideas, typically gives rise to behaviour of an un-coordinated, regressive and somewhat primitive kind. Complex-determined acts are, on the whole, unadjustive adaptations to persons and situations. There is more coordination and rationality about sentiment-determined behaviour. A knowledge of the presence of a sentiment enables predictions to be made about behaviour of the kind for which the subject is likely to be able to give reasons. Predictions may also be made as to behaviour which may result from the presence of a complex, but such behaviour is of a different kind; both the subject himself and others are more likely to agree that it depends upon an irrational peculiarity of the subject.

Sentiments tend to be defended with reasons and rationalizations; complexes are ordinarily not defended in this way. In the

case of sentiments there are closer ties to the ego, ties both intellectual and emotional, whereas complexes have more remote reference to the ego in these respects. Complex-determined behaviour, for the most part, is excused rather than intellectually defended; the subject may admit his own irrationality, but feel it to be out of his control. Nevertheless there may be some degree of identification or ego-involvement with complexes, which may be acknowledged with signs of pride even when the subject apologises for them. Guilt and inferiority complexes sometimes lead to rather histrionic admissions of guilt and inferiority; these admissions protect the subject's ego from full awareness of features of the complex which he wishes to disown. Among such admissions are what are termed by Menninger (1930) 'illusions or alibis' of inferiority, which may disguise envy, hatred, guilt and other affective processes and states. It is probable that Adler has over-emphasized the importance of inferiority feeling and inferiority complexes, and that these may sometimes be mere superficial alibi-formations which hide deeper emotional organizations, particularly those of the guilt kind.

The presence of complexes may be established by the word-association test, often assisted by the psychogalvanometer (PGR). In his studies of such complexes Jung (1918) noted that 'almost without exception' long associative reaction times of response are caused by the presence of strong emotional tones; these emotional tones tended to be of the sort unpleasant to the subject. Other signs of complexes included repetition of the stimulus word, misunderstanding, translation of the stimulus word into a foreign language, over-energetic response and perseverative reactions. Signs of upset were found by Jung to be measurable with the galvanometer in conjunction with the association test. He notes also the usefulness of introspection in connection with investigation of the presence of complexes and the study of their indicators. A variation of the more usual method of word-association study of complexes may be noted. The experimenter gives a stimulus word, recording the response. The response word is then given as stimulus, and the response again recorded; this is used as the new stimulus word. What is being done may be disguised by the introduction of intermediate stimulus words, the responses to which are disregarded. If blockage occurs by a return to the original stimulus word such resistance may be broken down either by questioning, or by giving

both stimulus word *and* response word as the stimulus. The presence of systems of emotionally toned ideas is readily established by this 'progression' method. It is a more rapid procedure than that involving the usual type of word-list.

Another method of relevance to the study of complexes is Jung's procedure—active imagination. The subject is required to think imaginatively about some incident, suggest an alternative ending to a story, or make up a fantasy about a person or happening which appears to be emotionally significant to him. The method is more fully discussed by G. Adler (1948) and in Chapter XII.

6. Prejudices

Prejudices are another kind of system of emotional organization. Sherif and Cantril (1947) suggest three criteria of prejudices: they are rigid, intense, and usually based upon false premisses. It was shown by Rokeach (1948) that prejudice against other national groups correlates with generalized rigidity of mental life. On the whole prejudices resemble sentiments, but have certain characteristics in common with complexes. We shall be concerned primarily with prejudices of the negative and hostile kind, though a person may be prejudiced 'towards' rather than 'against' an object or group. A noticeable feature of negative prejudices is the operation of the principle of relative ethics stated by Shand and noted above. The person, group or creed is usually regarded as 'morally inferior' and the subject feels himself 'right' in experiencing hostility.

It is desirable to distinguish two important categories of prejudice: (*a*) *Primary prejudices* result from actual contact with the individual or members of the group against which the subject is prejudiced; (*b*) *Secondary prejudices* arise more indirectly from assimilation of the prejudices of other individuals, by social learning (e.g. suggestion, imitation, etc.). Intermediate are those in which both first-hand experience and assimilation of the attitudes of others play a part. As illustration of prejudice we may note the remark of the passenger in the Naples incident (Chapter II) that the policeman's behaviour was an instance of 'the Latin temperament'. Such a remark suggests that happenings were interpreted in terms of a previously-held prejudice against 'Latin temperaments'. A prejudice of the primary (direct-contact) type is often

better described as hatred than dislike. It is sometimes the result of a severely traumatic happening and logically unjustified over-generalization on the basis of such a happening. While conducting temperament tests on a group of conscript army personnel the writer encountered numerous instances of anti-Semitic prejudice of the secondary type. One soldier, however, had seen service in Palestine and constituted an extreme case of primary anti-Semitic prejudice. This appeared to be based upon traumatic experiences, the subject cited in support evidence of atrocities committed by the Israeli troops. The way to answer, and thus draw out expression of, this kind of prejudice differs from what might be employed in the case of a prejudice of the secondary or learned kind. The subject has first-hand knowledge of facts with which the investigator is personally unacquainted; on the other hand, it might be asked whether non-Jewish soldiers do not also sometimes commit atrocities. Anti-Semitic prejudice of this primary kind is probably considerably rarer than learned anti-Semitism. Jahoda and Ackerman (1942) found evidence that such prejudice tended to be of two main types. One of these arose from acceptance of current attitudes, the other from personality conflict for which the stereotype of the Jew provided a solution.

That prejudices against such groups as Jews, Negroes and American Indians go with other personality characteristics has been shown by numerous investigators. Rosenblith (1949) found among such associated qualities a 'jungle philosophy' that the world is a basically evil place, and a generally 'disciplinary outlook' that there is 'not enough discipline' in the national way of life. Secondary prejudices when voiced are often preceded by the assertion 'I am not against Xs, but . . . .'. This mechanism of self-deception is called by Frenkel-Brunswick (1939) 'conversion to the opposite'. Prejudices which follow such a phrase are unlikely to be of the primary kind; in these the alternative ego-defensive device of moral justification and ethical superiority is more likely to be employed.

We have noted the criterion adopted by Sherif and Cantril that prejudices are 'usually' based on false premisses. Evidence of this is to be found in social-distance scale studies of the kind frequently employed in laboratory courses in psychology. In the well known study of this type of social distance in relation to national groups which originated with Bogardus (1925), students frequently exhibit considerable prejudice against a national group such as the

Turks. In one such study carried out in New Zealand it was found that *none* of those who exhibited anti-Turkish prejudice had ever met a Turk. Even in countries closer to Turkey it is improbable that many of those who exhibit anti-Turkish sentiments will have sufficient acquaintance with Turks to be able to recognize a Turk from a Greek, who is usually rated much more favourably.

Most modern anti-Turkish prejudice is probably of the secondary type. Stereotypes about Turkish people have become widely accepted in English and other Western European communities on the basis of stories of atrocity and massacre. Such prejudices may distort judgment and influence thought, but are unlikely to lead to any violent, revengeful or vindictive kind of action. The present writer has encountered only one case of anti-Turkish prejudice of the primary type—in an Armenian who had personal experiences of 'Turkish atrocities'. His prejudice against the Turk was of a very different kind and was compatible with revenge and violent action.

This individual, like the soldier who had served in Palestine, had a prejudice to which the term 'hatred' is applicable. Not all hatreds are prejudices, however, though many hatreds of classes of people rather than of individuals tend to be of the prejudice kind. Many hatreds of groups are understandable when examined from the standpoint of the subject, even though not logically justifiable. The widespread hatred of Germany and things German which has arisen in many European countries as a result of Nazi occupation may be considered as a prejudice. Hatred of the Nazi party and the Gestapo are instances of hatred to which the term 'prejudice' is not *really* applicable, since the generalizations on which such hatreds are based cannot properly be regarded as false. They relate directly to a realistic assessment of the qualities of the group in question. It seems to be misleading to call such emotional systems 'prejudices'.

Sentiments may be viewed in terms of associative connections with the object. If ideational recall of an individual, or of the individuals who represent a group, inevitably brings the associations of humiliation and suffering (for oneself or others), then a sentiment of the hatred type is probably present. If there are both positively and negatively toned associations the sentiment is likely to be ambivalent rather than purely negative. Absence of alternative associations may arise from the nature of the object itself (e.g. the Nazi Party), or again from the selective activity of consciousness (e.g. for

which the prejudice may be responsible). Again, it may result from personal experiences of individuals who do not represent a cross-section of the group about which the prejudice develops. Again, one experience of a representative of a group may have been so traumatic that it has completely outweighed other such experiences. Memories and their emotional tones have a bearing upon the origin and structure of prejudices and upon the question of what may profitably be called 'a prejudice', and what 'a hostile sentiment' but *not* 'a prejudice'. It seems safe to assume that generalized hostile sentiments towards any national or ethnic group are prejudices, since it would be a major research task, which the subject has quite obviously omitted, to establish the validity of judgments made. That such an investigation characterized by scientific objectivity and proper sampling has not been undertaken is evident from the lack of objectivity, the rigidity and intensity of emotion which characterize these prejudices in speech and action. Introspection reveals an absence of alternative associations of positive emotional tone with the object. The prejudice subsequently tends to exclude by its selective influence the acquiring of such alternative associations.

While the prejudices of those who have suffered much from Germans, Russians, Turks or other peoples may be understandable, there is a possibility, which has not been explored, of alternative associations. Those who are not against 'Germans' may include in their associations with 'Germans' such individuals as Beethoven, Goethe, Kant, Luther, Schopenhauer and Pastor Niemoller. They may nevertheless have a negative emotional tone to their associations with such names as Bismarck, 'the Kaiser', Hitler and his associates, and perhaps also Wagner. Such prejudices may affect the parent, who imparts them to the child. Alternatively the subject may be influenced through the written word or, in the case of cartoons of the 'Unspeakable Turk', 'Prussian Bully' and 'Russian Bear' type, by way of pictorial illustration (see early issues of *Punch*). Sentiments towards national groups are unlikely to be prejudices in so far as they include associations of positive emotional toning. In the instance of the individual with the prejudice against 'Latin temperaments'[1] it is unlikely that he was aware, or greatly influenced by the awareness, that 'Latin temperaments' might include the temperaments of Molière, Cervantes,

[1] Chapter II.

Velasquez, Marconi and St. Francis of Assisi. It is probable that stereotyped visual images of Frenchmen with pointed beards, Spaniards with knives, and Italian organ-grinders had a closer associative connection. Childhood influences probably play a considerable part in the acquisition of the associations which form the structure of, for example, anti-negro prejudice. Children are often threatened with 'black men'; and black has strong association with dirt and with the negative and 'evil' side of things. There is also much inaccurate folklore about the intellectual and character traits of coloured people, while parents may maintain some degree of social distance. While thus protected from close acquaintance, the child reads and hears stories which show the coloured individual in an inferior and otherwise adverse light.

The social and economic status of individuals who are encountered seems to be an important factor. Allport and Kramer (1946) found that less anti-negro prejudice occurred when there was contact with negroes of similar socio-economic status. MacKenzie (1948) obtained evidence that acquaintance with negroes of high occupational status was an important factor in determining favourable and non-prejudiced attitudes. It is interesting to note the distribution of the grosser forms of anti-negro prejudice in terms of both history and geography.

Colour prejudice seems to have been largely absent in the ancient world. Homer tells us that the gods enjoyed feasting with the 'blameless Ethiopians', and Herodotus describes the same people in eulogistic terms. Again, in the Roman Empire there appears to have been no colour-bar. In the present-day world colour-bar is absent or nearly absent in such countries as Brazil, and Nigeria and other parts of West Africa.[1] At the other extreme is the severe subjection of the negro in the south of the United States and the intensified policy of discrimination in present-day South Africa under the influence of the political and racial theories of Dr. Malan. The latter are explicitly advanced on 'Christian' grounds! Among American students MacKenzie (1948) found less prejudice in North-Eastern than in Mid-Western universities.

It is not our task to pass adverse ethical judgments about the immense suffering which colour prejudice has certainly inflicted upon one large category of the human species. We may nevertheless note in passing that the 'scientific' arguments which have been

[1] Wellesley Cole, 1950.

advanced in such countries, and by prejudiced peoples in other communities are usually, at least biologically or psychologically, false and often nonsensical. For example, the scientific psychologist would be much too cautious to assert such views as are commonly and dogmatically stated about negro 'inferiority' in intelligence and in character. That racially intolerant policies of these kinds are motivated by a *conscious* self-interest is improbable. This explanation pays insufficient attention to the influential human mechanisms of self-deception or ego-defence. On the other hand, a clash of interests does seem to be a causal factor in areas of the world where some of the most intense forms of anti-negro feeling occur. For example, in South Africa and the southern parts of the United States the negro is a highly dangerous actual or potential competitor with the white man. That white interests are involved is, however, often admitted by the prejudiced individual, not directly but through moralization and rationalization.

When President Truman proposed to enfranchise the negroes in the Southern States by abolishing the poll tax, his proposal was received not merely with anger but with indignation. Southern Senators spoke of their 'rights', asserted that Truman was morally wrong, and even charged him with being a 'Communist'. The President was not opposed by the argument that white interests were being threatened, but rather with indignation and by the assertion of moral principles. It may be noted that the right of the negro to exercise his vote was already an established part of the *law* of the country, which was in practice obstructed by the tax which had to be paid before voting. Though President Truman was only trying to enforce the recognized law of the land, he nevertheless encountered moralized anger, and was assailed with disparaging epithets stated in terms of 'righteous indignation'. When prejudices are involved conflicts of economic and other interests are often stated in this way, moralistically rather than as such. As Cantril (1941) has shown, even lynching which, as murder, is contrary to the law, is often defended on grounds of moral principle.

Three main types of theory have been held as to the origins of prejudice towards minority groups. Zawadski (1948) distinguishes these as: (1) The earned reputation theory, (2) the scapegoat theory, and (3) the interactionist theory. The earned reputation theory is often that advanced by the prejudiced person. It holds that a group

enjoys the reputation it has earned. On the whole psychologists have tended to accept the scapegoat theory, which explains prejudices as the products of displaced hostility. This view has often been associated with an over-simplified theory of the origins of hostility in 'frustration'. A third type of theory is called by Zawadzki 'interactionist'; this emphasizes that prejudice is the result of the mutual interaction of two groups, and that both contribute towards the prejudice. Zawadzki points out that 'discrimination cannot but produce some undesirable characteristics'. The part played by minority groups in maintaining prejudice has been noted by other investigators like Jahoda and Ackerman (1942) and Bettelheim (1943). That prejudice and discrimination may produce socially undesirable traits in the minority group, and that such traits may maintain prejudice, seem reasonable assumptions. Prejudice is not only likely to produce such traits, but the prejudiced individual is likely to seek what confirmation he can in the actual qualities of the group against whom he is prejudiced. In this vicious circle realistic perception as well as displacement and projective distortion may play its part. Scientific attempts to correct the bias of the layman's 'justifiable reputation' theory has on the whole, as Zawadzki points out, tended to result in neglect of the study of the minority group in its reactions to discrimination.

Prejudices of the secondary type characterized by lesser degrees of intensity may be a result of simple learning, and to these the alternative hypotheses are not necessarily relevant. Learning may occur from early childhood under the influence of similar prejudices on the part of the parent; they may also be the result of the radio and the printed word. In recent years there has been some controversy in Britain about the possibly adverse effects of children's serial radio programmes. Many of the criticisms advanced have themselves been instances of the kinds of rigid thinking for which prejudices are responsible. Prejudices can result in over-simplified theories about more remote social issues. Thus the radio and children's reading matter have both been held to be 'the cause' of delinquency. That delinquency has a single and simple causation is highly unlikely, as serious scientific investigators have shown. On the other hand, neither radio programmes of the Dick Barton kind nor children's literature can be acquitted of having an influence, and possibly a strong influence, upon secondary prejudice-formation. The villains often exhibit 'foreign qualities' of a stereo-

typed kind: Dick Barton's first opponent was Kraemer. Other villains have included Weimar, Schwarfschmidt, Signor Patelli, De Flaubert, Esteban and Volkasch. Apart from the foreign nature of such names, sample broadcasts revealed foreign-sounding (particularly German-sounding) speech. Thus Esteban used the German 'Ja', and other villains employed the German sound 'Vee' for 'We'. In contrast the 'good people' spoke with English, Scottish or Cockney accents.

Similar examples are to be found in literature read and liked by young people. For example, Charles Hamilton ('Frank Richards' and the creator of Billy Bunter) employed many foreign villains and figures of fun. French and German masters at Hamilton's fictitious schools, Greyfriars, Rockwood and St. Jim's, tended to be eccentric in ways which reflected and confirmed widespread stereotypes. The young reader or radio listener may, under such influence, become equipped with an internal world of stereotyped foreigners, while remaining remote from first-hand experience of nationalities other than his own. The nature, origins and associated imagery of such unreality-adjusted conceptions of other national groups are worthy of more attention and objective study by the research worker. One investigation of imagery associations with names of different national groups was carried out by Gordon (1949). She investigated and confirmed the hypothesis that stereotyped images are based on earlier experiences than those that are non-stereotyped. On the whole, however, her findings supported the view that personal contact and casual observations are more influential in developing the imagery associated with conceptions of national characteristics than the radio, the film or the newspaper.

7. Attitudes

The term 'attitude' is a very much broader one than 'sentiment'. It is difficult to find a very satisfactory definition of 'attitude' in view of the broad meaning of the term. 'Attitude' is taken to include general ways of reacting having no definite object, like severity and laziness (Thouless 1923); it includes the Würzburg mental set (Murphy *et al.*, 1937); it relates to neural states of readiness (Allport, in Murchison, 1935) and embraces many other things. McDougall (1923) regarded the catholic concept of attitude very critically, and preferred to speak of sentiments. Unfortunately the

ambiguous term 'attitude' has attained a wide usage in psychology and is likely to remain. Most empirical studies of the pencil-and-paper survey kind have been carried out under the name of attitude studies. Much is known of human attitudes towards an immense variety of objects, important and unimportant, though little has been ascertained experimentally, and many pencil-and-paper studies in this field have been of poor quality. That, as Sherif and Cantril (1947) observe, some sociologists have equated social psychology with the study of attitudes might be held to be evidence of the immaturity of this aspect of our science. Valuable attempts have been made to clarify the nebulous field of attitude psychology by Sherif and Cantril, and by Allport at an earler date (*loc. cit.*). From a survey of the field Allport comes to the conclusion that the 'essential feature' of an attitude is a 'preparation or *readiness* for response'. If a distinction between attitude and sentiment is required, it would seem that sentiment has more direct reference to the organization of the emotional life. Shand writes:

> 'The emotions tend always to build themselves into more stable and complex feelings: and these are the sentiments, which in their turn become the centres of attachment of the original emotions.'[1]

In contrast, attitudes refer rather to overt behaviour, to tendencies to outward forms of response, as Allport's conclusion would suggest. The unsatisfactory term 'attitude' has been avoided in this book as far as possible, and sentiments, prejudices, mental sets, values and personality traits have been referred to as such. A profitable integration of Shand's sentiment theory with empirical studies of attitudes awaits the attention of future psychologists. While a great deal is known about the incidence of positive and negative attitudes or sentiments towards a large variety of objects, much less is known about the structure and functioning of emotional systems themselves: love, hate, liking, disliking, prejudice, and the various possible kinds of ambivalence. Shand's analysis provides a desirable, highly relevant, and somewhat neglected basis for further research in this field.

[1] Shand 1896, p. 217.

8. Shand's Laws of Emotional Life

Shand's laws of emotional life[1] and its organization fall into three main categories: (1) General laws of emotion; (2) laws of specific emotions; (3) laws of emotional organizations (sentiments). The *law of disinterested emotion* (Chapter II) relates to emotional life generally. Specific laws deal with specific emotions such as anger and fear:

> 'Fear, though it be forced into aggression, strives to attain its ends without aggression.'[2]

This principle embraces the fact that fear sometimes leads to aggression and enables a prediction to be made whether such aggression is or is not likely to occur in any given instance of fear. The third set of laws refer to the organization of emotional life, and more specifically to the sentiments. Two of Shand's principles relating to the 'relative ethics' of the sentiments have been noted. These emphasize an aspect of what is embraced in what Shand regards as the basic and fundamental law of sentiments:

> 'Every sentiment tends to include in its system all those emotions that are of service to its ends, and to exclude all those which are useless or antagonistic.'[3]

In his history of psychology Spearman (1937) has adopted an unduly negative attitude towards the 'alleged laws of orexis' of Shand and other psychologists. It might be questioned whether Shand's principles are 'laws' in the usual sense. On the other hand, perhaps too sharp a distinction can be drawn between the established conclusions of psychology, or any other science, and its more provisional principles and hypotheses. Even if we place his examination of orectic mental life at its very lowest, it must be admitted that Shand is the author of an almost bewilderingly large number of *hypotheses*, most of which have never been investigated. The psychology of orectic mental life is too little understood for it to be possible to neglect one hundred and forty-four such principles, whether these are regarded as established 'laws' or merely as fruitful hypotheses awaiting further investigation. The principles concerned seem to be particularly worthy of research since they were

[1] Shand 1896, 1914, 1922. [2] 1914, p. 217.
[3] *Op. cit.*, p. 62.

formulated by Shand after a survey of previous human thought about such subjects as emotion and motivation. They are the product of group rather than individual thought and observation.[1] We cannot attempt to summarize Shand's contribution in any detail, but may make brief reference to some additional principles and hypotheses.

Love and hatred are analysed and certain assertions made as to the emotions which result from such sentiments under a variety of differing conditions. Relations between sentiments and moral judgment are asserted. Hypotheses about the factors which give rise to the various sentiments are stated. Relations between emotion and sensory stimulation of the pain kind are asserted. Predictions are made as to the effects of specific emotions such as fear, surprise, suspicion, joy and anger, upon subsequent experience and behaviour. For example, no less than twenty-five principles relating to the emotion of sorrow are stated.

Whether the principles asserted are regarded as laws or merely as hypotheses, it is suggested to the reader that an acquaintance with them is of considerable value in the planning of his researches in such fields of psychology as emotion, emotional organization, feeling and motivation. The relevance of the thematic apperception test to such research may be noted. Murray and Morgan (1945), the authors of the test, have been among those who have applied it to the study of religious and other sentiments.

SUMMARY

Systems of emotional organization are distinguished from emotions. Such systems impose consistency upon emotional experiences and enable some degree of prediction of the emotions most probably experienced under a variety of circumstances. Important among the emotional systems are sentiments such as dislike, love and hatred. Sentiments tend to embrace psychological content which is compatible with their systems. They may be ambivalent, and are perhaps usually ambivalent; like emotions they differ in degrees of intensity. Complexes may be distinguished from sentiments, and complex-determined thought and behaviour have certain distinctive characteristics. While repression plays an important part in the complex it is not necessarily absent from the sentiment. Prejudices are intermediate between complexes and senti-

[1] Compare Chapter XV.

ments; a distinction is made between two kinds of prejudice. The relation of Shand's work on the sentiments to the alternative concept of attitude is noted. Shand's principles of emotional life form a starting point for many profitable research projects.

RELEVANT READING

Allport, G. W., 1935, 'Attitudes', Chapter in Ed. Murchison, C., *A Handbook of Social Psychology*.

Krech, D., and Crutchfield, R. S., 1948, *Theory and Problems of Social Psychology* (Chs. 6–7).

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CHAPTER VI

Association and Conditioning

If two psychological processes (or states) occur together subsequent occurrence of the one tends to lead to the occurrence of the other. The phenomenon is association (by contiguity). Many principles or 'laws' have been formulated in connection with such association; of these the law of contiguity is the most important. Conditioning is a special case of association by contiguity. By conditioning the subject comes to respond to neutral stimuli which have been associated in time with an original, primary stimulus. Thus salivation and other food responses may be conditioned to a bell stimulus. Conditioning has considerable relevance to the psychology of learning, particularly to such learning as involves modifications at the stimulus end of the stimulus-response sequence.

Association has been defined by Stern as 'a relation between items in mind of such nature that the appearance of one of them involves the readiness to arouse another.'[1]

Stern, who can hardly be regarded as an 'associationist', nevertheless contends that association as defined in this way is not only a justifiable concept of psychology; it is an 'indispensable' concept. Yet it has often been argued against 'associationism' in general, or against the laws of association in particular, that the principles involved are not all-embracing. This argument appears to rest upon a fundamental misconception of the function of scientific laws. Laws are seldom if ever applicable to every case without reference to other and supplementary principles. While the excesses of the extreme associationist have been rightly criticized, these belong principally to the history of psychology; the laws of association remain and, like other laws, have their limitations, which are best summarized in the phrase 'other things being equal'. With this proviso there seems no reason to reject Stern's judgment that asso-

[1] Stern 1938, p. 221.

ciation is a necessary and in fact 'indispensable' concept in psychology. There are two kinds of laws of association. The *primary laws of association* state the fact of association in general terms, while the *secondary laws of association* are supplementary principles which state the conditions favourable or unfavourable to the operation of the primary laws.

1. Primary Laws of Association

The basic principle of association, the *law of contiguity*, may be stated in its broadest terms:

> 'If A and B are presented together in space or in time the subsequent presentation of A tends to evoke B.'

As an illustration of a secondary principle which states conditions favourable to the operation of this law, we may note the factor of repetition or frequency. On the other hand, repetition is not a necessary determinant of association; the law may operate as a result of a single previous presentation of A and B. The symbols A and B may refer to a wide variety of psychological states or processes: ideas, percepts, images, moods, emotional tone or other affective states. Early associationists were somewhat preoccupied with the specific case of 'association of ideas'. A more satisfactory standpoint is to be found in Bain[1] who makes explicit reference to 'actions, sensations or states of feeling'. The origins of the law of contiguity are remote, but the principle occurs at least as early as the *Phaedo* of Plato. An excellent history of associationism has been written by Warren (1921). Illustrations may be given of conditions under which the law of association by contiguity does not appear to operate: Emotional upset may inhibit associative functioning. For example, a student in an examination may be unable to recall relevant information which he knows he has learned. When flustered or apprehensive a person may be unable to remember some piece of information, despite ability to think of other facts whose associative link with the forgotten material normally leads to its recall. As Freud (1904) has shown, active forgetting or repression may regularly prevent remembering of the proper names of persons for whom the subject has hostility. Again, there may be more than one association with a given item and the dominance of

[1] 1863, p. 85.

one particular association may inhibit recall of the alternatives. Yet again, the subject's mood may favour one kind of association rather than another, as we have seen (Chapter IV). Finally, the associative link between two items may have been too little reinforced for association to occur—a vocabulary word-list may have been underlearned rather than learned, and the associations between the corresponding words of the two languages insufficientlystrengthened. These exceptions are better dealt with in terms of the relevant supplementary principles involved than by rejection of a law of some fundamental importance throughout the whole field of psychology.

Sometimes a second primary law of association has been stated, the *law of similarity*. This states:

> 'If A and B resemble each other, then occurrence of A tends to result in occurrence of B.'

This is also a principle of wide application in psychology, though the phrase 'other things being equal' is again understood. The two laws are summarized in the more general principle of association stated by Stern and noted above. Association by similarity may occur during the composition of an essay; a fact about which a writer has some knowledge tends to call to mind other facts which resemble it. Association by contiguity can also operate in that the writer recalls facts which he has perceived together. Thus a student may state a general principle and an illustrative instance of it, both of which he has heard during a lecture or read on the same page of his text-book.

The extent to which a subject has been mastered may be examined in terms of the two principles of association. Differences between what teachers rightly assess as 'good' and 'poor' examination papers are partly differences in the proportions of similarity and contiguity associations. A poor paper will often show a predominance of contiguity associations; it reproduces the text-book or the lecturer's argument without much evidence of assimilation. There is a tendency for reproduction of arguments and examples which have been heard or read together. The better type of paper is likely to differ in that it depends more on association by similarity. It may involve a gathering together of information from many sources: numerous books, articles in journals, laboratory experiments, and personal observations. These are associated by a not always ob-

vious similarity, and appreciation of their relation is taken by the examiner as evidence that the examinee understands his subject.

The differences referred to are taken to depend on differences in the amount of information read and assimilated. At the same time it will be apparent that similar criteria may distinguish high and low intelligence levels. An important aspect of intelligence is the ability to comprehend relations, to abstract and to bring to consciousness relevances which are not necessarily distinguishable at lower intelligence levels. Experience in individual intelligence-testing situations will reveal that the less intelligent subject may be able to produce associations. Many such associations are those of the contiguity kind, while associations of similarity are of a simple and obvious character. High intelligence may certainly assist an examinee in so far as it makes available associations of similarity which are not available to others. At the same time it is apparent that rigid reproduction of contiguity-associated material may occur for any one of a number of reasons. In addition to poor acquaintance with subject-matter there is the too little understood phenomenon of 'examination upset', which may account for the 'poor' type of paper.

The principles of association have numerous other applications. One of the most interesting of these is to be found in Frazer's work *The Golden Bough* (1911). Frazer distinguishes between two kinds of primitive magic: contagious and imitative. Contagious magic is regarded by him as a fallacious application of the *psychological* law of contiguity to material nature. The magician acts as though *objects* which had once been in contact remained capable of exerting a subsequent influence upon one another as a result of this previous association. For example, a widespread practice has been that of attempting to cure a wound by anointing or otherwise treating the weapon which caused the wound. What is probably a survival of this magical practice is to be found in the stereotyped saying, 'a hair of the dog that bit you'. Imitative magic also depends upon a similarly fallacious extension of the law of similarity. For example, a malevolent magician may seek to destroy an enemy by destroying an image which resembles that person. Attempts have been made to induce fertility by performing ceremonies which imitate the birth process. This twofold theory of magic is of considerable value in that it provides a meaningful and unified explanation of a large number of otherwise apparently unrelated phenomena of

primitive psychology: magical practices, taboos and the surviving superstitions of more sophisticated communities.

A third illustration of the application of the basic principles of association may be given. It has been noted by Bain (*op. cit.*) that association transfers the interest of an end 'to the pursuit of a means'. This early statement has considerable relevance to the principle of 'functional autonomy' later to be emphasized by Allport (Chapter II). The way in which money is valued as a means, and later comes to be valued as an end in itself, is analysed by Bain as an illustration of his principle. Such a process has been studied in its transitional stages in the animal psychology laboratory. In 1936 Wolfe demonstrated that chimpanzees would learn to work not merely for food but also for value-tokens which could be inserted into a machine and exchanged for food. These tokens proved to be effective incentives in learning experiments. Differential evaluation was also demonstrated. The animals would work harder for one kind of token which could be exchanged for more food than for other tokens of lesser food value. Nissen and Crawford (1936) found that paired young chimpanzees would not only share food, but would also share tokens exchangeable for food. They found that tokens retained this incentive value even when their exchange for food was delayed. At the human level such evaluation of instrumental objects is, of course, a matter of some importance. Its origins appear to depend upon the processes of association.

2. Secondary Laws of Association

Numerous secondary laws of association, which state the conditions under which the primary laws of contiguity and similarity operate, have been stated. Important among such laws are those stated by the Scotsman, Thomas Brown, with which we shall be principally concerned. Brown chose to speak of 'suggestion' rather than association, in the sense that idea A suggests idea B, that is the idea associated with it. Brown was the first to make the distinction between primary and secondary laws of association which has been noted. Of the nine secondary laws, or conditions under which the primary laws operate, Brown has summarized four of his more specific laws in a single statement:

> 'When the two associate feelings have both (together or in close succession) been of long continuance, very lively, very frequently

> renewed, and that recently, the tendency to suggest each other is more powerful' (Brown 1820, p. 240).

The principle could be formulated to have wider application, the word 'feelings' being replaced by some more general term. Summarized in this statement are the more specific *laws of duration, frequency, recency* and *liveliness of association.* The law of relative frequency has relevance to Pavlov's conception of internal inhibition with reference to the conditioning phenomenon.

Another important condition of association is stated by Brown in terms of an example:

> 'The song which we have heard but from one person can scarcely be heard again by us without recalling that person to our memory' (*Ibid.*, pp. 236–7).

This is an illustration of the *law of number of alternative associations.* The likelihood that any particular association will occur depends upon the number of possible alternative associations (e.g. of similarity or of contiguity). That this law has reference to the formation of positive, negative and ambivalent sentiments has been suggested in the previous chapter. An introspective examination of the affective tone of memory images relating to, let us say, the school period of childhood will suggest the relevance of this principle to the formation of these different kinds of sentiments. In a number of other principles or secondary laws Brown drew attention to such influences on association as individual differences, emotional variations, temporary 'diversities of state' (ill health, etc.), and prior habits. These influence the likelihood or otherwise of association formation.

The concept of *associative spread* relates to the interaction of old and new associations. Previous associative learning may facilitate subsequent association formation; for example, a student who turns to a second book on a subject may be assisted by the reference points provided by the previous book he has completed. The new associations may also reinforce the old. On the other hand, associative spread may be negative in its effects. Previous associations may inhibit the formation of new learning bonds; this phenomenon is known as *proactive inhibition.* Alternatively the establishment of the new associations may weaken the old associations. In this case the occurrence is one of *retroactive inhibition.* The two kinds of associative inhibition may be illustrated with reference to Pyle's

card-sorting experiment (1921). In this experiment the subject sorts cards into a tray divided into compartments to which numbers have been fixed. After several trials the positions of the numbers on the tray are changed and the subject again carries out the sorting task. A third stage of the experiment involves a return to the original position of the numbers, and the subject again sorts the cards. Proactive inhibition is apparent in the difficulty the subject has in establishing the new set of motor habits required for the second learning task. The time taken to perform this is longer and many incorrect movements may be observed. Retroactive inhibition occurs in the third stage of the experiment with the return to the original positions of the numbers. The intermediate task has interfered with the original responses. Again, increased time and the occurrence of incorrect movements may be noted.

The phenomena of associative inhibition have reference to an important principle of learning formulated by Jost in 1897. *Jost's Law* states:

> 'Given associations of equal strength but different age, further practice strengthens the older more than the younger' (Munn 1946, p. 140).

A second part of the law relates to persistence rather than strength of associations:

> 'If two associations are now of equal strength but of different ages, the older one will lose strength more slowly with the further passage of time' (Woodworth 1938, p. 58).

Older associations are both more readily reinforced and more persistent than younger associations. Jost's law summarizes the conditions under which proactive and retroactive inhibition occurs. It also has reference to the reasons why rest periods and sleep, which allow associations to age, have the effect of strengthening and increasing the persistence of associations. The law has obvious reference both to academic study and to acquisition of skill in sport.

3. Emotional Tone of Associations

The nonsense syllable invented by Ebbinghaus and used by him in his studies of association (1913) eliminated not only the meaning but also the influences of emotional tone upon retention and forgetting. This factor, excluded by Ebbinghaus and the numerous

investigators who have followed his method, has engaged the attention of others. The pioneer study in this field was that of Galton (1883), who relates an incident in which, during a walk through London, he attempted to find associations with the various objects he perceived. He tells how such an introspective experiment resulted in samples of his 'whole life' passing before his attention. It permitted recall of 'many bygone incidents' which he never suspected to have formed part of his 'stock in trade'. These were recalled to conscious awareness merely through association with perceptions of objects 'too familiar to awaken the attention'.[1] Galton's more systematic experiments which were, like those of Ebbinghaus, upon himself, resulted in the word association test. The 75 words which he worked with gave him 505 ideas; some of these ideas occurred only once, others occurred as many as four times. Galton appreciated the significance of such a method in the study of the structure of both the intellectual and the emotional life. Numerous laboratory experiments of the standard type depend upon Galton's word-list method and Jung's extensions of it.

Operation of the principles of association by similarity and contiguity may be demonstrated by presentation of such a list. The subject is given the mental set to respond with a word either similar to, or associated in space and in time with, the stimulus word. Other standard experiments relate rather to the study of the emotional tone of associations. A typical experiment may be described. Two subjects are chosen by lot and each given an envelope. One envelope contains instructions to wait in an adjoining room; the other envelope gives instructions to the second subject to commit a fictitious crime. If the wording is suitably chosen a good deal of anticipatory guilt can be aroused even before the 'crime' is committed. The act may involve 'stealing' some object from the lecturer's desk, or reading some specially prepared 'private' letter. In one such experiment it was arranged for another member of the staff to interrupt the crime. It happened also that the subject met the professor when leaving the lecturer's room. The rest of the class has the task of finding which of the two 'suspects' is the guilty one, using the word association test. Suitable stimulus words had been prepared during the 'crime', and these were now presented to the two subjects. Association times were considered, and observations made of the behaviour of the person being tested. The

[1] Galton, *op. cit.*, p. 187.

actual response words were examined, and the 'criminal' discovered on the basis of all the data.

There are numerous variations of the association experiment. In another standard experiment the subject reads one of two or three stories. It is the task of the experimenter to determine which of the three stories has been read, making use of a suitable list of words prepared from each of the alternative stories. As before, association times and the nature of responses to the stimulus word-list are considered. Again the personality of the subject may be investigated in terms of his systems of emotional organization—sentiments, prejudices and complexes—with the word association test. Jung (1918) gives illustrations of the ascertaining of an individual's occupation from the nature of his associative responses to a standard word-list.

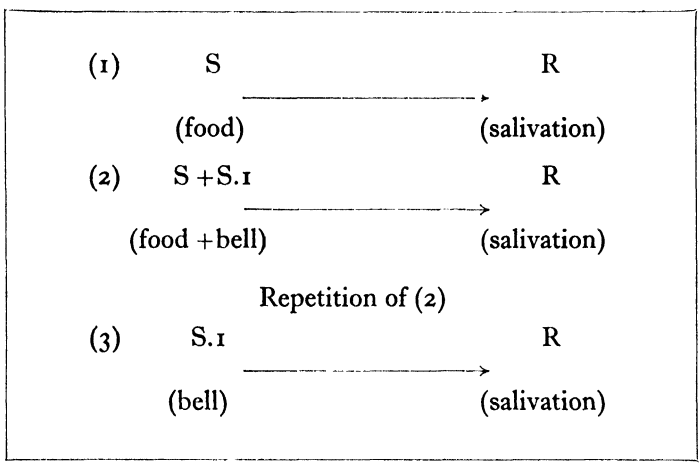
Pavlov, whose life and work were models of scientific integrity, was generous in his acknowledgment of his own debt to earlier thought. In particular he stressed his indebtedness to associationist psychology and he regarded conditioning as a particular case of association by contiguity (Pavlov 1928). Later investigators have viewed conditioning from a somewhat different standpoint which will be dealt with in the following chapter. Pavlov's own substantial contributions to psychology are, as he has himself stressed, essentially in the associationist tradition. He was concerned with contiguity relations between stimulus and response. Some learning is primarily a matter of stimulus substitution, and it is to this that Pavlovian conditioning principles are primarily applicable. In the typical conditioning experiment of the 'classical' type the organism makes a reflex response to a new (secondary) stimulus which has been associated a large number of times with the stimulus that naturally evokes this reflex.

4. The Conditioned Reflex

In 1852 Bidder and Schmidt were investigating certain physiological problems of gastric secretion in their relation to metabolism. During these experiments they observed that the offering of food to a hungry dog would give rise to a flow of gastric juice.[1] Pavlov's subsequent intensive researches were concerned with this phenomenon in dogs. At the beginning of the present century Pavlov

[1] Hull, in Ed. Murchison 1934, p. 383.

found that such secretion would occur with a neutral stimulus, e.g. a bell, which had been presented a number of times together with the food. Subsequent presentation of this secondary stimulus alone led to the occurrence of the salivary reflex. Pavlov's translator, Anrep, used the term 'conditioned reflex' to denote this secondary, experimentally established response (Harriman 1947). Subsequent investigators have tended to use the wider term 'conditioned response', and in accord with this usage we shall speak rather of 'responses' than of 'reflexes'. The basic conditioning experiment can be expressed in a formula which is valuable for summarizing more complex experiments of this kind:



The summary given indicates that the response remains constant; it is at the stimulus end of the sequence that change occurs. Stage (1) refers to the unconditioned response (reflex); stage (2) and its repetition relate to the establishment of the conditioned response, while stage (3) represents the occurrence of such a conditioned response. In the example taken food is the *unconditioned stimulus*; the *unconditioned response* to this stimulus is salivation. In the third stage of the experiment there is the *conditioned stimulus*, in this case a bell, which leads to the *conditioned response*.

Our example, the basic conditioning experiment, involves the setting up of a *primary conditioned response*. The process could be continued to the stage of a *secondary conditioned response* by a pairing of the conditioned stimulus (S.1.), the bell, with another

stimulus (S 2), let us say a buzzer. With repetition of such paired presentation the buzzer alone will evoke the salivary secretion response. A simple surgical operation permits measurement of the amount of saliva secreted in these experiments (see fig. 11). This more complex conditioning experiment may also be summarized in a formula of the same general kind. There are, however, limits to the conditioning process unless *reinforcement* occurs. 'Reinforcement' (Pavlov) involves pairing the food (unconditioned) stimulus with the bell (conditioned) stimulus a number of times. It represents a return to stage (2) of the basic experiment summarized in

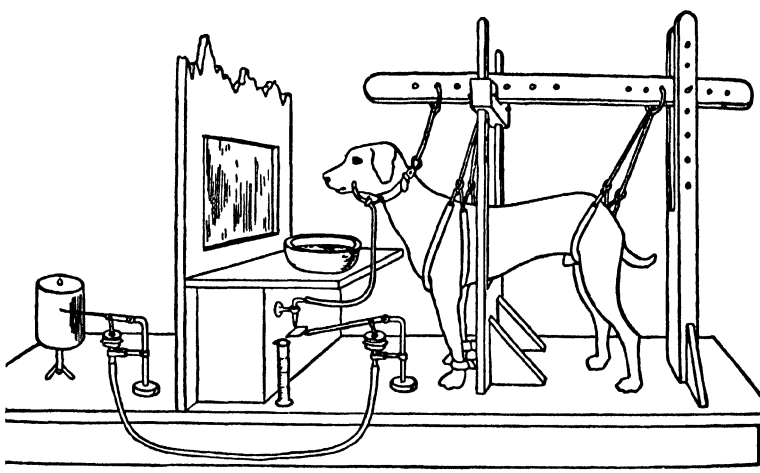


FIG. 11.—Pavlovian Salivary Conditioning[1]

our formula. While there are limits to the indefinite continuation of conditioning beyond the secondary stage, studies in Pavlov's laboratory have established the possibility of at least *tertiary conditioning* (Frolov 1937). Pavlov was concerned with food responses and with the dog as an experimental subject. Subsequent investigators have shown the possibilities of human conditioning as well as of conditioning of other of the lower animals. Human conditioning may be illustrated by one of many such experiments.

Marquis (1931) experimented upon a group of infants, from the time of birth. They were fed only under controlled conditions, and a buzzer was sounded at the time of bottle-feeding. In the course

[1] Reproduced from Yerkes, R. M. and Morgulis, S., *Psychological Bulletin*, 6, 1909, p. 264, by permission of the Editor and the American Psychological Association.

of periods ranging from three to eight days of paired presentation of the food and auditory stimulus, conditioned responses were established. Sucking and other feeding movements occurred in response to the buzzer alone. The experiment has additional interest as evidence that the cerebral cortex does not function in the first ten days of life. It thus confirms the possibility, and with human subjects, that sub-cortical conditioning occurs.[1] Many experiments have demonstrated conditioning in the adult human subject. One interesting experiment was that of Hudgins (1933). Hudgins succeeded in establishing a conditioned response of the pupillary reflex of the eye to verbal stimuli, namely the words 'relax' and 'contract' spoken by himself.

5. Motor Conditioning

Other early investigators were concerned with a different kind of conditioning, with motor rather than salivary responses of the Pavlovian kind. In 1902 Twitmyer was engaged in a study of the knee-jerk reflex.[2] The reflex was stimulated in the usual way by a blow on the patella ligament; in the experiments a bell was frequently sounded before the knee-jerk was elicited. On one occasion it happened that the bell sounded but the knee was not struck. The reflex occurred nevertheless. Subsequent experiments confirmed this unexpected occurrence, and showed that the conditioned reaction could be established with from 30 to 230 paired presentations of the two stimuli. It was unfortunate that this important discovery was, as Hull says, 'buried in a privately printed thesis'. The thesis was largely about other things. V. M. Bechterev (1857–1927) was the first sytematic investigator of these non-secretory motor reflexes. In his studies of 1912 he was concerned with what he called the 'protective reflex'. His experiments centred primarily upon conditioned withdrawal established by painful stimuli such as electric shocks. Bechterev, like Pavlov, worked with dogs, but, unlike Pavlov, later carried out numerous experiments upon human subjects. Early behaviourist studies of such investigators as Watson, involving presentation of electric shocks in association with neutral stimuli such as bells, resemble the pioneer investigations of Bechterev rather than of Pavlov. Hilgard and Marquis (1940) point out that the wide acceptance of conditioning by psychologists was

[1] Woodworth 1938, p. 107. [2] Hull, in Ed. Murchison, 1934, p. 382.

a result of the influence of Bechterev, though the details accepted were rather those of Pavlov. Both Pavlov and Bechterev may be regarded as psychologists. Bechterev wrote explicitly upon psychology; although Pavlov was primarily a physiologist he was also concerned with unquestionably psychological topics. Pavlov wrote a book on psychiatry (1941), made studies of such psychological phenomena as the dream, neurosis and hypnotism, and in addition carried out an experimental study from the standpoint of the conditioned reflex, of the process of psychoanalysis (Pavlov 1928). The assessment of Pavlov as a physiologist whose work was later applied by psychologists to psychology is, in view of these facts, a misleading one. Some of the pioneer but important applications of conditioning to psychology were those of Pavlov himself.

6. Inhibition

If an established conditioned response is not reinforced by presentations of the unconditioned (food) stimulus together with the conditioned stimulus, the response will cease to occur. To take an example, a bell (conditioned stimulus), if presented a large number of times without the food stimulus being presented with it, ceases to evoke the conditioned response, which becomes *internally inhibited.* It is Pavlov's contention that such disappearance of the response comes about not by destruction, but as a result of inhibitory processes in the cortex. That this is the case is suggested by the fact that the response can be re-established more readily than a new one can be established, or than the same response in another animal (Pavlov, *op. cit.*). An illustration of a similar phenomenon at the human level may be found in connection with the punishment of a child or criminal. It is widely recognized by legal authorities that it is more important that a punishment be *certain* than that it be severe, if it is to be an effective deterrent. Punishment which is an unlikely possibility will not be so effective as punishment which inevitably follows the crime. Again, it is apparent that a child who is frequently threatened with punishment which is never forthcoming will eventually come to treat such threats with the contempt which is their due. In the absence of reinforcement, then, inhibition of the internal kind will occur in the conditioning experiment also. A specific case of internal inhibition is called by Pavlov *conditioned inhibition.* An animal may be presented with

another stimulus together with the conditioned stimulus. When this combination is presented the animal is not fed; the combination is not reinforced. If the original conditioned stimulus is sufficiently reinforced it will continue, when presented alone, to evoke the response, but when combined with this other stimulus it will not evoke such response; the additional stimulus is called a 'conditioned inhibitor'. To illustrate, in an experiment by Pavlov a conditioned response was established to a bell. When, however, the bell was preceded by a buzzer the dog was not fed. In the course of time the response occurred with the bell alone, but did not occur with the bell when preceded by the buzzer (the conditioned inhibitor). Such inhibition is of the internal kind in that it results from non-reinforcement.

In contrast to internal inhibition Pavlov speaks of *external inhibition.* This occurs as a result of an additional stimulus which is presented with, or just previous to, the conditioned stimulus. Thus in one famous experiment (see below), the salivation response was externally inhibited for a time under the influence of an electric shock presented each time food was given. An incident related by Frolov (1937) occurred in Pavlov's laboratory, and illustrates external inhibition.

Some of Pavlov's students had established new conditioned reflexes which they wished to demonstrate to Pavlov and some visitors to the laboratory. When the time of demonstration came the students were embarrassed to find that the animals would not give the required responses. The explanation lay in the additional stimuli provided by the presence of Pavlov and the other additional observers. Such stimuli had an external inhibitory influence. External inhibition is of some importance in connection with laboratory procedure in conditioning experiments. An uncontrolled variable may constitute an external inhibitor. For this reason among others, more than usually rigorous precautions have to be taken by the experimenter in conditioning studies.

Inhibition has considerable relevance to the problem of motivation. Not only may the organism come to respond to what were originally neutral stimuli, and thus manifest secondary needs and aversions; external inhibition may result in the temporary removal of unconditioned (primary) responses. A third and important possibility was experimentally investigated by Pavlov's student Yerofeyeva: the setting up of a positive conditioned response to pain.

The unconditioned food response was first verified. An electric shock of moderate intensity was now given with food every time the animal was fed. As might be expected, the result was an external inhibition of the salivary reflex and associated food responses under the influence of pain-avoidance. General signs of withdrawal and no salivation resulted from food plus shock stimulation. The experimenters continued and the animal was not fed. Finally, under the influence of intense hunger and after some resistance, the paired stimuli led to the occurrence of salivation, and general food and seeking reactions. When this response had been effectively established it was found that it would occur on presentation of the electric shock alone. The natural protective withdrawals from pain had been eliminated, the animal allowed itself to be given the shock, it salivated, and manifested other signs of gratification of the sort associated with the original unconditioned food stimulus. Further experiment revealed discriminatory responses, and with higher intensities of electric shock the animal again manifested the usual withdrawing reactions.[1]

The experiment is one of some interest. In the early stages, as in the concluding subsidiary experiment, there was a complete inhibition of natural, innate food-responses on presentation of food. This occurred as a result of the influence of the also presumably innate pain-withdrawal responses. On the other hand, in the final stage of the main experiment this protective withdrawal was also inhibited, and eventually shock produced salivation and other positive, seeking responses. Frolov, in giving an account of this experiment, relates the story that the English physiologist, Sherrington, who was present at the time of the experiments, remarked that he now understood the behaviour of the early Christian martyrs and their willingness to accept painful deaths. It need not be emphasized that such analogies should not be pressed too far, yet the experiment is perhaps not entirely irrelevant to this kind of motivation. Such a study suggests possibilities of rather unlimited influence of conditioning upon motivation. Not only may secondary needs be established as in the typical conditioning experiment; in addition this experiment shows that competing primary needs and aversions may eliminate one another, and that a positive reaction to pain can be established, at least in an animal subject. With reference to human applications we must exercise caution, but may note

[1] Frolov, *op. cit.*, pp. 92–99.

Flugel's contention (1945) that in certain respects man is also a pain-seeking as well as a pleasure-seeking animal.

Other interesting experiments having reference to inhibition were carried out by Pavlov. Some of these concerned the phenomenon of *differential inhibition.* Inhibition may be utilized to produce a reversal in which intense stimuli are inhibitors and produce no response, while weak stimuli produce greater effects than normally. Such an experimentally produced state was termed the 'paradoxical phase' by Pavlov (1928).

7. Other Phenomena of Conditioning

An extraneous stimulus may externally inhibit a conditioned response, but this is not necessarily the case, and the converse phenomenon of *disinhibition* may occur. For example, the presence of a stranger or the addition of a new stimulus may revive a recently extinguished response. Thus in one experiment by Pavlov's student Zavadsky a conditioned response was internally inhibited. The response was subsequently disinhibited by other stimuli of the auditory and tactile kinds (Pavlov 1927). Other experiments have shown that *delayed conditioned responses* may be be established. The conditioned stimulus is presented some time before the food (unconditioned stimulus). As a result the conditioned response, when established, will occur at approximately the same period of time after the presentation of the conditioned stimulus. Such delayed conditioned responses make it possible for studies to be made of an animal's powers of time-discrimination. Certain rather paradoxical psychological phenomena are regarded by Pavlov (1928) as related to delayed conditioning, among these the often surprisingly accurate time-estimates which may enable human beings to wake up after a determined period of sleep. The phenomenon of *summation* may be noted. If two stimuli will each evoke a given response and both are presented together, the resulting response is usually stronger than for each stimulus presented separately. Such increased strength may be in excess of simple arithmetical summation.

Some controversy has surrounded the problems of *discrimination* and *stimulus generalization.* Particularly in the early stages of conditioning other stimuli, especially those relating to the same sense department as the conditioned stimulus, may evoke the response.

Thus if a dog is conditioned to respond to a bell, salivation may occur on perception of other notes and tones. This phenomenon Pavlov called 'irradiation'. He regarded such irradiation as involving the spread to other parts of the cerebral cortex of excitatory (or inhibitory) processes aroused by the stimulus. It seems better to adopt the more generally used term 'stimulus generalization' for this phenomenon, and to regard 'irradiation' as an hypothesis advanced by Pavlov to explain it. An illustration of such stimulus generalization is Watson's experiment on conditioned fear of a white rabbit. At the conclusion of the study the investigators found that the child showed fear of other furry animals and objects (Watson and Raynor 1920). Subsequent investigators have questioned Pavlov's irradiation hypothesis; on the whole experimental evidence supports the fact of such generalization but not necessarily Pavlov's explanation (Hull, *op. cit.*). A recent important investigation by Razran supports an alternative theory that stimulus generalization depends upon a categorizing or rating of related stimuli by the organism 'on some sort of crude similarity-dissimilarity scale'.[1] Razran rejects Pavlov's irradiation hypothesis, but also the alternative formulations of Hull and others.

Stimulus generalization effects may be minimized by reinforcing only one stimulus. Some experiments have shown that conditioned responses can be made highly specific and used to measure an animal's powers of discrimination. For example, it has been demonstrated that a dog can discriminate between two notes as close in frequency as 800 and 816 vibrations per second (Short *et al.*, 1948). Though the conclusion was already established by other methods, Pavlov was able to demonstrate the dog's insensitivity to colour by discriminatory reflex experiments. Pavlov's well-known studies of experimental neurosis in dogs depended upon generalization and discrimination; they involved presentation of increasingly similar stimuli between which the animal was eventually unable to discriminate (Pavlov 1928, 1941).

Sleep and states of coma were held by Pavlov to be a result of internal inhibition processes. Some interesting experiments involving both conditioned inhibition and stimulus discrimination were carried out. In one such experiment a series of notes was presented to the animal, it being fed only on presentation of the one note, X. As a result notes other than X eventually became condi-

[1] Razran 1949, p. 363.

tioned inhibitors and a rather curious phenomen occurred. The animal would fall asleep during the playing of other notes of the series, but would awake and exhibit the conditioned food response when note X was played. Such an experiment involved the establishment of an extremely specific conditioned response and the elimination of stimulus generalization effects. Freud's 'repression' was regarded by Pavlov as involving inhibitory processes in the cortex. Pavlov rejects the view (which he attributes to Freud) that repressed material is necessarily sexual. Any complex of stimuli under appropriate conditions may become inhibitory (Pavlov 1928). Again, *hypnosis* is held by Pavlov to involve cortical inhibition; such aboulia (inability to perform willed acts) as occurs in hypnosis is suggestive of inhibitory processes. In some phases of hypnosis sensory areas are subject to inhibition, and the hypnotized person is unable to perceive stimuli presented to him. There is some evidence that inhibition decreases with old age.

Frolov (*op. cit.*) reports an incident in which Pavlov was asked his opinion about an elderly patient who had been in a state of catalepsy for a period of 20 years. He gave no overt indications of life other than physiological signs: pulse, breathing, and secretion of gastric juices in the stomach before his tube-feeding. Pavlov concluded that, since inhibition decreases with extreme old age, the symptoms would disappear with the onset of senility. Such spontaneous recovery occurred. The patient in this case not only returned to autonomous activity and was able to speak and respond sensibly to many questions, but was also able to give some account of his psychological processes during the previous cataleptic period.

8. Pseudo-Conditioning

The interesting and rather paradoxical phenomen of pseudo-conditioning may be noted. Grether (1938), while investigating conditioned fear responses in animal subjects (monkeys) found a rather unexpected effect in his control group. A number of occurrences of the fear response affected the organism in such a way that the subsequent presentation of a neutral stimulus resulted in the same response. In one experiment fear was evoked by exposure of flashlight powder; the conditioning stimulus was a bell. When the fear response had been evoked a number of times it was found that the bell stimulus, which had not been presented to the control

group with the unconditioned stimulus, nevertheless gave rise to the same (fear) response. 'Conditioning' appeared to have occurred without any pairing of the two stimuli. This phenomenon has been conclusively established by investigators subsequent to Grether as occurring in adult humans (Grant and Hilgard 1940), in infants at birth (Wickens and Wickens 1940), and in numerous lower animals by other investigators. May (1949) examined the evidence for and against some of the hypotheses advanced to explain the phenomenon, among others that pseudo-conditioning is due to expectancy, to generalized mental set, or to the establishment by repetition of a dominance of one form of response. Hilgard and Marquis (1940) contend that it results from a heightened state of excitement which sensitizes the organism to stimuli that do not normally evoke the response.

Summary

Among the most important psychological principles so far formulated are the laws of association. Like other scientific laws these hold good 'other things being equal'. The primary laws of association are considered and illustrated in their application to the higher thought processes, to certain of the phenomena of primitive psychology, and in relation to the development of secondary motives. Secondary laws of association are dealt with and the phenomena of associative inhibition are considered with particular reference to the law stated by Jost. 'Conditioning' (Pavlov) represents a specific case of association by contiguity. It has particular reference to modifications which occur at the stimulus end of the stimulus-response sequence. Internal and external inhibition are of central relevance to the conditioning experiment. Pavlov advances the theory that internal inhibition provides an explanation of sleep and such states as hypnosis and catalepsy. Other phenomena of conditioning are discussed: disinhibition, discrimination, stimulus generalization, delayed conditioning, summation and pseudo-conditioning.

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CHAPTER VII

Learning

Learning is one of the most important distinguishing characteristics of the living organism and has often been regarded as the most fundamental of all psychological processes. Association and conditioning are of particularly close relevance to learning. Perception and apperception have reference to past learning which enables the subject to interpret the sense data in meaningful ways. At the same time perception is previous to, and a necessary condition of, learning. Secondary motives are 'secondary' in the sense that they are learned. Motivation, whether primary or secondary, is an additional condition of learning; without motivation learning does not occur. The most important contributions to the psychology of learning have been made by animal psychology, and some emphasis is placed upon this. Such experiments are sometimes misunderstood as being merely studies of the lower animals. They involve something more important than that—an attempt to settle fundamental issues of relevance to all learning on the basis of verifiable and falsifiable deductions. Systematic application of this approach has made the field of learning one of the most advanced areas of scientific psychology. Particular attention will be paid to the substantial contributions of Hull to the theory of learning.

Living organisms are distinguished from inanimate matter by their ability to learn. Behaviour, experience and motivation are modified as a result of what has happened to the organism in the past. As Hilgard (1948) has pointed out, the changes which are called 'learned' occur as a result of training procedures and are opposed to changes which result from factors not attributable to training. The term 'maturation' denotes modifications which result from the growth and development of the organism rather than from learning. Again, as Kellogg (1938) notes, learning involves a 'persisting' modification. Changes which occur with learning are relatively persistent as compared with changes which follow from

fatigue or sensory adaptation (Chapter III). Boring has defined learning as 'the establishment of new relations between stimulus and response'.[1] Pavlovian conditioning may be regarded in terms of this definition as a special case of learning; that of substitution of a secondary for a primary stimulus. As instances of learning Hilgard cites: acquiring a vocabulary, memorizing a poem, operating a typewriter, acquiring prejudices, ideals, preferences and social attitudes generally.

Some of the typical animal learning experiments will first be described and illustrated. The Pavlovian *conditioning experiment* represents one laboratory approach to the problem of learning and has been discussed in the previous chapter. Human as well as animal conditioning may occur. For example, Marquis conditioned human infants to make feeding responses on presentation of an auditory stimulus which had been paired with the primary food stimulus (see above, p. 139). A different kind of experiment involved the *puzzle-box*. Pioneer investigations in this field were carried out by Thorndike (1911, 1913). He placed hungry cats inside a box from which they could obtain release—and thus secure food—by depressing a lever or performing some other simple act. Thorndike's observations led him to conclude that at first random movements occurred, but that eventually the correct escape-producing response was established as a result of trial and error processes. These responses were reinforced by allowing the animal to have food each time it secured release. Under the influence of the hunger drive, and as a result of the reinforcement of this hunger satisfaction, the animals came to escape more rapidly on subsequent presentations of the experimental situation. Hovland has suggested that this learning is better described as 'trial and success' since errors retard and success establishes learning.[2] McDougall employed a different kind of puzzle-box experiment and trained an Airedale terrier to perform various series of movements necessary to open the box in which a biscuit had been placed (McDougall 1923). Once the task had been learned McDougall added additional complications to the box, and was able to demonstrate the ability of the animal to adjust its food-seeking behaviour to these progressive modifications. McDougall emphasized the purposive character of the responses—the way in which the dog's behaviour varied appro-

[1] Boring *et al.*, 1948, p. 2.

[2] In Boring *et al.*, 1948, Ch. VII.

priately while remaining orientated towards the task of obtaining the food reward.

An alternative learning experiment involves the *animal maze*. In this the animal learns to take the correct pathways from the point of entry to the food goal. Yerkes successfully trained an earthworm to take the right-hand pathway of a simple T-shaped maze, an electric shock being given each time it entered the other pathway (Russell 1934). The subject ordinarily employed in maze experiments is the white (albino) rat, and in this case the maze is of a complex kind with numerous correct or blind-alley pathways; the usual goal object is food. Another kind of learning experiment involves the *discrimination box*, in which the animal makes a choice between two (or more) perceptually distinguishable alleys. As the term suggests, the experiment is designed to measure an animal's ability to learn in a discriminatory way—to choose between alternative sensory cues presented. In the *Skinner box* experiment an animal—usually a white rat—learns to secure a pellet of food by depressing a lever. The apparatus has been widely used in experiments designed to investigate learning of the response modification kind. In one experiment Skinner (1938) investigated the rat's powers of discrimination. Lever pressing was rewarded by food only when a light was shown; when this supporting stimulus was not presented it was arranged that lever-pressing would *not* produce food. In the course of time the subject learned to make the lever pressing response only when the light was on.

Other laboratory approaches to learning involve less standardized apparatus but are of a general *problem-solving* kind. In one of his experiments Köhler (1925) gave two hollow bamboo sticks to one of the apes which were subjects in his Teneriffe investigations. Food was put outside the cage beyond the reach of either of the two sticks. After unsuccessful attempts the animal learned to solve the problem, joined the sticks by pushing one hollow shaft into the other, and secured the food with the aid of this lengthened rod. Köhler was impressed by the fact that such correct solutions as this occurred suddenly, as a result of 'insight' rather than after a period of continuous trial and error. Other investigators have laid emphasis on the fact that trial and error behaviour nevertheless appeared to precede the occurrence of this insightful solution.[1] The typical experiment of this problem-solving kind involves a goal

[1] E.g. Kellogg, 1938 (*a*).

object, some barrier which impedes the subject's achievement of this object, and an instrument which, if used correctly, will enable the animal to bridge the gap between itself and its goal.

1. The Learning Situation

Typical animal learning experiments have been illustrated, and some of the elements of the learning situation may be examined in terms of these. An essential condition of learning is *motivation.* The motive may be a primary or a secondary drive. An animal may be motivated to seek food, to avoid an electric shock, or alternatively to seek or avoid some secondary stimulus to which it has been conditioned. In a discussion of the Thorndike puzzle-box experiment Hovland distinguishes four basic elements: stimulus, response, motive and reward. He points out that Thorndike used *hungry* cats; if the animals are satiated learning does not occur.[1] Again, in the animal maze or Skinner box experiments the learning occurs in the service of some drive. A second condition which has been held to be necessary to all learning is *reinforcement* ('reward'). Pavlov's experiments showed that responses which are not reinforced cease to occur; they are internally inhibited (see page 141). Again, in Skinner's experiment noted above the response was reinforced by feeding only when the supporting stimulus (the light) was presented. In the absence of this stimulus the responses ceased to occur because of non-reinforcement. Pavlov himself regarded pairing of the conditioned with the unconditioned stimulus as the basic factor in reinforcement. Others, like Thorndike, have emphasized rather the factor of achievement of a satisfying state (or avoidance of dissatisfaction) as the essential in reinforcement. It was Thorndike's contention that responses which are effective in achieving this end tend to be repeated and those unsuccessful not repeated. Considerable emphasis has been placed by Thorndike, and by Hull in more recent times, upon reinforcement of this satisfaction kind as the essential accompaniment factor in learning. As has been seen, Boring regards learning as involving establishment of new stimulus-response relations. Stimulus and response are necessary components of the learning process. As in the typical Pavlovian experiment, the animal may learn to respond to new stimuli. Alternatively, in the Thorndike or McDougall puzzle-

[1] In Boring *et al., op. cit.*

box experiments there is a *modification of responses*; the animal learns those responses which enable it to obtain the desired goal object.

The discrimination box and animal maze experiments illustrate the importance of another element in the learning process. An organism responds to *cues* of a visual, auditory, or other sensory kind. Cues govern the nature and direction of responses and determine when and where responses will occur. Watson and Lashley carried out intensive investigations to establish which sense organs are essential to the furnishing of cues in maze learning. Watson destroyed the visual, auditory and other sense organs and found maze learning to continue. He concluded that the essential cues are of a kinaesthetic type. Lashley found a way of eliminating the kinaesthetic sense and demonstrated that the number of errors did not increase. Other investigators have shown that under normal conditions vision, touch and other senses play a part in maze learning. The evidence seems to support the view that there are *alternative* possible sensory cues. In his discussion of these experiments Woodworth concludes that rats use either good visual cues or good non-visual cues, depending upon which is the more readily available.[1]

Improvement that results from learning is often expressed in quantitative units as a graph—the *learning curve*. This may be an upward-sloping indication of increased accuracy of performance, or of number of items learned. Alternatively the graph may slope downwards and indicate progressive decrease of learning time or of the number of errors. The learning curve may be continuous, regular, and without evidence of sudden improvements. Performance improves, but does so slowly and regularly as a result of practice, consolidation and reward. Other learning curves show the discontinuous improvement in performance which has been held to result from processes of the insightful kind. Subsequent investigators have questioned the interpretations which Thorndike made of his own data—that the increased speed of solution of the puzzle-box problem was of a continuous and regular kind, a result of progressive trial and error. From an examination of Thorndike's learning curves Koffka (1924) concluded that Thorndike's own data afforded evidence of the discontinuous, insightful kind of learning. Adams (1921), who repeated the experiments, drew the conclusion

[1] Woodworth 1938, pp. 126 ff.

that the trial and error behaviour observed by Thorndike was the result of emotional upset and fluster. In the absence of such emotional excitement Adams found cats capable of learning in an insightful way. Köhler's studies of anthropoid apes at Teneriffe (1925) led him to place emphasis upon insight as an antithesis to trial and error. Insight takes account of the problem as a whole and involves its sudden solution, as in the experiment with apes noted above. Nevertheless it has been seen that trial and error appeared to precede the occurrence of insight in Köhler's own experiments. Hebb (1949) holds that it is 'impossible to avoid the conclusion' that *both* kinds of learning occur. He advances the hypothesis that continuous trial and error is typical of the learning of the child while 'insight' characterizes the learning of the mature adult. At the same time Hebb regards 'insight' merely as a 'valuable first approximation'—a provisional concept requiring further analysis. Learning curves show regularities and irregularities which may be regarded as a result of proportionate influences of the different processes designated by the words 'insight' and 'trial and error'. These irregularities can arise as a result of the variations in complexity of different parts of the learning material. Thus Kellogg (1938 (*a*)) points out that whether trial and error or insight occurs depends upon the complexity of the problem. Difficult problems will provide evidence of trial and error while simple problems may result in insightful learning on the part of the same organism. Kellogg holds that there is no need for a qualitative distinction between the two and that each is reducible to the other if the difficulty of the problem involved is considered. In the light of the evidence that the *alternative kind* of learning occurred both in Thorndike's and in Köhler's experiments, it seems necessary to adopt at least a *provisional* distinction. Nevertheless both trial and error and insight are obviously concepts which require further and fuller analysis.

An experiment carried out with human subjects serves to illustrate the characteristics of trial and error on the one hand and insight on the other. Scott presented three adults with an intricate mechanical puzzle. By trial and error the first subject took eight hours to solve it. A second individual watched the performance of the first and solved the problem in two hours. The third subject was a skilled mechanical engineer who studied the principles involved and achieved the solution in half an hour. He was able to

teach a fourth person to solve the puzzle in fifteen minutes.[1] Past experience of similar data and principles evolved from such experience would often seem to play a part in 'insight'. As Woodworth (1938), Kellogg (*op. cit.*) and others have noted, there appears to be an important relation between insight and transfer of training.[2] A principle seen in relation to a problem is isolated and applied in the solution of another problem. Such transfer seems to have occurred with Scott's engineer subject. Again, the 'difficulty' or otherwise of a task is relative to the subject. As Kellogg has pointed out, a second difficult problem presented after an earlier and similar one has been solved by trial and error may demonstrate insightful learning. The training and past experience of the engineer subject would have been such as to permit this to happen and transfer to occur; the problem lost much of its difficulty as a result of previous experiences and transfer of training on the basis of these. Factors other than knowledge and the nature of the problem may determine whether learning will be of the trial and error or insightful kind.

There appear to be close relations between what has been called 'insight' and what has been called 'intelligence'. Intelligence involves capacity to abstract principles, comprehend relations and organize past knowledge in ways which permit of insightful solution of a complex problem (compare Chapter IX). Some but not all learning situations permit such eductive, intelligent thought processes. This fact has not always been appreciated fully by some of the earlier investigators of animal learning. Animals have been placed in situations which did not permit insightful solution or confronted with tasks quite obviously beyond their intellectual capacity. When trial and error behaviour occurred the conclusion was drawn that such animals were incapable of the 'higher' forms of learning. Köhler criticized Thorndike's puzzle-box experiments on essentially these grounds; the task itself did not allow a survey of the total situation of the sort which would permit insight. As a corrective against this kind of error of experimental method the student psychologist may find it valuable to carry out some introspective studies while performing tasks of two types. A standard intelligence test—for example the Passalong test of the Alexander scale—may be used in the study of mental functioning of the eductive, intelligent, insightful kind. Blindfold performance of a finger

[1] Collins and Drever 1937 p. 225. [2] See below, p. 169.

maze will illustrate the kind of learning which does not permit application of principles or insightful solution. Studies with two such sets of material will serve to illuminate the close relations between 'insight' and 'intelligence'.

Nevertheless, although a learning situation permits insightful solution, unintelligent trial and error behaviour may occur. This may result from fluster, frustration or other kind of emotional upset rather than from intellectual incapacity. Like Thorndike's cats, under these conditions a human subject may resort to trial and error behaviour. Intermediate between the two is 'trial and error on the mental plane' (Watson). Movements may be considered and rejected in an anticipatory way at the level of thought rather than of overt action. We conclude that both 'trial and error' and 'insight' are provisional concepts which require further analysis into more fundamental psychological processes. Which of these alternative kinds of learning will occur depends upon the degree of difficulty which a given learning situation presents to a given subject. Such difficulty depends partly upon the nature of the material itself, but partly upon the characteristics of the organism—its previous experience of tasks which may permit transfer of training to occur, its intellectual capacity, and its available intelligence; emotional upset may lead to regression to trial and error even in the case of an organism and task which both permit insightful learning.

2. Response Conditioning

A valuable contribution which clarifies relations between learning and conditioning has been made by Skinner (1938), who distinguishes between S (stimulus) and R (response) conditioning. Stimulus conditioning occurs in the traditional Pavlovian experiment and involves a substitution of a conditioned for an unconditioned stimulus. The response remains constant; it is merely evoked by a different stimulus. In the traditional Pavlovian experiment the primary (unconditioned) stimulus is both the original determinant of the response and the source of reinforcement (reward). Moreover, in Pavlov's experiments the food was given whether the correct response was made or not. Response conditioning is different; in this case the response itself produces the reward. It follows that if an incorrect response is made it will not be reinforced (rewarded). An animal manipulates a latch, pulls a string

or makes some other movement whose relation to the food or other reward is quite arbitrary, having been decided by the experimenter. For example, in the Skinner box experiment the animal obtains a pellet of food by depressing a lever. Conditioning occurs, but it is conditioning of a non-Pavlovian kind which involves response modification rather than stimulus substitution. With response conditioning the primary and reinforcing stimuli are not necessarily identical. A response may be reinforced by a stimulus which had acquired reward value as a result of previous learning. For example, in Wolfe's study (above, p. 133) monkeys were taught to insert tokens into a machine which automatically exchanged these for food; the tokens themselves acquired reinforcement value and could be used as learning incentives.

Skinner's distinction between S- and R-conditioning parallels closely that drawn by Hilgard and Marquis (1940), between conditioning of the 'classical', Pavlovian kind and 'instrumental conditioning'. Skinner's R-conditioning is regarded by Hilgard and Marquis as a typical case of such instrumental conditioning, the kind of conditioning in which the response is instrumental in bringing about the reward and is thus in itself reinforcing. The characteristics of response or instrumental conditioning are three: (*a*) It involves modification of response rather than stimulus substitution; (*b*) since responses are instrumental in producing the reward incorrect responses are not rewarded; (*c*) the reward (reinforcement) may or may not be identical with the original primary stimulus. These contributions are valuable in suggesting ways in which conditioning principles can be extended to embrace the *variable* responses which often occur in the service of satisfaction of primary or secondary drives. Pavlovian principles offer no very convincing explanation of learning of the kind which involves depression of a lever in order to secure food; Skinner has provided an experimental and theoretical basis from which such learning can be approached in conditioning terms.

3. Thorndike's Laws of Learning

The first important attempt to formulate laws of learning on the basis of experimental investigation was made by Thorndike. Thorndike's *law of exercise* states that the carrying out of an action tends to facilitate subsequent performance. It is essentially a more

formal statement of the familiar principle that 'practice makes perfect'. The negative aspect of this law is the *law of disuse* which states that learning connections are weakened if practice is not continued. Thorndike's law of exercise (and of disuse) has reference to the phenomena of overlearning and underlearning. Responses are said to be 'overlearned' when practice has been carried out beyond the point necessary for perfect performance. They are said to be 'underlearned' when repetitions have been insufficient to bring them to this point. In certain oral examinations—notably those of the medical student—overlearning rather than mere learning may be required. The effect of such overlearning is to make the verbal material immediately available without the hesitation which tends to occur with recall of what has merely been learned. Touch-typists overlearn the position of the keys of their typewriter; the adult has usually overlearned the mathematical tables of his school-days. It is Kellogg's contention (1938 (*a*)) that the acquisition of a complex skill, the mastering of typing, tennis play and the perfection of a foreign language, 'may be placed under the heading of overlearning'. Improvement in a skill is not a matter of finding out what is to be done, but rather a matter of doing it better and better. The single and important principle involved is the law of exercise and it is upon this that the efficiency of skills depends. Hilgard (*op. cit.*) points out the limitations of the law and also stresses that it is principally applicable to repetitive habits like rote remembering and the acquisition of muscular skills. He notes that experiments have shown that the law of exercise does not apply to learning in general; fo ⁻ample, repeated attempts to draw a line exactly three inches long did not show improvement despite the frequency of the repetitions. Thorndike himself was later to modify the law and diminish the emphasis which he placed upon its importance.

Thorndike's second law, the *law of effect*, has had a different history. In a recent work Mowrer (1950) goes so far as to say that in relation to modern learning theory this is 'probably more influential' than any other single principle. Thorndike's law of effect states that responses 'accompanied or closely followed by satisfaction' will be more likely to recur on recurrence of the situation, while responses accompanied or closely followed by 'discomfort to the animal' will be less likely to recur. He adds: 'The greater the satisfaction or discomfort, the greater the strengthening or weaken-

ing of the bond.'[1] This latter statement comprises a subsidiary principle of learning, the *law of intensity*. The law of effect and its subsidiary principles apply to learning of both positive and negative kinds. Negative learning comprises learning *not* to make a response. The applications of the law of effect may be considered in relation to Thorndike's puzzle-box experiments. Thorndike's law represents an explanation of the reinforcement of correct responses by success in achieving escape, food and diminution of hunger tension. A reason for the importance of the law of effect in the modern psychology of learning is provided by Hull's explanation of reinforcement in terms of this principle. Hull's attempt to establish a systematic and integrated psychology of learning—despite its numerous and distinguished critics—remains one of the more important achievements of psychological theory.

4. Theories of Learning

Some basic differences remain and divide leading students of the psychology of learning. Nevertheless the present position of learning theory is a satisfying one as these differences are largely of the kind which will be settled by future laboratory experiments. Despite the differences referred to, all the important investigators in this field are in general agreement that crucial experiments can, and should, be designed to settle the more important points at issue. A broad distinction can be drawn between two important and opposing standpoints: those of field theory and those of the non-field theory type.

The standpoint of investigators like Tolman, Lewin, and Krechevsky is essentially of the 'field theory' kind, and is related historically to gestalt psychology. Its concepts are distinctive and include 'valence' (Lewin), 'cognitive maps' (Tolman) and 'hypotheses' (Krechevsky). Hilgard points out that the field theorists are distinguished by their emphasis on innate characteristics rather than environmental factors, on wholes which are more than the sum of their parts (gestalten), on cognitive acts rather than response, on dynamic systems of equilibrium as opposed to 'mechanistic' concepts, and on contemporary (rather than historical) causal factors.[2] Lewin stresses the importance of relations between the organism and its environment; learning occurs within a 'total field'.

[1] Thorndike 1911, p. 244. [2] *Op. cit.*, pp. 9 ff.

The organism's responses depend upon 'valences'—the attracting or repelling characteristics of environmental objects. As Sprott has put it in a happy phrase, an object which is an appropriate instrument for the solution of a problem—like the sticks in Köhler's experiment[1]—acquires what Sprott (1937) calls 'a use-me look'. The neo-gestaltist standpoint of these theorists, considered below, is readily distinguishable from the general approach and typical concepts of the second group of learning theorists. These have been termed 'stimulus-response', and sometimes 'associationist', psychologists and they view learning largely in terms of the modification of stimulus-response relations. Such theorists may be contrasted with the neo-gestaltists in terms of Hilgard's criteria noted above. This second group of learning theorists can be sub-divided into three categories. Guthrie (like the earlier investigators Pavlov and Watson) represents a relatively pure form of associationism. Hull, with his emphasis upon reinforcement in accord with the effect principle, belongs with Thorndike to what has been called the 'hedonist' tradition (Mowrer 1950). The third group comprises investigators like Skinner and Mowrer who hold that there are two kinds of learning. These dualistic theories involve an attempt to reconcile the differences which divide Pavlov's associationism from the Thorndike-Hull emphasis on the effect principle.

An attempt will be made to illustrate some of the important theories of learning held today by describing the standpoints of the four important learning theorists: Guthrie, Tolman, Hull and Mowrer. Before we attempt such a summary it may be noted that there is a danger that those who favour a gestalt or field theorist standpoint may adopt an over-simplified conception of the alternative kind of theory. As Spence has pointed out, there is no reason to suppose that those who view learning in terms of stimulus-response connections are unaware of the fact that learning involves far from simple inter-relations of numerous and complex factors.[2] We shall attempt to show that Hull and others have made contributions to the understanding of such 'higher' processes as insight, purpose and ideation generally. Stimulus-response psychologists are as much aware of the occurrence of such processes, and of their complexity, as is any field theorist. Again, we may add that there is no reason to assume that the field theorists and others who reject the Thorndike-Hull effect principle are unaware of the importance

[1] See above, p. 150. [2] In Ed. Moss 1942, Ch. XI.

of motivation in learning. In a previous chapter we have already dealt with contributions which both Tolman and Guthrie have made to the psychology of motivation itself (Chapter II).

5. Guthrie's Behaviourist Associationism

Guthrie represents a relatively pure associationist approach to learning. He specifically rejects Thorndike's law of effect and places emphasis upon association by contiguity as the fundamental law of both conditioning and learning:

> 'A combination of stimuli which has accompanied a movement will on its recurrence tend to be followed by that movement.'[1]

Guthrie's account of learning, animal or human, rests upon this basic principle. This investigator was among those who repeated Thorndike's puzzle-box experiments. Guthrie was impressed by the tendency which the animals showed to repeat movements in a stereotyped way, despite the fact that they failed to secure release from the puzzle-box. For example, one animal repeated the same inappropriate responses no less than 38 times. This phenomenon led Guthrie to an explanation of such learning in accord with his general 'behaviourist-associationist' standpoint. He advanced the hypothesis that the animal tends to repeat the responses which last occurred on presentation of the learning situation. Since these must inevitably include the correct escape-producing response, it follows that this response rather than the incorrect and irrelevant movements will be established in the course of time (1938, 1950). This explanation illustrates Guthrie's well defined associationist standpoint, which contrasts with Thorndike's law of effect explanation and with the emphasis which Adams placed upon insight in the same experiment. Guthrie's associationism stands somewhat apart from that of the other important learning theorists. At the same time it may be noted that other psychologists with generally opposing views accept the importance of the principle of contiguity in learning. Thus Hull (1930 (*a*)) stresses that contiguity limits the possibilities of trial and error responses. Trials are made not from all possible movements but only from those conditioned to one or other of the stimulus components of the learning situation. He points out that this 'enormously limits the number of trial reactions

[1] Guthrie 1935, p. 26.

made'. Tolman states his explicit preference for Guthrie's contiguity principle as an explanation of the kind of learning which involves acquisition of movements or 'motor patterns'. He is equally explicit in his rejection of Hull's reinforcement theory in favour of Guthrie's explanation of such learning.

6. Tolman's Field Theory

Tolman (1949 (*a*)) maintains the thesis that there are different kinds of learning to which different principles are applicable. He denies that learning can be dealt with adequately in terms of stimulus-response connections. Learning is regarded as typically a matter of a series of discontinuous, cognitive and organizing acts. (Compare the gestaltist 'insight' theory.) In the case of maze learning a rat does not develop a chain of responses in which each action brings about the appropriate stimulus for the next action, as Watson had believed. On the contrary, such learning depends upon what Tolman has called 'cognitive maps'. These are subjective configurations of previous sensory experiences which enable the animal to orientate itself in space, and to make the correct responses despite the experimenter's modifications of its immediate environment. The nature and influence of cognitive organizations upon learning may be illustrated by reference to a series of experiments carried out by Krechevsky. On the basis of these experiments Krechevsky (1932), and later Tolman and Krechevsky (1933), questioned the whole conception of 'chance' in learning. The experiments suggested weaknesses of explanations which emphasized 'random exploratory movements' and responses of a kind held to be 'without purpose or meaning'.[1]

In the first experiment the animals were presented with a discrimination box which permitted choice between two alleys. The alley containing food was distinguished by a rod over which the animal had to climb. Observation revealed that behaviour, even when incorrect, was not of the 'hit or miss' type. On the contrary, systematic preference for the left-hand path, followed by systematic preference for the right, appeared. A second experiment involved animals trained in antagonistic habits. They were first taught to respond positively to the brighter of two stimuli and negatively to the darker, and then were trained in the reverse

[1] Krechevsky, *loc. cit.*

responses. In this experiment systematic behaviour again appeared. One systematic response (to the light) would be given up, another systematic response (to right) adopted and finally given up for a third (to dark), etc. A further experiment with the discrimination box revealed the 'same story'. Light-going responses were given up for dark-going responses, and so on. Krechevsky concluded that the behaviour revealed a series of systematic attempts which, although inappropriate, were certainly not random. He called such behaviour that of the 'as if' kind; it is conditional and dependent for its continuance upon verification by achievement of the goal. An alternative kind of systematic response would occur when the goal was not achieved.

Krechevsky goes so far as to suggest that the animals were acting under the influence of a set of 'hypotheses'. These hypotheses may be defined in purely behaviouristic terms. Tolman similarly places emphasis upon cognitive processes of this kind. Tolman and Krechevsky (1933) have analysed the experiments more fully. The animal is considered to act in accord with a series of hypotheses. Each hypothesis is related to the previous one, and narrows down the field of possible alternatives until the correct one is found and the problem solved, or a new kind of principle introduced. Tolman's 'cognitive maps' and Krechevsky's 'hypotheses' alike involve the theory that it is something within the organism rather than in the environment which is the important determinant of maze, discrimination, and other kinds of learning. Stimulus-response theorists like Guthrie and Hull would deny that such influences operate, or that these are concepts necessary to explain learning. Tolman also employs a closely related concept, that of a sign gestalt. What Tolman has called 'sign learning' depends upon 'sign gestalt expectations'; the organism makes reponses preparatory to a second stimulus object under the influence of the expectation that this is going to follow the first stimulus object. Cognitive maps (Tolman) and hypotheses (Krechevsky) are instances of these sign gestalt expectations. Whether there are kinds of learning which depend upon such factors is an issue which can be experimentally decided; Tolman and Krechevsky have been careful to define their concepts in behaviouristic rather than 'mentalistic' terms.

Controversy between the sign gestalt psychologists and those who emphasize Hull's reinforcement principle has led to con-

siderable concern with the problem of 'latent learning'. The question arises whether an animal motivated by one drive will learn the position of rewards which satisfy another drive. Will evidence of such learning appear on a later occasion when the animal is motivated by this second drive? The typical experiment of relevance to this question has involved placing a hungry animal in a 'Y-shaped maze'. One of these alleys contains food, the other water. It is a matter of fundamental theoretical interest whether the experience gained in the food-learning situation will lead the animal—on the later occasion when motivated by thirst—to take the water and not the food alley. On Tolman's view that such learning depends upon cognitive maps or sign gestalt expectations, the animal should show this preference. On Hull's view no such preference will appear since the hunger but not the thirst response has been reinforced, and the animal will again turn to the food and not to the water. The Y-maze experiment on latent learning represents a good instance of a crucial laboratory test upon which basic issues of theory depend. The experiment has been performed by numerous investigators whose methods, in view of the theoretical importance of the conclusions, have been heavily criticized by the opposing group of psychologists. (Compare Chapter I, p. 13.) In summarizing recent experiments on this issue Melton suggests that some modifications of Hull's learning principles may be necessary to embrace this case of latent learning. Nevertheless Melton points out that such a reformulation as may be needed will not necessarily be incompatible with Hull's general standpoint.[1] In the next issue of the same publication Buxton stresses the crucial importance of the latent learning issue and the fact that, if it could be shown that such learning *always* involves reinforcement, the field theorist would be forced 'seriously to reconsider his views'. Buxton summarizes researches subsequent to those considered by Melton and concludes that the papers published during the year 'cannot be said to settle the issue'.[2]

Tolman's conception of learning is pluralistic rather than monistic like Hull's. It is Tolman's contention that 'there is more than one kind of learning' (Tolman 1949 (*a*)). Some kinds of learning are explicable from a Hullian standpoint, others from the standpoint of Guthrie. Others again require a different kind of explana-

[1] In Ed. Stone and Taylor 1950.

[2] *Op. cit.*, p. 29.

tion not to be found in the writings of these or alternative stimulus-response learning theorists.

7. Hull's Behaviour Theory

Hull's approach to learning comprises an important and influential system of theory which has been subjected to rigorous modification from time to time so as to remain consistent with new experimental evidence. It embraces a system of postulates and deductions from these postulates; the postulates are designed to embrace *all* forms of animal and human learning: conditioning, problem solving, maze learning, discrimination, etc. Hull contends that one of the best tests of an hypothesis is its ability 'to deduce correctly the results of experimental observations not yet made' (Hull 1930 (*a*)). This criterion of 'deductive forecast' may be illustrated by the goal gradient hypothesis in terms of which Hull deals with maze learning. On the basis of the working assumption that principles operating in the case of the conditioned reflex apply to maze learning, he argues that a goal reaction gets conditioned most strongly to the stimulus immediately preceding it. Other conditioning is progressively weaker in proportion to the remoteness of the responses from the goal. There is, in short, a 'gradient' of habit strength in terms of proximity or otherwise to the final goal and related responses. Hull proceeds to make deductions from this hypothesis. He deduces that blind-alley responses will be eliminated first at the goal end of the maze and progressively backwards to the beginning of the maze. The typical maze learning performance shows, in fact, such a progressive elimination of errors in a backward direction. In all Hull deduces eleven consequences of a verifiable and falsifiable kind from his goal gradient hypothesis. Examples of these deductions include: (*a*) an animal will move progressively more rapidly as it approaches its goal; (*b*) long mazes take more time to master than short mazes; and (*c*) of two alternative paths to the same goal the animal's progress over the early section of the shorter will be more rapid than over the corresponding section of the longer (Hull 1931). Hull's study illustrates very clearly the function of a good psychological theory (cf. Chapter I). It establishes relations between known and unknown factors and observations, and suggests ways in which its own deductions can be experimentally verified or falsified.

Hull's system of thought places central emphasis upon the factor of reinforcement, without which he contends that learning does not take place.[1] Reinforcement is a result of drive reduction and occurs in accord with the law of effect. When a response leads to reduction of a drive dominant at the time a subsequent presentation of the same or associated stimulus will activate the same response. This now occurs 'more certainly, more forcefully and more vigorously' than on the earlier occasion.[2] Two kinds of reinforcement are distinguished: primary and secondary. Primary reinforcement occurs when a response is followed closely by drive reduction (whether that response be learned or unlearned). Secondary reinforcement is 'secondary' in the sense that it is *associated* by contiguity with a primary reinforcing stimulus. Thus in token learning experiments the tokens themselves become reinforcing agents as a result of their previous association with food. At the same time the subject's responses remain remote from the food response; secondary reinforcement invariably involves such a remoteness from responses appropriate to the reduction of a drive. Higher order conditioning illustrates secondary reinforcement and is explained by Hull on this basis. In secondary, tertiary and further conditioning the reinforcement process is transmitted from one hitherto neutral stimulus to another neutral stimulus through repeated association. Pavlov failed to achieve higher order conditioning beyond the tertiary stage. Hull holds that, given conditions of stable and consistent association, such transfer may proceed indefinitely.[3] The words 'primary' and 'secondary' as used by Hull in this connection are a far from fortunate choice. It may be emphasized that 'primary' and 'secondary' do *not* refer to qualities of innateness. A 'secondary' reinforcing agent is 'secondary' in the sense that it has developed reinforcing characteristics *through association with* a 'primary' reinforcement. Again, it may be stressed that a 'primary' reinforcement may involve a learned ('secondary') drive.

Theoretical and experimental contributions of other investigators are embraced in Hull's developed theoretical system. Hull uses the term 'Mowrer-Miller hypothesis' to denote an important standpoint which he accepts in relation to the problem of reinforcement.

[1] The reader's attention is drawn to Hull's recent revision of his system of postulates: *Psychological Review*, vol. 57, May 1950.

[2] Hull 1943, p. 386. [3] *Op. cit.*, p. 84 ff.

The Mowrer-Miller hypothesis states that whenever a reaction is evoked a negative drive is created, which operates to produce cessation of the response.[1] A drive results in a state favourable to cessation of a response, and unfavourable to the recurrence of that response. This state is named 'reactive inhibition'. Hull explains the phenomenon of conditioned inhibition (Pavlov) on the basis of the Mowrer-Miller hypothesis. In conditioned inhibition cessation of action rather than action becomes conditioned to whatever stimulus happens to be present. The hypothesis has features of interest not only as a development of the law of effect, but also as a justification for the contention that reinforcement is an essential condition of learning. The hypothesis represents a quite specific rejection of the law of exercise, and a further emphasis upon the law of effect. Carrying out of responses results merely in reactive inhibition. For learning to occur reinforcement in accord with the law of effect *must* take place. Hull's account of reinforcement also specifically rejects Pavlov's view that the critical element in reinforcement is occurrence of the primary stimulus. As Hull points out, this explanation fails to account for selective, discriminatory learning.

Certain aspects of Hull's theory relate more directly to the 'higher' forms of learning. He refers to what he calls the 'pure stimulus act', an act 'whose sole function is to serve as stimuli for other acts'.[2] This is held to have considerable biological importance since it allows the organism to react both to the 'not here' and the 'not now'. Pure stimulus acts are regarded as the organic basis of symbolic, ideational psychological processes. Hull was impressed by the fact that both animals and children show anticipatory reactions when approaching a rewarding goal—for example, movements of mastication in anticipation of a food reward. One of the characteristics of a strong drive appears to be its tendency to produce 'anticipatory invasions' of behaviour by acts which belong to the goal towards which the behaviour is directed.[3] These anticipatory acts, though normally incomplete and fractional, are of considerable importance. They have the capacity to act as stimuli and thus control and direct other activity. Hull considers 'fractional anticipatory goal responses' to be a type of pure stimulus act. Just as the pure stimulus act is the organic basis of ideas and concepts, so

[1] Hull, *op. cit.*, postulate 8, p. 300.

[2] Hull 1930 ,p. 515. [3] Hull 1931.

the anticipatory goal responses are the 'physical substance of purposive ideas'.[1]

8. Mowrer's Dual Theory of Learning

Mowrer's standpoint is more closely allied to Hull's than to Guthrie's or Tolman's. Nevertheless he rejects Hull's monistic attempt to account for all learning in terms of a single set of principles. It is Mowrer's contention that the term 'learning' has been applied to 'two basically different types of change'.[2] He cites evidence that conditioning involves change of a relatively transient and reversible kind. On the other hand, problem-solving learning is relatively permanent and irreversible. Mowrer is strongly opposed to the attempts of early investigators like Watson to explain all learning in terms of classical Pavlovian conditioning. While he is in agreement with the effect principle (Thorndike-Hull) as an important factor in problem-solving learning, he rejects the Hullian view that this kind of reinforcement is a satisfactory explanation of the alternative kind of learning—conditioning. This Mowrer explains from a modified contiguity standpoint. He places considerable emphasis upon the importance of secondary drives—notably the drive to diminish anxiety—as determinants of the learning process (see Chapter IV). He rejects distinctions between behaviour which seeks to increase, and behaviour which seeks to decrease, stimulation. All motivated behaviour is avoidant. If behaviour sometimes increases certain kinds of stimulation, this is merely incidental to progress towards elimination of the drive stimulus which brought the responses into being. For example, food-seeking responses are regarded as motivated by an attempt to avoid the stimulation of the hunger drive (Mowrer 1938). Mowrer's own standpoint in relation to the Mowrer-Miller hypothesis (Hull) may be noted. He holds that there is an important and influential self-correcting mechanism which ensures that, if a response is not rewarded, conflict arises, and fatigue follows from this conflict. Fatigue instigates a resting response which is contrary to the original non-rewarded response which it thus inhibits.[3] The rapidity with which a non-rewarded response will be extinguished is held to be proportionate to the effort expended in such response.

[1] *Op. cit.*, p. 505. [2] Mowrer, *op. cit.*, p. 276.

[3] Mowrer 1950; originally published 1943.

Mowrer finds anticipation of his hypothesis in the Freudian 'pleasure principle' which operates to keep the quantity of neural excitation as low as possible, or at least constant.[1] As has been noted, Mowrer differs from Hull and asserts that the law of effect and these subsidiary principles are not applicable to learning of the conditioning kind. We have seen that Hull accepts the theory that conditioning can be explained in terms of the same principles as apply to other forms of learning.

In concluding our consideration of these theories of learning it may be emphasized that Hull's system of experimentally orientated theory comprises a scientific achievement of major importance in the history of psychology. Hull's contribution has been a very substantial one. It has provoked numerous experiments and has been modified from time to time as experimental evidence demanded. The question of how far such a system of verifiable and falsifiable deductions from basic postulates will withstand the experiments of its critics is an issue of some importance. It is an issue which will be settled very largely in the animal laboratory.

The nature of such animal learning experiments is readily misunderstood; they do not represent merely studies of animal learning. On the contrary, they comprise crucial laboratory tests of hypotheses designed for experimental testing. The hypotheses have reference to learning as such, human and animal, as the writings of leading investigators in this field illustrate.[2] The main issues which divide Tolman and the field theorists from Hullian behaviour theory have been summarized by Melton in the first issue of the *Annual Review of Psychology* (1950): (*a*) Tolman's standpoint is pluralistic—there are different kinds of learning (this may be contrasted with Hull's monistic standpoint); (*b*) Tolman contends that under certain conditions (e.g. those of latent learning) an organism can learn without 'reinforcement' (Hull); that there is *any* such case of learning is denied by the Hullian; (*c*) Tolman believes learning to involve a sequence of discontinuous organizing responses—Hull holds learning to consist of a continuous modification of stimulus-response relations (the 'continuity-discontinuity controversy'); (*d*) Tolman postulates sign gestalten, cognitive maps and other concepts, the presence and influence of which would be denied by Hull.

[1] Mowrer, *op. cit.*, pp. 84–5; Freud 1920.

[2] Guthrie 1935, Tolman 1932, Hull 1943, Mowrer 1950.

In the second issue of the publication referred to Buxton (Ed. Stone and Taylor 1951) concludes that there has been 'no sudden change in the status of the major problems in the field of learning'. Buxton's summary represents the most recent impartial survey of experiments carried out in this field available at the present time of writing. He concludes that, on the whole, the weight of evidence supports the Hullian stimulus-response standpoint rather than the main alternative, Tolman's field theory position.

9. Transfer of Training

The earlier conception of mental life in terms of a number of 'faculties' has exerted its influence upon human thought about learning and upon educational practices. The task of education has been widely held to be one of training 'the memory' and other 'faculties' of the student. Such 'mind-training' subjects as Latin, Greek and mathematics have been defended on the basis of this doctrine, the fallacy of 'formal discipline'. A conception of the mind as composed of faculties which can be trained like muscles has misled the educationalist and inflicted many unrealistic tasks upon the student. Gates (1950) gives a number of instances of unrealistic mathematical problems and quaintly spelt but little used words which have been included in school text-books presumably on the ground of their mind-training potentialities. There is no reason why Latin, Greek and other such subjects should not be included in the school curriculum if it is required that the learner know about them. They can be defended on that basis, but not on the grounds that they have any appreciable 'general' training effects upon 'the human mind'. Thorndike and Woodworth (1901) investigated the validity of the doctrine of formal discipline. Experiments were carried out on a large number of mathematical and other tasks. The study failed to show that memory is a 'faculty' which can be improved by training. The experiments demonstrated that improvement in any specific task rarely resulted in equal improvement in other tasks, no matter how similar. The effects of learning might be more specific or less specific, but were not of the kind which would support the doctrine of formal discipline. Sometimes the effect of learning one task has hindered rather than helped the learning of another task.

While the doctrine of formal discipline may be rejected as a

fallacy there is evidence that learning a specific task may have more general effects. Positive transfer of training occurs; one form of this is bilateral transfer. For example, in a standard laboratory experiment it can be shown that practice with one hand will facilitate mirror drawing performance with the other. Bilateral transfer comprises the effect of exercise of one side of the body upon the performance of the unexercised other side. A second kind of transfer is transfer within the same class. Exercise in the performance of one task may facilitate performance of a task of a similar kind. On the other hand, transfer of training may be negative. For example, the learning of meaningful material may diminish the speed and accuracy of subsequent learning of nonsense syllable material. There are three possibilities: transfer of training may be positive, negative or zero. Numerous experiments have shown that when positive transfer occurs it is usually inconsiderable, and neither of a kind nor an extent to justify the formal discipline hypothesis. Thus Thorndike (1924) found that the transfer effects of learning Latin were of a lesser order than those resulting from training in book-keeping, though it is subjects like Latin, not those like book-keeping, which have been and still are defended by the formal discipline fallacy. On the basis of an examination of 810 studies of transfer of training Sandiford (1941) comes to the conclusion that while positive transfer does occur under certain conditions the amount of such transfer is usually small. In view of this fact he concludes that it is better to depend upon direct training than to hope to obtain similar effects indirectly by transfer. The same writer notes that positive transfer is most likely to occur when subjects are young and of high intelligence, and when the two sets of material are similar and have many elements in common, particularly in matters of content and method.

10. Social Learning

Thouless (1923) has suggested the term 'social induction' as a generic one to include suggestion, sympathy and imitation. These three forms of social induction comprise important aspects of social learning, of modification of experience, behaviour and motivation under the influence of others. On this view, suggestion involves the social induction of ideas, sympathy the social induction of emotion, and imitation the social induction of actions.

There are individual differences in the trait of suggestibility. Situations which are unstructured, ambiguous and conducive to anxiety and insecurity are on the whole favourable to suggestion (acceptance of ideas without rational persuasion or intervention of critical thought). Individuals who are young, who have been subjected to doctrinaire methods of teaching, who value the prestige of their informants and are uninstructed in the relevant area of information tend, on the whole, to be more suggestible. The evidence that there is a sex difference in suggestibility is inconclusive. Eysenck (1944) found neurotics to be more suggestible than normal individuals and failed to find any support for the hypothesis that hysterics are more suggestible than other neurotics.[1] This investigator distinguishes primary or motor suggestibility from secondary or sensory suggestibility. There is possibly a third kind of 'prestige' suggestibility.[2]

Sympathy involves social induction of emotion, or induction of ideas with strong emotive tone. As has been noted, positive sentiments tend to lead the subject to react with sympathy to the emotions of the object of such a sentiment (Chapter V). Sympathy, which is 'feeling along with' another person, may be distinguished from empathy. The term 'empathy' was introduced by Lipps in 1903 to describe the kind of aesthetic appreciation which involves 'feeling into', or 'projecting oneself into' some art product or object of natural beauty. The word is now used in an extended sense to denote apprehension of the state of mind of another individual without, as in sympathy, feeling as he does (English 1928). One may empathize with a criminal without necessarily sympathizing with him. Sympathetic induction of emotion as well as suggestion may play a part in the technique of the skilled public speaker or the propagandist.[3]

Miller and Dollard (1945) distinguish two kinds of imitation. In the case of 'matched dependence' the follower depends on the leader for the signals he gives as to what act is to be performed. He need not, like the leader, be fully or keenly aware of what act is to be matched. This differs from 'copying' in which the person who

[1] Eysenck 1947.

[2] Eysenck and Furneaux, 1945; Eysenck *et al.*, 1947.

[3] Some interesting research remains to be carried out on the various techniques employed by those professional orators in Hyde Park and elsewhere who view their work not as a propagandist pursuit but essentially as an art.

copies attempts to make his action accord in its details with that of his model. Copying plays an important part in educational learning, and in the kind of imitation involved in the language development of a child. Relations of empathy to imitation may be noted. Some psychologists[1] have identified 'empathy' with what has usually been called 'ideo-motor action'. Photographs are often used to illustrate this form of social induction of action; Allport reproduces a photograph of the spectators of a pole-jumping event who unwittingly adopt the bodily posture of the jumper. Empathy in the sense of 'feeling into' plays its part also, though empathy in its more usual senses does not necessarily involve crude overt movements of this kind. These ambiguities of usage of the term 'empathy' may be noted.[2] In Allport's sense it appears to be a form of induction of movements and actions, and is thus closely related to imitation.

Social learning has been analysed by Miller and Dollard from an essentially Hullian standpoint.[3] The learning process is held to involve the four essential components of drive, cue, response and reward. Among the primary drives are the unlearned appetites; among the learned drives are anxiety and desire for money and social approval. Drives function under the influence of cues, of stimuli which determine when and where responses will occur and the general character of the responses. Responses may be overt, and may involve new kinds of action or, alternatively, new ways of thinking. The final and necessary element is reward (Hull's 'reinforcement'). Examples of primary rewards include relief from pain and the acts of eating and drinking. Secondary rewards include praise, relief from anxiety and receiving of money or higher social status. Extinction occurs when responses are not rewarded (cf. Hull). Attention may be paid to learning of the typically human kind that involves acquisition of information and new ways of thinking. Under the influence of primary and secondary drives the child adjusts himself to his social groups. His responses, implicit and overt, are rewarded and thus reinforced. The socialized individual of Western European culture assimilates norms of that

[1] E.g. Allport (*op. cit.*) and Morgan (in Boring *et al.*, 1948).

[2] The advantage of Maslow's suggestion (1945) is again apparent, and avoids ambiguity: 'empathy (Lipps)', 'empathy (Allport)', and 'empathy (Psychoanal.)' assist clarification.

[3] *Op. cit.*, pp. 11 ff.

culture such as a belief in the rightness of trial by jury and in the superiority of the Christian and democratic ways of life, accepts his status in the social hierarchy, and identifies himself with certain sub-groups and not with others. New motivating drives are acquired, new rewards valued, different responses learned, and additional cues accepted. The three kinds of social induction, together with forms of social learning like rational persuasion and teaching, are involved in this process of socialization.

Among the elements of culture accepted are beliefs. Krech and Crutchfield distinguish three kinds of belief: knowledge, faith and opinion.[1] Those beliefs which seem to the individual to be verifiable are called 'knowledge'. A person, for example, believes in the law of gravitation; he has verified it in the past and can verify it in the future. He may call certain of his beliefs 'opinions'. He implies by this that the facts are still (partly at least) unverified, and that others may hold different beliefs in such matters. When an opinion is verified it becomes knowledge. Faith is regarded by these authors as a belief of an unverifiable kind. We may question this view of faith as a not entirely accurate description of the psychological processes involved. Faith, in its usual religious sense, seems to embrace something more than belief. A person who has faith places his trust in another person, spiritual or otherwise, and his behaviour is in accord with this confidence and trust. Religious faith is not adequately described as an intellectual assent to a proposition about God. The missing component is better described in the words 'belief in' than in the word 'belief'. Theology is a system of beliefs, of propositions. The behaviour and motivation of the religious individual, civilized or primitive, educated or ignorant, intelligent or otherwise, relate to more than the theological doctrines with which he is in agreement. In short, religion involves sentiments rather than merely belief, and behaviour is under the motivational influence of such sentiments. Religious, like other positive, sentiments involve retention of confidence in the object despite seemingly incompatible evidence. Faith is not necessarily what it has often been held to be, an irrational retention of false beliefs; a follower may retain his faith in his leader despite adverse circumstances. Retention of confidence may seem to the follower to be in accord with additional information which is available to him and not to others. This standpoint seems to approximate

[1] 1948, pp. 165 ff.

closely to that of the religious person confronted with 'contrary evidence'. Religion as an element of culture embraces both belief and sentiment. Through social learning a child may assimilate its parents' theological beliefs, or their religious faith, or both. The contention that faith, religious or otherwise, can be regarded as a kind of belief may be strongly questioned on psychological grounds.

In the course of socialization a person may learn by trial and error or by insight based on his personal experiences. He may learn by imitation or he may be taught. Learning by insight or by being taught is a more economical method than trial and error. A student of Mowrer's, Mrs. Roger Lyndon, contributed an interesting definition of teaching as a process 'whereby one individual enables another to learn something more quickly than he would on the basis of his own trial and error behaviour'.[1] Nevertheless the personal relation between learner and teacher is sometimes complicated by what has been called the 'younger-older generation conflict'. Tension between his own and previous generations may make the learner reluctant to accept the knowledge, opinions or skills which the older person wishes to impart. The learner may manifest negativism which will inhibit his acceptance not only of irrational belief and unverified opinion, but often of verified knowledge also. Again, 'learning by experience', that is by personal trial and error and by insight, may be advocated by the educationalist himself. This issue arises in relation to acquisition of verbal information about the science of psychology itself. In a discussion of psychoanalysis Reik (1949) emphasizes the difference between learning by rote and learning by personal experience. Reik draws attention to the difference between a psychoanalyst who is 'an artist' and one who is 'merely a technician'.

This question of rote learning has a more general relevance to the psychology of scientific thinking. As Reik points out, technical terms have necessary functions but may be used as a substitute for real comprehension rather than merely as names for significant relations. Other verbal products which are socially transmitted may manifest similar features. Experiments by Sherif (1935) have shown that stereotypes depend more on social transmission than on individual personal experiences. Such stereotypes are distinguished by their rigidity, emotional intensity and inaccuracy (Sherif and Cantril 1947). Legends are regarded by Allport and Postman (1947)

[1] Mowrer, *op. cit.*, p. 675.

from this standpoint as an unusually persistent piece of 'hearsay'. They comprise rumours which have persisted, often for hundreds of years. A legend has been subjected to an early history of distortion in accordance with the principles which govern selectivity in human remembering (Chapter VIII). After a time changes cease to occur and the legend is transmitted in 'solidified form' to subsequent generations.[1] Legends which almost certainly bear little relation to the facts but are an interesting product of selective social learning and cultural transmission may be noted. We may instance the stories of Alfred and the cakes, Washington and the cherry tree, and the lives of the 'good' and 'bad' kings of English history. Most of us will have learned these legends at an early period of our lives since legends are transmitted from generation to generation in accordance with the far from invalid proverb, 'the hand that rocks the cradle rules the world'. Much interesting research remains to be done on the frontier between psychology and history, an examination of the personalities, motivation and behaviour of individuals who have lived in the past. Many such personalities of historical importance have become, certainly to the layman and probably to some extent even to the historian, oversimplified and largely fictional in their characteristics. Such personalities merit examination in accordance with our knowledge of the principles which govern human perception, learning, remembering and social transmission.

Summary

Learning involves modification of stimulus, response and central processes under the influence of past experience. Classical Pavlovian conditioning cannot be equated with learning. Some psychologists have experimentally verified the occurrence of other forms of conditioning which have more direct reference to response and central processes. Typical animal learning experiments are discussed and illustrated. Hull holds that a single set of principles can be stated and are applicable to all kinds of learning. Others oppose this unitary approach. Evidence of various experiments suggests that 'trial and error' is a less simple kind of behaviour than has often been supposed, and that the concept merits careful examination. Insight as an antithesis to trial and error is considered in relation to the learning curve and to other psychological concepts.

[1] *Ibid.*, pp. 162–3.

The doctrine of formal discipline is rejected and the conditions under which transfer of training takes place are considered. Thorndike's laws of learning, other principles and later development of the law of effect in Hull's theory of reinforcement and the Mowrer-Miller hypothesis are examined. A brief account is given of the learning theories of Guthrie, Tolman, Hull and Mowrer, and some of the major points at issue between important opposing theories of learning are noted. Suggestion, imitation, together with empathy and teaching, are considered in relation to socialization. Kinds of beliefs are examined and the contention that faith is a type of belief questioned. The social transmission of verbalized information gives rise to the possibility of 'solidification' of such material. In view of this it is suggested that there is need for further researches on the frontier between psychology and history.

RELEVANT READING

Hilgard, E. R., 1948, *Theories of Learning*.

Hull, C. L., 1943, *Principles of Behaviour*.

Miller, N. E., and Dollard, J., 1945, *Social Learning and Imitation*.

Mowrer, O. H., 1950, *Learning Theory and Personality Dynamics*.

Spence, K. W., 1942, 'Theoretical interpretations of learning'. In (Ed.) Moss, F. A., 1942.

Hull's articles in the *Psychological Review* from 1930 onwards, may be noted. Hull (1943) is a very important but difficult book. Hilgard (1948) and Spence (1942) give clear and lucid accounts of some of the main issues. An interesting attempt to relate some aspects of the two great developments of modern psychological theory that we owe respectively to Freud and to Hull has recently appeared: Dollard and Miller 1950.

CHAPTER VIII

Remembering, Imagery and Imagination

What has been perceived may be forgotten, or may remain available for subsequent recall and reproduction. But there are many possibilities intermediate between accurate recall and complete forgetting. Previous perception and learning, and contemporary emotional and motivational factors, induce changes and distortions in the material 'recalled' and 'reproduced'. The reproduction and the original percept may differ very considerably. Experimental investigations have demonstrated some of the principles which govern this cognitive reorganization. Imagination, like recollection, depends originally upon perception, and in this case there is an even greater amount of cognitive reorganization. Imagery is an important and interesting field of psychology of considerable relevance to thinking, remembering and imaginative creation. It is in the field of imagery that some of the most extreme human individual differences are to be found.

Ebbinghaus was concerned with the memory process, largely in quantitative terms of remembering and forgetting. The nonsense-syllables employed in these pioneer experiments excluded the factor of meaning and other components of relevance to the remembering of everyday life. A difference of emphasis is apparent in the investigations of Stern and others who were interested in reproducing the real-life remembering situation, and in studying the changes which occurred in the material 'remembered'. Stern's interest in the psychology of testimony and its accuracy, in rumour and inaccurate remembering, was consistent with the 'personalistic' emphasis which he sought to bring into psychology (Stern 1938). Something more than mere retention and forgetting was, he argued, involved in human remembering. Stabilization occurs: 'The fluid mass gradually solidifies into a fixed deposit. . . . Remembrance becomes personal mythology.'[1]

[1] Stern, *ibid.*, p. 256

Such change may occur with the mere passage of time, as can be shown by requiring a person to report on an incident or experimentally-designed situation which he has previously perceived. Again, these and other distortions may occur as a result of social influences like suggestion. This is shown in the standard testimony experiment in which cross-examination with 'leading questions' is employed. Psychological investigations have failed to support the assumption, often implicitly made in the examination of witnesses in the law courts, that testimony given in good faith will be accurate. Even in the case of items about which the subject was certain, one of the pioneer investigators, Borst in 1904, found only 75 per cent accuracy. Of the reports examined by this investigator only 2 per cent were free of errors.[1] Stern found evidence that inaccuracy in remembering is particularly marked when memory images are reformulated in words. Under such conditions the images undergo what Stern called 'a drastic simplication and solidification through being forced into verbal form'.[2] The reader may obtain introspective evidence of such over-simplification if he attempts, on waking, to reformulate his dream in words, while still retaining memory of some of the visual imagery of the dream. Krech and Crutchfield give a more formal statement of a general principle of relevance to remembering:

> 'Cognitive structures over time undergo progressive changes in accordance with the principles of organization.'[3]

The 'principles of organization' involved appear to be similar to, or identical with, those formulated by the gestalt psychologists in relation to perception. It was suggested by Wulf in 1922 that among the factors which give rise to distortion in remembering is the principle of pragnanz, the tendency towards the formation of a strong gestalt (Koffka 1935). Stern's references to tendencies towards 'drastic simplification' and 'solidification' are suggestive illustrations of this. That closure also plays a part is further indicated by one of Stern's references to a testimony (*aussage*) experiment.

Subjects were shown a picture of a household in the process of removal. Some weeks later one of them was able to recall part of the picture showing a woman, and remembered that she was sitting down. He could not recall the object she was sitting on, but since

[1] Hart 1927, p. 97. [2] *Op. cit.*, p. 265 [3] 1948, p. 125.

she must have been sitting on something, invented a packing case in place of the sofa in the original picture.[1]

The illustration taken illustrates perceptual closure in that it shows the invention of an object in general accord with the theme of the picture of the removal of a household. The studies of Gibson (1929) and of Carmichael *et al.* (1932) had particular reference to the influence of the title given to the exhibit upon subsequent recall. It was shown that different titles gave different mental sets which tended to influence the nature of subsequent reproductions. Memory changes which occurred tended to be influenced by the title given to the material, whether this title was actually appropriate or otherwise. Intensive investigations employing this 'repeated reproduction' procedure were carried out by Bartlett (1932) who, like Carmichael, used diagrams but also employed verbal material. Stories, usually myths, were reproduced at periodic intervals and changes which occurred compared with the original.

A different kind of experiment was introduced by Bartlett and termed 'serial reproduction'. In this a story is read by one subject who passes on his reproduction verbally to another, who passes it on to a third, and so on. The changes which occurred as a result of this social transmission were analysed. Bartlett noted the tendency for titles and proper names to change, a bias towards the concrete, a loss of individual characteristics such as the style of the original, a tendency towards abbreviation, and a 'rationalization' or elaboration of apparent gaps in the story. The investigator concluded that an 'effort after meaning' was an influential determinant of the changes and distortions which occurred. There was, in short, a displacement, a subjective 'schema'. Features incompatible with such a schema would be omitted, and additions would be made so as to make for greater compatibility with this subjective configuration or pattern of reference points. For example, there was a tendency for displacement away from the unusual towards the accepted standards of thought, belief and judgment of one's own society. Bartlett emphasized the tendency for remembering to be influenced by familiar social facts and norms. Similar serial reproduction experiments were carried out with descriptive passages of prose, controversial argumentative passages, and pictorial material. A further experimental study was carried out by Hanawalt and Ruttiger (1944) with one of the stories originally used by

[1] Stern, *ibid.*, p. 264.

Bartlett. The investigation was concerned with the effect of the presence of an audience upon *repeated* reproduction. It was found that reconstruction of the story before an audience resulted in a better and more accurate reproduction; there was, for example, less 'invention', less addition of ideas not in the original. Recalls before an audience tended to be longer than those made to a single experimenter. Three of the subjects even used more words in the recall than there were in the original. It was found that the generally advantageous effect of the audience persisted and improved subsequent recalls alone with the experimenter.

A somewhat different experimental approach to remembering involved the repeated reproduction method and was employed by Curran and Schilder (1937). The procedure might be termed one of 'saturation'. It involved presenting the (verbal) material and requiring the subject to repeat it again and again until he was exhausted, or refused to cooperate further. This investigation revealed the extreme persistence of memory traces; it afforded evidence that changes which occurred from one reproduction to the next were not merely those of the fading of a trace and its loss of efficiency. The experimenters concluded that they were dealing not merely with changes in recall, but with changes in the organization of the memory traces themselves. Again and again it was observed that words and phrases not available on a previous recall became available on a subsequent recall. Not only did different selections of words from the original extract appear, but different alternative shades of emotional tone occurred in successive reproductions. The general conclusion was advanced that 'the trace remains constant and that every recall brings different sides of the trace into appearance'.[1]

This investigation is an interesting one, suggesting as it does the possible over-simplification of Müller's widely accepted theory that forgetting results in an increasing indefiniteness and deterioration of a memory trace. It indicates that what is apparently not available for recall on one occasion may be available on a subsequent occasion, while the material formerly recalled may become latent for a period, to recur at a later period of time. In 1911 Claparède noted, on the basis of observation and memory experiments, that the content of memory can remain unrecognized even when capable of being reproduced.[2] That this is the case and that,

[1] Curran and Schilder, *op. cit.*, p. 175. [2] In Ed. Murchison, C., 1930.

as Curran and Schilder showed, what has been perceived can remain latent for a time but remains available for reproduction later, would be in accord with the psychoanalytic theory of remembering. That remembering is governed by the principles which relate to other aspects of mental life is suggested by the gestaltist approach (Wulf and Koffka) and neo-gestalist approach (Bartlett and others) to these problems.

1. Selectivity in Remembering

It will be convenient to illustrate the selectivity which affects remembering under the three conditions of everyday recall, of serial, and of repeated reproduction, using the same material. Our illustration has reference to an experiment which took place at Bedford College, London, during the period 1948–1949.[1] One of the legends employed in the experiments will be considered in order to illustrate features of selectivity in remembering. This was based on the myth of the origin of love, related by Aristophanes in Plato's Dialogue, the *Symposium*. The following was prepared and used as part of the experimental material:

THE ORIGIN OF LOVE

In the dialogue entitled the *Symposium* Plato relates a myth as to the origin of love. Primitive human beings were round, had four hands and four feet, and one head with two faces looking both ways at once. This strange being could walk upright, but could also roll over and over at a great pace. These beings were terrible in their might and power, and of them it is told that they dared to scale Heaven and attempted to lay hands on the gods. Doubt reigned in the celestial circles. Should they kill these beings and annihilate the race with thunderbolts? At last, after considerable reflection, Zeus discovered a way. Men would continue to exist, but he had found a way to humble them and restrain their power. He would cut them in two. If they continued to be insolent towards the gods, he would further divide them and they would have to hop about on one leg. Apollo was bidden to heal the wounds and reform the shapes of the half creatures which had now been made. One half he made man, the

[1] I am indebted to Miss J. Powell and Miss M. Robson, who assisted in the preparation of the data used as illustration in this chapter.

other half he made woman. After the division the two halves of each creature wandered the earth seeking each other and thus love between man and woman was born. And the reason is, Plato tells us, that human nature was originally one and the desire and pursuit of the whole is termed love.' (241 words.)

The procedure adopted with this and the other myths used may be summarized:

(*a*) Original story read through twice by subject A at normal reading speed.
(*b*) Period of 'oblivescence', of casual conversation with other subjects (two minutes).
(*c*) Subject now required to write an account of myth read. On completion this was read to subject B.
(*d*) Period of 'oblivescence' for B.
(*e*) B to write down account of myth heard from A, subsequent reading of this to subject C, etc., etc.

Before we examine subsequent reproductions some attention may be paid to the original material employed and quoted above. It will be apparent to those familiar with the original that, while based on Plato's myth, it differs in certain respects, as a result of selectivity of remembering on the part of the experimenter himself. Some relevant introspections may be given. The experimenter's first acquaintance with the myth was from a reading of the Dialogue; his last acquaintance before the experiment was a reading of Jowett's translation of the Dialogue. The actual account written for the experiment was modified by an intermediate reading of Frederick Rolfe's novel, *The Desire and Pursuit of the Whole.* This has, as its title, a phrase which appears at the end of the experimental material and involves a plot which has specific reference to the theme of the myth. An interaction of associations with the original and with this secondary source of information unquestionably influenced the account of the myth prepared. In accord with Bartlett's principle both abbreviation and simplification occurred. This was partly an intentional modification for the requirements of the experiment, but was not wholly so. Displacement in the direction of modern and conventional social norms is also evident. The experimenter's version of the myth tends to reflect the modern and Western conception of 'love' rather than the anti-feminist conception of the Athenians. That the subjects in the experiment were

female and not male may have partly determined this change. Another influence was the novel read; the conception of love adopted was that of Rolfe's novel rather than Plato's. The myth is attributed to Plato, not to Aristophanes; introspection revealed primarily positive feelings towards the former and towards the latter a mild degree of hostility. Finally, it may be noted that the experimenter made some attempt to employ a style reasonably appropriate to content. This was at least of somewhat better quality than the flat, commonplace prose of the reproductions.

The final (ninth) reproduction may be quoted:

THE ORIGIN OF LOVE

> Plato in his *Symposium* gives this account of the origin of love. Originally the earth was inhabited by people who had four arms and legs and two heads looking in opposite directions. They tried to scale the walls of Heaven, and the celestial powers, fearing their strength, ordered Zeus and Apollo to cut them in half so that they should not be so powerful. This having been done, man goes through life seeking for his other half. (81 words.)

It will be noted that the gross inaccuracies which quite often occur in serial reproductions are absent. The most obvious change is in length; the account is shortened from 241 to 81 words. Changes of style are apparent. Contrast, for example:

> 'Human nature was originally one, and the desire and pursuit of the whole is termed love',

with the serial reproduction version:

> 'This having been done, man goes through life seeking for his other half.'

The loss of original features emphasized by Bartlett (*op. cit.*) is particularly evident in matters of style. Another change relates to a redundancy of the word 'people' in the experimental material that does not appear in the final version. The kinds of inaccuracy which occurred, though of a minor type, are interesting. While the proper names Zeus and Apollo appear correctly, the complicated relation between the commands of Zeus and the actions of Apollo has altered. In the serial reproduction version it is Zeus and Apollo who are given orders by 'the celestial powers'. Again, the difficult conception of 'one head with two faces looking both ways at once'

has been simplified to 'two heads looking in opposite directions'. Omission of descriptive details, and of the reflections and doubts of the 'celestial powers', will be apparent. Retention of some of the original words and phrases is another feature of interest.

We may now compare this final serial reproduction version with a repeated reproduction (of subject A), after an interval of approximately twelve months. The subject concerned had access to all nine serial reproductions and the original for several days after the initial serial reproduction experiment; an analysis of these was made by her as part of her laboratory work. We cannot, of course be certain about the details of her reading during this twelve months period. Nevertheless, it was thought worth while to obtain a repeated reproduction after this long period of time with the same material which had been used in the original experiment. The reproduction was as follows:

THE ORIGIN OF LOVE

In a dialogue entitled the *Symposium*, Plato gives an account of the origin of love. Primitive individuals were round and rolled over and over at a great speed, and it was feared that they might attempt to overthrow the citadel of the gods. There was great consternation in the celestial circles and finally Zeus ordered that the rebels be cut in half, and be left to hop about on one leg if necessary. Ever since then human nature has been divided into male and female, and each part has been wandering over the earth in search of the other half. This desire to be whole is what we call love. (114 words).

If this version is compared with the original experimental material and with the final serial reproduction certain features of interest are apparent. There is a similar though lesser abbreviation, a loss of individual characteristics, and some degree of distortion. On the other hand, as is understandable, there is greater accuracy. There is a difference in another important respect in that this reproduction has more the character of a paraphrase, a reformulation of similar content in the subject's own words. The subject gives evidence of having attempted to recall the essentials of the original, and to rephrase it in her own words in reasonable style. The story has acquired a new form in accord with this. Differences in some respects resemble those between Plato's original and the experimenter's version of it. A new personality has expressed itself

in the choice of such phrases as 'overthrow the citadel of the gods', 'great consternation in the celestial circles', and in the subject's own attempt at the concluding 'desire and pursuit of the whole' theme of the conclusion. At the same time much condensation has occurred. (Note the 'hop about on one leg' abbreviation.) There is evidence of failure of memory rather than of the stereotyped inaccuracy which is typical of the serial reproduction version.

The three accounts of the myth given illustrate three conditions under which distortion occurs: (1) Changes resulting from interference of a related but somewhat different second source of information—retroactive inhibition; (2) changes resulting from social transmission—serial reproduction; (3) changes resulting from passage of time, in this case a period of twelve months—repeated reproduction. It would be interesting to determine whether changes which take place under these differing circumstances differ somewhat from one another. On the other hand there are obvious similarities in the three kinds of changes and these may be considered from a more systematic standpoint.

2. Principles of Cognitive Selectivity

Further experimental work is necessary before differences, if any, between the distortions which occur in repeated reproduction on the one hand and serial reproduction on the other can be demonstrated. We shall approach both types of experiment in terms of their features of similarity in the matter of such distortion. In his discussion of serial reproduction with verbal material, Bartlett[1] notes the following kinds of alteration: (*a*) Omission and distortion of unstable material, particularly proper names and titles; (*b*) bias towards the concrete; (*c*) loss of individual characteristics (e.g. style); (*d*) abbreviation; (*e*) rationalization. Particularly in the case of material of the 'folk tale' kind, there is an introduction of 'connecting and explanatory words'. In the case of serial reproduction with picture material there is a tendency for transformation in the direction of 'accepted conventional representations',[2] a greater tendency towards elaboration (since a visual image favours invention), and the kind of change which may result specifically from assigning names to the diagrams used.

Bartlett's theory emphasizes the influence of past experiences on

[1] *Op. cit.*, pp. 171 ff. [2] *Op. cit.*, pp. 177 ff.

the selection and distortion which occurs. As a result of past experience there develops a schema, an 'active organization of past reactions', an organized subjective setting to which incoming perceptions are related. In this schematic form the past operates and exerts its influence upon the retention and subsequent reproduction of the perceived experimental or other material. (The term 'schema' is introduced by Bartlett with explicit reference to the earlier physiological work of Head.) This view that previous sensory impressions form a pattern, configuration or gestalt that exercises its influence upon remembering seems to be a reasonable assumption, and is in accord with Wulf's and Koffka's view of the psychology of remembering.[1]

The question arises whether other principles relating to the formation and functioning of perceptual gestalten are also applicable to remembering. That this is the case is probable since remembering begins (chronologically) with perception. In particular the general principles of pragnanz and closure seem to summarize many of the more specific changes noted by Bartlett in connection with his serial reproduction experiments referred to above. The simplifications to which Stern, Bartlett and others have drawn attention, together with 'invention' (intrusion of additional material not in the original) and 'rationalization' processes, can be regarded as specific instances of pragnanz. In retention and reproduction, as in perceiving, there is evidence of a tendency towards simplicity and stability. Bias towards the concrete with omission and distortion of unstable material also appear as specific instances of the law of pragnanz. As has been noted (Chapter III), closure is a special case of pragnanz. It involves the closing of 'gaps' in the perceptual and, we might add, memory field. Since forgetting results in gaps, and often in an awareness of such gaps, it seems reasonable to expect that closure will play an important part in inaccurate remembering. The instance given by Stern involving the introduction of a 'packing case' in place of a forgotten sofa illustrates closure. An interesting and more complex instance of closure can be taken from a serial reproduction experiment involving complex pictorial material carried out by the writer some years ago.

The original was a picture from the thematic apperception test (Murray 1943). It showed three figures, two women and a man, apparently engaged in ploughing a field. In the original, however,

[1] Koffka 1935.

the plough does not actually appear but can be inferred from the presence of horses, the posture of the man, and the furrows immediately in front of the horses. The first subject was asked to give a verbal account of this picture to the second subject, who repeated his account to the third, and so on. It is apparent that the original imposes considerable 'tension' arising from the quite obvious presence of an object, a plough, which is nevertheless not visible. The gap created by this necessary but perceptually-absent item soon closed; the plough appeared in *all* versions of the picture subsequently drawn on the basis of verbal information given. It was omitted only by the first subject, the one who had perceived the original picture.

The same experiment gave numerous illustrations of pragnanz: for example, a gross simplification of the complex spatial relations of the three figures in the picture, and a similar simplification of the twofold direction of the furrows of the ploughed field. Many 'inventions' occurred, for example the introduction of sea in the background of the final reproductions. These were presumably a result of past experience and the influence of schemata—in short, of apperceptive processes (Chapter III). Bartlett noticed the tendency for such additions to occur very readily with pictorial material. Much experimental work with complex rather than simple pictorial material awaits research. Some interesting investigations might be attempted with the irrelevantly detailed pictures of such artists as Pieter Brueghel (1530–1569). Demonstration of perceptual and memory selectivity with serial and repeated reproductions of such paintings as these would be interesting. There are numerous alternatives in the selection of one or other aspect of the picture, of figure-ground perception, and of elaboration and distortion. Detailed art products like these approximate more closely to the conditions under which real life perceptions are made, where the alternatives are many.

A further principle of wide relevance to the changes which occur in human remembering is suggested by Claparède.[1] Experiments revealed evidence to this investigator that testimony tends to be 'along the lines of probability' on occasions when recall is inaccurate and insufficiently strengthened by interest. Freud contends that associated unpleasant affective tone favours forgetting. Experiments on this hypothesis have been inconclusive; some have

[1] In Ed. Murchison, C., 1930.

supported, others failed to support, Freud's clinical and introspective evidence. It is probable that hedonic tone influences not only remembering but also the perception process. A person may not remember simply because he does not perceive or apperceive some unpleasing happening. Another influence on remembering is the phenomenon known as the 'Zeigernak effect'. It has been found by the investigator of this name, and confirmed by others, that uncompleted tasks are more readily remembered than completed ones. It has been found that the former are remembered approximately twice as well as completed tasks. The additional principles contributed by these other investigators are of relevance to selectivity in remembering. A valuable contribution has been made by Bartlett and others who have carried scientific study of the memory process a stage nearer reality than the nonsense syllable, but much interesting research remains to be done in this field.

3. Imagination

In his book on social psychology Britt (1941) has collected together instances of cartoons which show similar or almost identical content, though drawn by different artists. It is certainly the case that similar social conditions may, as Britt argues, give rise to these duplications. Alternatively a kind of imitation may have played a part; not conscious imitation, but rather an unconscious influence of a previous perception. The term 'unconscious plagiarism' which has sometimes been applied to this phenomenon is perhaps too strong since processes similar to these are almost certainly universal. As has been noted (Chapter III), it is widely accepted today that all knowledge arises from perception. The psychologists who deviate in this respect are those, like Jung, who uphold the existence and influence of a collective unconscious composed of archetypes which influence artistic and other forms of creative thinking. As has been noted, however, the evidence of biology on the whole does not support this alternative viewpoint. An apparent exception to the principle of the primacy of perception in cognition is 'creative' human thought: invention, imagination and the construction of 'new' social products in the field of art and science. The principle stated may be maintained even with reference to this apparent exception. Krech's and Crutchfield's proposition concerning the progressive changes which cognitive structures undergo, together with

Bartlett's and other experiments which demonstrate the existence and influence of schemata, provide an explanation of 'creative' human thought.

Imagining involves a very marked reorganization of previous perceptions. The experiments of Curran and Schilder show that some memory traces may be unconscious. Certain aspects of schemata may be latent for a time but available for recall and reproduction on subsequent occasions. Imagination appears to depend partly upon what is available to ordinary introspective recall, but also on these additional latent aspects of previous perceptions. Imagination involves an, at least partly, unconscious reorganization and rearrangement of previous perceptions. Like any other form of cognition, creative or imaginative thought is limited by what has been perceived.

The literature of myth and legend and the folklore of Egypt tell of the imaginary god Anubis, with the head of a jackal and the body of a man. In the legends of Greece and Rome we encounter the sphinx, the centaur and other such imaginative creations. Swift created horses with human qualities. The Irish peasant created the banshee and the leprechaun. To take the cases of the sphinx and the centaur, it is obviously impossible to obtain (other than from a picture, model or story) a perceptual impression of an animal with a woman's head attached to a lion's body, or a man with a horse's body. Yet such creations have evident reference to rearrangement of perceived human and animal qualities. Thus, for example, many primitive people have created 'were' animals. These were-wolves, were-lions, etc., relate to the kinds of animals available to perception in the part of the world in which the legends occur. We do not, for example, find were-leopards in Norse legends. We do, however, find were-wolves.

Imaginative creations of these kinds can be explained as reorganizations of previous perceptual experiences. From this standpoint there is little difficulty in maintaining the principle that cognition, even imagination, depends upon perception for its content. This does not mean that imagination is 'nothing but' perception, but only that imagination *begins* with perception. The analysis may be continued in relation to the process of artistic creation. Literary products often have a substantial factual perceptual basis and in a work of fiction such perceptions may be quite intentionally reproduced. To illustrate, Samuel Butler's imaginary community *Ere-*

whon has, of course, no basis in reality on the West Coast of New Zealand where it was supposed to be. On the other hand, the mountains and the pass which the traveller crossed to reach *Erewhon* have an existence and were seen by Butler, who lived in this area of the country. A subsequent traveller may visit and perceive for himself these mountains and this pass. The actual society of *Erewhon* consisted largely of an imaginative creation manifesting features which Butler believed would be a valuable improvement on those of Victorian England, where they were noticeably absent. For example, in an age in which the criminal was ill-treated and the sick person sometimes over-solicitously cared for, it is not difficult to understand either the motivation or the content of the converse state of affairs which Butler portrayed; in *Erewhon* crime was treated, and illness punished. The personality of some individual a writer has known may form a basis for a fictional character. As is well known, a surgeon at Edinburgh University, Joseph Bell, was Conan Doyle's admitted basis for the character of the fictional Sherlock Holmes. In his biography of Doyle, Pearson gives a case in which Bell deduced from the appearance of a man that he had served in the army in a Highland regiment, had been not long discharged, and had been a non-commissioned officer stationed at Barbados![1] There is, again, much of Dr. Doyle himself in Dr. Watson. Sometimes a character who appears in literature is a composite reproduction of qualities of a *number* of individuals with whom the author has been acquainted. Hamilton's Billy Bunter was derived from no less than four persons. We are told: 'One was a fat sub-editor . . . another an acquaintance who was always blinking over his spectacles, another a person who was always expecting but never receiving a postal order, and another an unnamed Victorian statesman of more than ordinary fatuousness.'[2]

The relevant perceptions from these several sources were organized by the author in the service of his literary purposes. This process may occur less consciously in some of the most imaginative creations of human thought. Lowes (1927) was interested in the creative thought of Coleridge as it appeared in the two poems, 'The Ancient Mariner' and 'Kubla Khan'. From a copy of a notebook belonging to Coleridge, Lowes was able to obtain sufficient information about the poet's methods of reading and the content of

[1] Pearson 1943, p. 88.

[2] Turner 1948, p. 205.

that reading to work through all this material. The task was a laborious one. Lowes followed Coleridge's earlier reading through numerous accounts of early voyages of exploration, those of Father Bourzes, Hawkins, Captain Cook, Bartram, Martens, Dampier and others. In the course of the study the investigator found that Coleridge had the habit of tracing obscure references to the often remote originals, and reading these also. Allusions to scientific phenomena and other matters had been followed up in this way by Coleridge; moreover the bibliographies of these works had been studied and the originals also read. Lowes followed the same procedure. He was finally able to accomplish the task of reconstruction of the poet's reading previous to the writing of the two poems, though on the whole the task was most successfully accomplished in the case of 'The Ancient Mariner'. Lowes, on the basis of the evidence, came to the tentative conclusion that the real person on whom the Ancient Mariner himself was based was probably Fletcher Christian, the leader of the 'Bounty' mutineers. Evidence that this was the case was to be found in notes by Coleridge indicating his plans and intentions about future writing.

The study itself is too detailed for summary, so we must content ourselves with a single illustration of the part which previous perception (mainly reading) played in the composition of 'The Ancient Mariner'. In the poem Coleridge wrote:

> Beyond the shadow of the ship,
> I watched the water-snakes:
> They moved in tracks of shining white,
> And when they reared, the elfish light
> Fell off in hoary flakes.
>
> Within the shadow of the ship
> I watched their rich attire:
> Blue, glossy green, and velvet black,
> They coiled and swam; and every track
> Was a flash of golden fire.

It may be noted that Coleridge's reading was both immense in extent and thorough in method. In addition he seems to have had extremely well-developed associative memory. A few illustrations

of what Coleridge had been reading previous to composing these lines may be taken from Lowes's investigation.[1]

Sir Richard Hawkins had written of the sea 'replenished' and containing 'snakes green, yellow, black, white'. Dampier wrote of 'abundance of water snakes . . . ' Captain Cook had noted that 'some small sea animals' had a 'white or shining appearance'. Bartram had enumerated colours including 'blue', 'green' and 'velvet black'. Father Bourzes had referred to 'a kind of artificial fire' made by fishes playing in the sea. Davis had described 'the strangest sea' which had given the appearance of a 'burning flame of fire'. None of the early explorers referred specifically to the 'shadow of the ship', but Martens made reference to the 'shadow of the sail', and Bourzes in another passage distinguished between colour differences perceived in the water as between the 'side next the sun' and the 'opposite side'.

It is to be emphasized that the evidence that Coleridge had read all these passages is very strong indeed. The illustrative examples taken refer only to some of the material of Coleridge's reading which Lowes found to be relevant *to these two stanzas alone.* Finally, it cannot be assumed that the investigator, however painstaking and thorough, was able to trace *all* the reading and other perceptual experiences which exercised their influence upon the poem. On the other hand, a comparison of the stanzas quoted with the examples taken of the poet's previous reading contributes substantially to an understanding of the 'sufficient reason' why the content of this imaginative creation was so and not otherwise (cf. Chapter X). Coleridge himself was greatly interested in the influence of association upon human thought, and the investigator found some assistance obviously relevant to the poet's own thought processes in Coleridge's writings on association (*Biographia Literaria* and elsewhere). Lowes did not hold that Coleridge consciously composed the passages read into the form of a poem. Nevertheless he found evidence that such a process of conscious synthesis probably occurred in some of Coleridge's least satisfactory poetry. An unconscious rather than a conscious combining and rearrangement seems to be involved in the creation of great literature. Without conscious volition the various relevant material read about early voyages of exploration and scientific phenomena, or perceived by Coleridge in his daily life, formed organizations in the poet's mind.

[1] Lowes, *op. cit.*, pp. 42 ff.

Later, under the influence of the censorship and selection of poetic technique and purpose, the final art-product emerged. This was a gestalt, an integrated whole, continuous in its structure and spontaneous in its essential content.

The study has relevance to creative thought generally. Such thought-products appear to introspection to emerge from 'within' and to be unrelated to perception. This experience is in accord with its remoteness from perception; it is a characteristic of creative thought that percepts have been so fully reorganized that they resemble the original little if at all. A thorough acquaintance with relevant information, such as Coleridge had obtained, seems to facilitate the occurrence of such thought. Von Helmholtz presented detailed introspection about his scientific thinking. This involved something very similar—a preliminary 'turning the problem over on all sides', and a viewing it in its complexity and detail.[1] The processes of inspirational thinking, whether this is artistic or scientific, include something which resembles the reorganization which occurs in perception of a meaningful whole from sense data that have previously appeared to consist of unrelated elements. When hitherto meaningless sense data are perceived as meaningful the process is not readily reversible. Similarly, in creative thinking ideas, words and images after a period of latency consolidate to emerge as a new configuration. This is of such a character that an examination of the original perceptual origins of these is ordinarily a task of extreme difficulty. Art and science also involve processes of another and more conscious kind. An author subjects his creation to the censorship of his critical thought processes or standards of judgment; this censorship enables him to present the finished thought-product in the socially acceptable form of art or science. Nevertheless, these conscious processes are secondary as their function is critical rather than creative. Inspiration itself seems to involve psychological processes which are little understood, though it appears that the principles which govern perception, association and cognitive reorganization operate here as elsewhere in mental life.

4. Imagery

The typical memory image is a revived percept. Examples might include the sight of one's home, the sound of a friend's voice, the

[1] Woodworth 1938, p. 818.

taste of cinnamon, the smell of coffee, and the coldness of ice, when these are recalled rather than perceived. Images may be classified according to the sense department to which they have reference. One of the most interesting features of imagery is the immense individual differences which appear.

Individual differences in images were first investigated by Galton (1883) who used the questionnaire method and set his subjects such tasks as forming an image of their breakfast table. They were required to answer questions about the clarity, brightness, colour and location of such images. In all these respects, as in the matter of predominance of the imagery of one or other of the sense departments, there were extreme individual variations. Galton's own study, and a similar investigation carried out by a French colleague, provided evidence for the hypothesis that men of science may have a less rich imagery life than the general population.

The implication of this finding of wide differences of imagery has been far from fully assimilated even by psychologists. It would be valuable for the reader to question others and to carry out some introspective studies of his own imagery processes, of the part which imagery plays in his thinking, and the extent to which his imagery is rigid and invariable or under voluntary control. Some individuals may find the task of recalling a visual, auditory, tactile or other image extremely difficult, or even impossible. Those whose thought depends little upon imagery have not always been tolerant of the ways of thinking of others with vivid imagery. Individuals whose imagery is clear and intense, and predominantly of one sense department, may find it difficult to understand either the psychological processes or the thought-products themselves of people whose imagery is of another kind.

Galton reports some curious cases of personal imagery. One scientist was able to image a slide-rule on which it was possible to make calculations, and from which the answers could be 'read'. Another individual had such vivid visual imagery that he could 'read' the original draft of the speech when making it. He was even hampered in his speaking by corrections made on the pages of the original. Some subjects were able to form images of the sun as bright and as clear as the original; they admitted themselves to be 'dazzled' by their images. Other subjects seemed unable to form images at all. For example, they could think about, but could not image the sight or touch, of their breakfast table.

It is probable that psychology has been more hampered than other sciences by the difficulty of appreciating and discounting the influence of imagery (or lack of imagery) upon thought. An excellent instance of controversy arising partly from the imagery differences of those taking part is provided by that about imagery and imageless thought itself. Eminent psychologists asserted and equally eminent psychologists denied the occurrence of imageless thought. Other psychologists went so far as to assert that images do not occur at all. We may note as an illustration that one of those unable to accept the doctrine of imageless thought was Titchener, whose writings give evidence of the important part which imagery played in his own thinking.[1] It is not unnatural that such a thinker should have had difficulty in understanding the psychological processes of others in whose thinking imagery played little or no part. Equally unsatisfactory were those like J. B. Watson who later denied the occurrence of imagery (Watson 1928). Likewise English in his psychological dictionary (1928) holds that the traditional conception of images is 'without any real place' in psychology. English gives evidence in his rather lengthy account of 'image' (pp. 63–64) that although he has an intellectual awareness of what an image is, or should be, he has little introspective experience of imagery. The explanation of much of the controversy that has surrounded imagery is probably very much dependent upon the almost unlimited possibilities of imagery differences. Some of the scientists first investigated by Galton were equally incredulous about the occurrence of imagery, and as unable to appreciate widely different imagery from their own as some of these subsequent psychologists.

One of those acutely aware of the influence of imagery differences upon thought has been Thouless, who notes, for example, the possibility that differences of literary style may be explained in terms of imagery differences (1923). Thouless has elsewhere (1930) noted that metaphorical expressions which intrude into abstract thought may be highly misleading. Although psychology may not be able to dispense entirely with metaphorical expressions, the imagery which accompanies (or determines) such metaphors may impede the solution of real problems. For example, the present writer has found difficulty in freeing himself of an imagery of 'depth' and 'darkness' with reference to psychoanalytic concepts

[1] Note also Spearman's comments on Titchener's 'unusually brilliant and abundant' images (Ed. Murchison, C., 1930, pp. 331–2).

relating to 'unconscious' mental life. A questioning of his own and other students has shown that he is not alone in this difficulty. Certain other, obviously post-Industrial Revolution, metaphors about 'energy' in mental life, together with conceptualizations in terms of hierarchies, systems of equilibria, etc., may similarly carry with them an imagery not quite appropriate to the actual subject-matter involved. Galton found evidence of a certain intolerance towards other kinds of imagery than one's own. If a person is unduly rigid in his adherence to one kind of imagery, he may find himself involved in arguments which depend more on personal imagery characteristics than upon issues of fact. In opposition to those like Watson and English, who would deny the occurrence of imagery or disregard it as an insignificant psychological problem, its importance may be stressed. Apart from unnecessary scientific controversy we may note possible difficulties of teaching and learning; these may arise from marked discrepancies between the imagery of teacher and student. With reference to wider social issues, it is probably difficult to estimate the influence which imagery differences have exerted on persecutions and social conflicts; many such conflicts have probably been influenced by different ways of forming images about fundamental religious concepts. Modern logicians have done much to eliminate pseudo-problems which arise from differences of meanings attributed to words. Less work has been done upon pseudo-problems resulting from a favoured kind of imagery which may determine the *choice* of such words.

It is usual to distinguish between memory images, imagination images, and eidetic images. In addition to these there are some specific imagery phenomena which may be noted:

Number forms are a persistent, stable, habitual kind of image possessed by certain individuals. They involve spatial arrangements of numbers. Whenever numbers are thought about they are imaged in this way. The slide-rule image referred to is a complex case of a number form. Others may involve a sloping curve with irregularities at the points of important numbers. A common number form involves images of dots corresponding to those on dice. Galton reported one case of a number form which was so complex that he personally was unable to understand it at all. He provoked some degree of intolerant incredulity in subjects possessing number forms by presenting them with a drawing of a different kind of number form. Months of the year as well as numbers are some-

times imaged in similar spatial arrangements. Illustrative diagrams of number forms may be found in Galton's original work (1883) and in Katz's *Psychological Atlas* (1948).

A more unusual kind of image is the *colour association.* Numbers, days of the week, months of the year, etc., may be imaged not in spatial relations, but in connection with some colour; the imagery, as in the case of number forms, remains remarkably constant. A child of five gave these colour associations: Numbers from 1 to 20 all had their associated colours. These were not all of different hue, however. For example 7, 8, 9, 10, 11 and the numbers 17, 18, 19, 20 were different shades of brown. The days of the week also had colour associations. Monday was cream, Tuesday white, Wednesday blue, etc. Composite numbers involved several colours. For example, the number 678 was brown and white. The subject also had certain colour preferences which resulted in a liking of some numbers and a disliking of others. Persistence of these colour associations was checked by a subsequent inquiry at a later date.

Although Galton believed number forms and colour associations to have an hereditary basis, this explanation is improbable. It seems likely that they can be explained in terms of associative learning. The possibilities of these individual variants of imagery seem to be almost unlimited. One student reported a related phenomenon with reference to her thinking about the days of the week. A detailed account of this was prepared, but will be more briefly summarized. The subject was 19 years of age. Thought about each of the days of the week was accompanied by an invariably present mental image of a visual kind. Monday invariably recalled a black purse and washing hanging on a line. Tuesday carried with it certain specific food and eating utensil images. Wednesday and Thursday each had the visual image of different houses. The Thursday image was of a building first perceived at the age of 3–4 years, but the Wednesday association was of a building, perception of which the subject was unable to locate in her past experience. Similarly varied images accompanied Friday, Saturday and Sunday (furniture, a haystack and a garden gate). The somewhat complex images involved have been very briefly described. The subject reported that her *imagery associations* had existed from an early period of her life, probably from infancy.

The part which contiguity in space and in time played in the formation of these unvariable imagery associations is suggested by

the nature of the images involved. For example, the Thursday image had apparent reference to school, while the associations of Saturday with a haystack in a field and of Sunday with a garden and a garden gate seem readily understandable. With reference to this isolated case of 'imagery-association', as it may be termed, we may note the phenomenon of the *concealing memory* to which Freud (1904) drew attention. Such early childhood memories, ordinarily of the visual image kind, tend to appear prominently against a general background of childhood amnesia. They are thought by Freud to have reference to emotionally important events which have been subjected to repression. Adler (1932) similarly places emphasis upon the emotional significance of the earliest memories which are available to recall. It is not always possible to determine whether the images involved are of the memory or imagination kind, because of the generally greater vividness of the imagination images of childhood. Products of direct perception may be confused, on recall, with products of imaginative creation.

5. Eidetic Images

It has been noted that some of Galton's subjects reported images as bright and as vivid as an actual perception; these would today be called 'eidetic images'. Such images are clearer and more detailed than the typical image; they have a 'perceptual' quality, and visual images of this kind tend to be localized in space. Systematic investigation of eidetic images began with Jaensch (1930) and his associates. Jaensch regarded eidetic images as intermediate between sensations and images, since they have features which resemble those of both ordinary perceptions and centrally aroused sensations (images). Eidetic images are usually of the memory kind, but may be imagination images. Jaensch established the occurrence of eidetic images in 61 per cent of children and 7 per cent of adults. In a later investigation Peck and Hodges (1937) found eidetic imagery in 60 per cent of children of four years of age; this was the highest incidence over the age groups investigated. Eidetic images are sometimes of long duration. Peck and Hodges (*loc. cit.*) report the case of a 6-year-old child who maintained one visual eidetic image for a period of 1,104 seconds. With the same subject the total duration of three images was 2,471 seconds (41 minutes).

Eidetic images are usually surprisingly detailed. In a study involving a group of 30 children with eidetic imagery Allport (1924) found three who could spell the long German word 'Gartenwirtschaft'—a detail in a picture shown to them—not only forwards but backwards as well, from their image. Visual eidetic images tend to have the quality of being 'out there' in space. Williams (1945) reported that quite complex spatial arrangements of eidetically imaged objects can be constructed. Subjects are able to answer questions about these spatial relations, and about complicated rearrangements of these 'objects' in space. Peck and Walling (1935) found duration of image and richness of detail to be equally satisfactory criteria of the eidetic qualities of images.

Jaensch developed a rather complex personality typology in connection with his studies of eidetic images. His later work is of questionable scientific value as it embraced Nazi racialist doctrines and their accompanying absurdities of biology. Nevertheless, there is evidence of possible ethnic differences in incidence of eidetic imagery in the work of independent investigators. With a group of pre-school children Peck and Hodges (1937) found a considerably higher incidence of such imagery in negro than in either white American or Mexican subjects.

Eidetic images sometimes occur in adults in the states of consciousness intermediate between sleeping and waking. A striking case of such an image was that of a young woman who woke from sleep to 'perceive' a hand clutching a flaming torch. It is largely a matter of words whether such phenomena are to be called eidetic images, hallucinations or, as in this case, memory images involving perseveration of some element of a dream. The medical superintendent of a mental hospital once reported to the writer the disturbing emotional effect which the occurrence of auditory eidetic images in the twilight states before sleep sometimes had upon new recruits to his staff. They would come to him to ask what they should do as they themselves were now experiencing 'hallucinations', e.g. of the ringing of a non-existent bell. In such cases it was necessary to reassure the person concerned about the 'normality' of the occurrence of such images immediately before sleep. It is possible that certain 'psychic phenomena' may be explained naturalistically in terms of such images.

SUMMARY

Experimental investigations have revealed that remembering is governed by certain selective processes. Not only does abbreviation occur as a result of forgetting, but there are also drastic simplifications and various gross or more subtle forms of distortion. Early studies of the testimony kind are considered, together with Bartlett's important investigations of serial and repeated reproduction. Further avenues of research in this field are indicated. Selectivity in remembering is illustrated by data from an original investigation. This illustration indicates the kind of changes which occurred as between the original legend, the preparation of the experimental material, and subsequent serial and repeated reproductions. The gestalt laws of pragnanz and closure appear to operate in remembering as in perceiving. Imagination involves marked changes and reorganizations of memory traces. Like other psychological processes, those that occur in 'creative' thought have ultimate reference to perception and past experience. Both remembering and imagination may involve imagery; a distinction is made between memory and imagination images. The widespread differences in imagery between individuals have probably exerted their influence upon scientific and other controversies. Imagery may lead a thinker to assume that others think about theoretical or practical issues in the same way as he does himself; it may thus lead to difficulties in accepting or understanding the form and content of another's thought. Finally, the phenomenon of eidetic imagery is discussed.

RELEVANT READING

Allport, G. W., and Postman, L., 1947, *The Psychology of Rumour.*

Bartlett, F. C., 1932, *Remembering.*

Galton, F., 1883, *Inquiries into the Human Faculty.*

Stern, W., 1938, *General Psychology from the Personalistic Standpoint.*

Note also Lowes (1927) as a scholarly study which, though the work of a student of literature, is one of considerable relevance to subsequent psychological investigations in this field.

CHAPTER IX

Intelligence and Ability

Cognitive psychology is concerned with such processes as perceiving, imaging and remembering. It also deals with differences of ability between individuals, and with the subject's general or specific levels of cognitive capacity. Psychometric tests, in close association with the method of factor-analysis, have proved the most valuable tools of the investigator in this latter field of intelligence and special aptitudes. But intelligence, and in particular intellectual mental functioning, may also be approached from the standpoints of animal and human experiment, and in terms of its development and neurological basis. Further advances of importance may be anticipated when integration is achieved between these and the present body of psychometric knowledge.

The term 'intelligence', it has been noted, is absent from the writings of early investigators like William James, Wundt and Titchener (Goddard 1946). Nevertheless it refers to what is today one of the more developed areas of psychology. Our primary concern in this chapter is with 'intelligence'—with the ability to perform tasks of a cognitive kind, and with the capacity or capacities inferred from such performance. A distinction can be drawn between two important aspects of the psychology of intelligence and ability: (*a*) cognitive structure and (*b*) cognitive functioning. This distinction will form the basis of our discussion.

1. Cognitive Structure

Investigations have established that there are individual differences in intelligence and in the more specific abilities, and tests have been designed and validated for the measurement of both. Such tests enable predictions to be made about behaviour in terms of what an individual can or cannot do. Such predictions have direct applications to vocational guidance and selection, educa-

tional classification, and other matters of important social concern. Alfred Binet had such a practical aim—that of educational classification. Binet prepared a scale of tests and established mental age norms. The standardized test consisted of a series of intellectual tasks appropriate to successive age groups. In contrast to the normal child were the intellectually inferior and intellectually superior. The intellectually inferior individual was one whose chronological age exceeded his mental age, while the superior individual was a child who was able to solve the problems appropriate to the intelligence of a higher age group. Binet's contributions to intelligence measurement have been considerable and his test, in its revised forms, remains a standard technique of mental measurement. At the same time the method involved a minimum of assumption as to what 'intelligence' in fact is. The concept of 'intelligence quotient', or 'I.Q.', was introduced by Stern in 1912. It comprises a ratio established by division of mental age by chronological age; the figure obtained is multiplied by 100. Thus the I.Q. of the normal individual is 100, that of the supernormal more than 100, and that of the subnormal less than 100. The average *category* is taken as 100 plus or minus 10. Stern (1938) has presented evidence that the distinctions drawn at these points are psychologically, as well as statistically, appropriate.

The investigators who followed Binet came to employ the precise and often highly complex techniques of factor-analysis.[1] The aim of the factor-analytic method has been regarded either as one of establishing the main dimensions of cognitive mental structure, or as one of cognitive mental classification. There have been, in short, differences of theory, method and interpretation of the leading factorial investigators. In particular there has been controversy as to the precise character of the 'factors' which have emerged. Nevertheless it is recognized, and more particularly by such psychologists as Burt, Thomson and the British factorialists generally, that their task is a twofold one. The first part of the task is believed to be that of establishing factors as principles of *mental classification*; the second part is that of *psychological analysis*, of 'identification' of factors in terms of psychological or neuro-psychological processes.

[1] Among these were Spearman (1922, 1927), Burt (1940), Thomson (1948) and Thurstone (1935). References are to major works among those cited in the bibliography.

2. Cognitive Mental Functioning

Spearman identified the general cognitive factor which emerged from his statistical treatment of the data with an ability 'to educe relations and correlates'.[1] At a later date, towards the end of his life, Spearman gave his considered opinion that there was a general cognitive capacity, best measured by ability to perform tasks that satisfied certain stated criteria, particularly when these tasks were of an abstract kind. The *noegenetic principles* that comprised these criteria had been formulated by Spearman at an earlier date (e.g. Spearman 1922).

Another important attempt to establish criteria which would distinguish intelligent from unintelligent mental functioning was made by Piaget, whose work has recently appeared in an English translation of a small but important book (Piaget 1950). Piaget was concerned with differences between individuals, but partly also with differences of intelligence as between given *instances of behaviour*. His experiments had reference to the maturation of intelligence, and to the kinds of cognitive functioning which occur at different stages of such development. For example, it was found that below a certain level of intelligence an individual was unable to allow for a compensatory process. If beads are placed in a low flat jar, and then poured into a high narrow jar, the individual below this level of intelligence will say that there are now 'more beads'. He is unable to allow for the fact that the qualities of width and tallness compensate for one another. In earlier studies Piaget showed that different notions of causality occur during the mental development of the child. The early 'phenomenalistic' conception is dominated by notions of contiguity in space and time, and there is an absence of ability to appreciate relations of the causal type. 'Animistic' conceptions involve endowing objects with mind or spirit, and explaining their movement in these terms. A distinction may be drawn between these developmentally early notions of causality and those of logical and mechanistic kinds which appear at a later age. These later conceptions of causality are of a kind which would better satisfy criteria of intelligence laid down by Piaget (1950), Spearman and others. The problem of the nature of intelligence, and of the qualities which distinguish the higher from the lower levels of mental functioning, is a complex one. Piaget has

[1] In Ed. Murchison 1930, p. 326.

made a substantial contribution to this problem by demonstrating the relevance of laboratory experiments on the human child.

Despite his own contribution to the psychological analysis of the kinds of intellectual function which distinguish high from low intelligence, Spearman did not fully appreciate the twofold character of the task of the factorial investigator. A substantial clarification of the issue has been provided by the two contemporary factor-analysts, Burt (1939, 1940) and Thomson (1939). Both are in essential agreement that *factors are statistical concepts* that enable precise and economical classification of cognitive mental life. They hold that the relations between these statistical concepts and actual human abilities or capacities are relations which must be cautiously and critically examined. In this they are opposed by the leading American investigator, Thurstone, who regards the second part of the task—that of finding psychological meaning for a factor—as one which can be accomplished by further statistical treatment. The differences which divide the two main groups of investigators in this field are made apparent if we employ a suggestion contributed by Thouless.[1] Thouless suggested that controversies concerning 'factors' would be clarified if a small letter were used to denote a factor as a purely mathematical concept, a capital letter being employed to denote the psychological entity held to correspond to that factor. To illustrate, the symbol 'g' denotes the general factor (mathematical concept) found by Spearman from statistical treatment of a large number of inter-test correlations. The symbol 'G' denotes the 'general ability', 'eductive capacity', etc., which Spearman identified with this factor. Controversy followed the publication of these findings and this conclusion. Thomson adopted an opposing view. He did not deny that a mathematical concept 'g' had emerged from Spearman's calculations. He did, however, deny 'G', that is the assertion made that 'g' has reference to a single, general, cognitive capacity. It was Thomson's contention that 'g' could be interpreted in other ways. Thomson's objections differed from those of, for example, Thurstone. Thurstone asserted a number of factors which were identified with a number of abilities. Thus for Thurstone's factors, as for Spearman's 'G', a capital letter should be used.

[1] Letter to Blackburn, cited in Blackburn's paper, Ed. Bartlett *et al.*, 1939.

3. The Two-Factor Theory and its Alternatives

Spearman divided theories of cognitive mental structure into three categories: anarchical, oligarchical and monarchical. Anarchical theories held 'intelligence' to consist of an indefinite number of capacities. A not very explicit theory of this kind seems to have guided Binet's test construction. An anarchical theory of a more explicit kind was held by Thorndike in his earliest approach to this problem. Oligarchical theories hold intelligence to consist of a finite, limited number of capacities. Thorndike's later theory was of this kind: intelligence involves capacity to complete unfinished items, to reason arithmetically, to reason verbally and to follow directions (CAVD theory). Thurstone today holds a theory of this oligarchical type. Monarchical theories hold intelligence to be a single, unitary capacity. The main opponents of the two-factor theory have adopted standpoints of the oligarchical kind; among these have been Thomson, Thorndike and Thurstone.

The two-factor theory of Spearman asserted that there are two *kinds* of factor, a factor common to all tasks of a cognitive kind ('g') and a factor specific to each such task (the 's' factor). Thus the ability involved in solving the items of an intelligence test, or some other such intellectual task, is of a composite kind. It consists of 'g' together with the 's' specific to that task. Since not all tasks are equally 'saturated' with 'g' it follows that the author of an intelligence test must select highly 'g-saturated' test items. Spearman contended that eductive thinking involves 'g' to a greater extent than purely reproductive thinking. For this reason he held many of the Binet scale tasks, such as repetition of numbers, to be unsatisfactory. The two-factor theory was opposed by other investigators on various grounds. One of the most important objections arose from the discovery of *group factors*; these were common to a *kind* of cognitive task, but were neither common to all cognitive tasks nor specific to a particular task. In a sense these group factors were intermediate between Spearman's 'g' and 's' factors. Examples included Davey's 'v' factor, common to all cognitive tasks of a verbal kind, and Alexander's 'f' factor, common to cognitive tasks of a non-verbal kind (those of the Alexander scale). Spearman denied such group factors, and held that the correlations could be explained purely in terms of 'g' and 's'. Thomson and others contended that the statistical data could equally well be explained in terms of over-

lapping group factors; they therefore denied that Spearman's 'g' factor necessarily had reference to some unitary general cognitive capacity ('G'). Burt opposed to Spearman's two-factor theory a *three-factor theory*; he contended that there are three *kinds* of factors: general, specific and group. As has been noted, Spearman regarded 'g' as more than a mere mathematical concept; he held that it had reference to a general cognitive capacity. At one stage he likened 'G' to a fund of available 'mental energy'. The 'S' factors were likened to 'engines' driven by such energy. Later he identified 'G' as the ability involved in performance of tasks which satisfied stated criteria. In his final paper he asserted the existence both of 'g' as a statistical concept and of 'G' as a general cognitive capacity. His contention was that 'the burden of further proof is in a large measure transferred to physiology' (Spearman 1946).

Thurstone opposed Spearman's 'G' as general cognitive capacity. He regarded cognitive capacity as composite, and presented evidence for a number of factors some, but not all, of which he was able to identify with psychological abilities. Both Spearman and Thurstone held that the factors which they defended were something more than statistical concepts of a classificatory kind. As the controversy proceeded this assertion became a more central issue. Burt, Thomson and others adopted an opposing viewpoint. Science is, as Goddard has observed (1946), a system of classified knowledge. Burt regarded factors as fulfilling this classificatory function. Factors are 'descriptive components only'. Burt (1939 (*a*)) believed that much controversy would be avoidable if psychologists ceased to regard factors as 'causal entities'. Thomson (1939) agreed that the usefulness of factors is a descriptive one. They are statistical coefficients which change with the sample and depend upon stated assumptions. A similar view is held by P. E. Vernon, who writes: 'Factors consist primarily of categories for classifying mental tests and examinations.'[1]

Spearman had adopted a different view, and like Thurstone regarded factors as representing basic human abilities and capacities. On Spearman's view such factors had ultimate reference to the work of the research physiologist; Thurstone similarly holds that factors relate to the nervous and endocrine systems of the body. We shall later be concerned with the relevance of physiological studies to this field.

[1] Vernon 1940, p. 160.

The difference which divides leading British factor-analysts like Thomson, Burt, Vernon and Eysenck from Thurstone, Cattell and others is not merely one of the kind of 'existence' attributed to factors. It is also a difference in mathematical treatment of data. In the terms of Thomson the two kinds of method employed depend upon the different 'stated assumptions'. Thurstone views his task as one of investigation of (cognitive) mental structure; Burt and Thomson regard their task rather as that of classification of mental life in a profitable and economical way. It is emphasized by Thomson (1946) that the British school use factors which are *uncorrelated* with one another (orthogonal factors). For example, 'g' and 'v' are uncorrelated. This means that a man with a high 'g' is as likely to be below as above average in 'v'. Other psychologists, however, use *correlated* factors (oblique factors), and equate these with primary capacities. Naturally each of the opposing groups of theorists has come to employ the methods most in accord with its view of the task of factor-analysis. The fact that the kinds of factors which emerge are different is one which, as Thomson points out, is not widely appreciated by students of psychology. The method favoured by Thurstone involves the additional statistical technique of rotation; this excludes the possibility of appearance of a general factor. It is employed to assist the factor-analyst to give psychological meaning to his factors.

Factor-analysis is a complex and involved set of mathematical techniques. It is not our task to discuss them here. A simple account is given in Guilford's book (1936). The more complex techniques which relate to the controversy are discussed in the various statistical journals and the books of the leading investigators mentioned. We have attempted to indicate some broad and important points of difference. It will be apparent that, though differences remain, these are at a very high level. There is, in fact, a certain resemblance between the present state of intelligence theory in psychology and that of relativity theory in physics. It is now widely recognized that conclusions obtained depend in part upon the techniques employed, and that much early controversy resulted from the failure of pioneer investigators fully to appreciate this dependence. Thus we cannot entirely agree with Spearman's final judgment that the answers to the problems raised depend 'in a large measure' upon physiological research. As elsewhere in psychology, differences are partly terminological, though the concepts involved

are, in this case, mathematical rather than verbal. The terminological aspect of the controversy is clearly recognized by such psychologists as Thomson and Burt, whose contribution to clarification of the problems involved has been an important one.

4. The Nature of Intelligence

Despite its inadequate theoretical basis the value of Binet's pioneer work has been very considerable. As Terman and Merrill (1937) have noted, a person may measure intelligence without being able to define the psychological character of intelligence. Numerous attempts have been made at such definition in psychological terms, while in the meanwhile psychometric advances have been made. One of the most satisfactory accounts of the psychology of intellectual functioning has been that of Spearman, on the basis of which Knight has defined intelligence as 'the capacity for relational, constructive thinking, directed to the attainment of some end'.[1] Knight adds that intelligence involves capacity to seize upon significant aspects of objects or ideas, and to bring to mind ideas relevant to these. The kind of thinking involved in intelligence is essentially 'relational thinking'. As Spearman had pointed out, purely reproductive test items are unsatisfactory since intelligence is most directly involved in eductive, not reproductive, thinking. Spearman's *noegenetic theory* included three main principles; these three noegenetic laws can be regarded as principles relating to cognition in general. Alternatively they may be considered as suggesting criteria of the kind of thinking we term 'intelligent'.

The first law is of *apprehension of experience*:

> 'A person tends to know himself and the items of his own experience.'

Spearman adds that not only do we strive, but we know we strive, not only do we feel, but we know we feel, not only do we know, but we know we know (Spearman 1937).

The second law is the law of *education of relations*:

> 'On the presentation of two or more items, a person tends to know relations between them.'

Differences of intelligence may be viewed in terms of this law. Thus higher intelligence is distinguished from lower intelligence

[1] Knight 1933, p. 16.

by greater capacity to apprehend relations and to appreciate the less obvious relations between items.

The third law is that of *eduction of correlates*:

> 'On the presentation of an item, together with a relation, a person tends to conceive the correlative item.'

Thus, given items and a relation, a correlative criterion of intelligence is the extent to which correlates can be educed (see below, p. 210). As has been noted, Spearman (1930) regarded intelligence as involving ability to perform tasks which satisfied the noegenetic principles. Towards the end of his life Spearman (1946) identified intelligence with 'noegenesis plus abstraction'. It follows that the principles should provide a psychological—as opposed to statistical—basis on which unsatisfactory intelligence test items can be rejected. These and other principles also stated by Spearman (1922) are of considerable guidance in the construction of intelligence tests. Certain of the items of the Terman-Binet scale do not satisfy such criteria and may be rejected on psychological, as well as statistical, grounds as insufficiently 'G-saturated'. Spearman himself severely criticized the Binet tests from this standpoint; intelligence ('G') is measured best by eductive rather than reproductive tasks. Nevertheless the Stanford-Binet test retains its usefulness for the very good reason that the 'intelligence' with which the mental tester and applied psychologist are often concerned is not identical with eductive capacity. Despite its serious theoretical weaknesses, to which Spearman and others have drawn attention, the Binet test retains practical usefulness.

It is certainly true that a high score can be obtained on the Binet test by an individual whose eductive capacity is seriously impaired. It has been shown that such scores may be achieved by individuals from whom the sections of the cortex which appear to have relevance to eductive capacity have been removed. Hebb (1939 (*a*)) obtained Stanford-Binet I.Q.'s of respectively 110, 113, 123 and even 152 on human adults from whom substantial portions of the frontal lobe of the cerebral cortex had been surgically removed. Further psychological implications of this and other neurological evidence are discussed below.

Many items of the Binet scale are more satisfactory from the standpoint of Spearman's noegenetic criteria: detection of absurdities, problem solving, and other items involving reasoning rather

than repetition or recall. The content of other tests can be evaluated from the standpoint of this theory of intellectual functioning. Thus in one of Sterne's tests the following task is set. The subject is given a pair of words and an additional word forming part of an uncompleted pair, and is required to add the missing item. Thus: storm—quiet; war— . . . (peace). Again: arm—elbow; leg— . . . (knee).[1] This task involves the law of correlates; the subject is given items and a relation and required to educe the correlate. Another satisfactory task is classification—for example giving the category to which such items as the following belong: blacksmith, lawyer, carpenter, grocer, bootmaker. ('Occupation', or some synonym would be a correct answer. The answer 'tradesman' would, of course, be incorrect as this does not include 'lawyer'.) A task of this kind involves the law of relations and processes of the abstraction kind. Raven's matrices test, one of the most satisfactory and widely used tests employed in Great Britain, comprises subject-matter very much in accord with Spearman's laws of relations and correlates. A useful laboratory exercise can be carried out with the matrices test, paying particular attention to the thought processes involved. Such an exercise will reveal the relevance of Spearman's noegenetic theory to the psychological processes which actually occur. Subsequent investigators have been assisted by Spearman's theoretical analysis of the nature of intellectual functioning.

Another kind of criterion of intelligent mental functioning, not unrelated to the noegenetic principles, might perhaps be found in the laws of association. It seems probable that a larger proportion of associations of similarity and a smaller proportion of associations of contiguity distinguish the more intelligent from the less intelligent (see Chapter VI). Intelligence seems to involve capacity to appreciate features of similarity between items, when such similarities are not of an obvious kind—that is, when processes of abstraction are involved. Lower intelligence would tend to result in a larger amount of contiguity association, a mere reproduction of items which have been associated in space or in time with the item presented. As Spearman has suggested, intelligence involves something more than mere reproduction; the nature of this additional element is defined in the noegenetic theory. The theory has considerable value both psychometric and theoretical. Its principles have some reference to analysis of differences between learning of

[1] Stern 1938, p. 314.

the insight kind and trial and error (Chapter VII). They also have relevance to the processes involved in abstraction, which seems to play an important part in intelligent mental functioning.

5. Intelligence Differences

Investigations have shown that intelligence approximates closely, though not absolutely, to the curve of normal distribution. No sex difference in adult intelligence appears, though the intellectual maturation of the two sexes differs somewhat. The influence of genetic factors upon what the intelligence test measures appears to be a very considerable one. On the other hand there are considerable differences of opinion as to what such tests *do* measure. Spearman would hold that they measure 'G', or general cognitive capacity, and 'S'; Thurstone contends that they measure a number of such capacities. Thomson believes that the statistical concept 'g', which results if a number of such tests are factorized, is the result of 'innumerable small influences, partly hereditary, partly environmental' (1946, p. 12). Burt holds to a three-factor theory, and would emphasize that group factors as well as general and specific factors are helpful *statistical* concepts. Despite these differences it is apparent that the consensus of psychological opinion knows nothing of the rigid dichotomy of an earlier period of philosophical speculation about 'rational' man and animals which lack 'reason'. Such sharp distinctions of this kind are a legacy of such philosophical systems as those of Descartes and Hegel. Many psychologists hold strong views about the harmful effects which such systems of philosophy have had upon the development of their science. Not a few of the more prominent modern philosophers would sympathize with, and share, this antipathy. The differences which divide man from the lower animals, in intelligence as in other respects, appear to be differences of degree and not of kind. We may note the relevance of Köhler's studies of 'insightful learning' in the anthropoid apes to the investigation of such differences. Another line of investigation has been opened up by those like Hebb (1949), who have designed intelligence tests for animals as low in the evolutionary scale as the white rat. The ultimate contribution of animal psychology to intelligence theory will probably be a very considerable one.

The psychological and legal conceptions of 'feeble-mindedness'

do not coincide. The categories of intelligence defect which the psychologist employs are defined in terms of I.Q. range. Idiocy comprises I.Q.'s from 0 to 20, imbeciles have I.Q.'s of 20–50, morons of 50–70. Intellectual deficiency which may be present from birth is called 'amentia'; that which may develop during life is called 'dementia'. These are distinguishable from what has been called 'emotional dementia' (Hart 1912). Emotional dementia is an *appearance* of what can be mistaken for low intelligence. It results from emotional indifference and is sometimes apparent in the psychotic. While no therapy can cure intellectual defect, modern methods of treatment such as Sakel's insulin and Meduna's metrazol therapies can effect remarkable cures of psychotics whose appearance and behaviour can resemble closely those of dementia and amentia. If only because such patients can return to normal life with largely unimpaired memories a certain amount of imagination and humanity should always be exercised in their handling. The fact that an 'emotional dementia' patient is, and remains, a human being is far from always remembered in the face of the strong but erroneous impression of intellectual defect conveyed by the form the symptoms may take. Again, in the case of the intellectual defective himself the psychologist can often contribute more than a mere assessment of such a patient as 'idiot', 'imbecile', 'moron', or 'high grade defective'. Particularly in the case of the high grade defective much distress may be experienced as a result of never having been taught the usual ways of occupying his time. When his work of testing is completed, a psychologist can sometimes make arrangements for instruction in pursuits which fall within the range of the ascertained capacity. For example, in the case of men handicrafts and carpentry may be possible; with women, knitting or sewing. The result will be a happy rather than a thoroughly miserable intellectual defective. When a pessimistic assessment of intellectual defect has to be made by the mental tester, it is desirable for him to carry out a subsequent interview to discover what can be done to assist the patient to lead a relatively tolerable kind of existence. Even when tests show that an individual is unquestionably defective, it is far from true that 'nothing can be done'.

In the first flood of enthusiastic comparative studies of intelligence many incautious assertions were made about the intellectual 'inferiority' of various non-European groups. A European culture-

centred test was constructed, standardized on Europeans, and then administered to non-Europeans. Understandably enough the average non-European did less well than the European. Many investigators proceeded to the conclusion that the non-Europeans were therefore inferior in intellectual capacity. One such psychologist who made this kind of mistake was Brigham, who deserves mention not so much for his error as for the scientific integrity shown in his courageous retraction of his own former findings (Brigham 1930). The errors of such investigators as these have been very effectively dealt with by Klineberg (1935).

We may consider here the intelligence of the African negro. Numerous investigations have shown that negroes tend, on the average, to do less well than the white man on the white man's intelligence test. For example, during the first world war, American negro recruits had a mean mental age of 10·4 as opposed to 13·1 for white recruits.[1] *One* hypothesis which would explain this difference is that the negro's intelligence is, on the average, lower than that of the white American. It must be emphasized that this is only *one* hypothesis: there are others. The content and standardization of the test might provide alternative explanations. Another hypothesis is that cultural factors such as the racial intolerance of the white population of the country or language played some part. As Garrett and Schneck pointed out in 1933, 'comparisons are permissible only when environmental differences are absent or at least negligible.'[2] This means, in short, that the innate difference hypothesis can only be maintained if alternative environmental hypotheses, of which there are many, are excluded by falsification.

Bieusheuvel (1943) stresses the effect which dietary deficiencies may have on intelligence. He concludes that in the African's home environment the average African's I.Q. score is depressed by at least 20 points below the level it would reach had diet and other factors of this kind been comparable with those of the European. Klineberg lists other important factors: language, schooling, sampling and socio-economic status.[3] He refers also to 'speed', in the sense that different cultures place greater or lesser emphasis upon the desirability of speed in thought and action; it is difficult to design tests which do not penalize the slow worker. An investigation carried out by Klineberg suggests what is probably a basically

[1] Klineberg, *ibid.*, p. 153 ff.

[2] Quoted Klineberg, *op. cit.*, p. 154.

[3] *Op. cit.*, pp. 152–177.

important depressing influence on I.Q. score in the case of the negro in the United States. He found negro intelligence test scores to depend upon length of residence in the Northern part of the United States. Those who had come from the South and had lived in the North one to two years had a mean I.Q. of 72. Those resident in the North nine or more years had an average I.Q. of 94. (The Northern-born negro I.Q. was found to be 92.)[1] Remoteness both in time and space from the areas of gross racial discrimination resulted in attainment in intelligence tests comparable to those of white Americans who had not been subjected to such discrimination. The study recalls a comment made by Wallas on the influence of certain types of social situation upon human thought and intellectual activity. Wallas speculates on what would have been the effect on the intellectual output of the fifth century B.C. if one of the subalterns of the kind portrayed by Rudyard Kipling had 'stalked daily' through the market place of Athens, snubbed 'that intolerable bounder' Euripides, and cleared out of the way the 'probably seditious group' gathered round Socrates.[2]

In his investigation of African intelligence the South African psychologist Bieusheuvel examines evidence for the hypothesis that average negro intelligence is inferior to that of white men. On the basis of his study he advances an alternative hypothesis, which he emphasizes *is* an hypothesis, not a conclusion. This is that the difference, if any, between African and European intelligence cannot be demonstrated under present circumstances, and with the techniques at present available. Among other things it is not possible, Bieusheuvel holds, to equate an African and a European group without selecting unrepresentative African samples. He contends that this hypothesis is more strongly supported by available evidence than an alternative hypothesis of African negro inferiority. A further interesting suggestion is made. The difference, if any, between the two groups may be not only quantitative, but also qualitative; different natural and cultural factors may be such as to lead to the development of differing kinds of intelligence. Bieusheuvel himself thus inclines towards Thurstone's theoretical standpoint that intelligence is composite rather than a single, unitary capacity. At the same time he suggests that those engaged in comparative studies between different cultural groups may have something of importance to contribute towards basic intelligence theory.

[1] Klineberg, *op. cit.*, pp. 186–7. [2] Wallas, 1936, p. 198.

Bartlett (1932) found evidence that powers of remembering of African natives were greater, and at times exceptional, when the material remembered was of direct relevance to significant aspects of their culture. It is probable that cultural factors will affect eductive as well as reproductive abilities. For example, in Western Europe and America social influences are such as to encourage the development of the abilities involved in eduction of relations between words and other symbols. The environment of the African native is likely to lead to greater development of powers of eduction of spatial and non-symbolic relations. Russell Pasha (1949) found among the desert-dwellers evidence of vastly superior ability to apprehend the significance of visual cues like slight imprints on the sand, the significance of which was not apparent to himself. There seems to be good reason to assume that the nature of the cultural and natural environment will exercise an effect upon the ways in which eductive capacity will develop.

Nadel, who has carried out comparative studies of African intelligence similar to those of Bieusheuvel, advances, much less tentatively, the view that 'we must admit the existence of different types of intelligence, and of the varied roles which different cultures assign to them'.[1] That there are such different *types* of intelligence, and that culture has an effect on such types, should on his view be taken into account in the design of intelligence tests. Nevertheless, it may be questioned whether the fact that culture influences intelligence test scores and the development of 'intelligence' necessarily leads to an oligarchical rather than a monarchical conception of intelligence. Ability to obtain a score of x in a test cannot exceed capacity, but it may fall short of this capacity for a number of reasons. The score may depend largely upon cultural or situational factors. It may also depend upon a single innate capacity of the kind postulated by Spearman. It may be maintained that intelligence is general eductive capacity—capacity to educe relations and correlates (Spearman). Under cultural influence such a capacity may develop in different ways. In Europe it might appear as an ability to deal primarily with verbal and other symbolic relations. On the other hand, in the African, Australian aboriginal and other such peoples it might develop primarily as an ability to deal with spatial and practical relations.

The European is subjected to an environment of books, news-

[1] In Ed. Bartlett *et al.*, 1939, p. 195.

papers and schools; the non-European we have been considering has to deal with problems which arise in the veldt, the desert or the jungle; these are essentially spatial and practical problems. Russell's observations show the European as singularly 'unintelligent' in his inability to educe the relations and correlates which present little difficulty to the desert-dweller (Chapter III). To the writer's knowledge the Australian aboriginal's boomerang is a unique cultural product; its design and effective use would appear to involve very considerable ability to cope with spatial relations. The capacity underlying such ability is not necessarily best measured by such a spatial test as the Porteus maze. On the other hand, there seems to be every reason to expect superiority of the European and white American in performing tasks for which *his* cultural environment of newspapers, books, schools, wireless and cinema has fitted him. It is to be expected that the European will maintain a superiority in educing symbolic relations, and such spatial relations as are more directly related to his own environment. These facts may be reconciled, as they are by Bieusheuvel and Nadel, with Thurstone's kind of theory. They may also be reconciled with a three-factor theory of the kind held by Burt. It is today recognized by both groups of psychologists, and by field workers, that earlier approaches to comparative intelligence study were often over-simplified. The cautious assertions of modern psychologists as to possible ethnic or 'racial' differences in intelligence contrast strongly with the dogmatic utterances of colour-conscious laymen on 'white superiority' (e.g. Malan 1948). It may be stressed that comparative studies of intelligence relate to differences between the *averages* of groups. High intelligence test scores can, of course, be obtained by individuals who belong to groups which tend on the average to give lower scores. Witty and Jenkins (1938,) for example, report a case of the exceptionally high I.Q. of 200 obtained by a negro girl of nine years of age. This was on the Stanford-Binet test; scores on other tests were equivalently high. Despite such cases as this it is, of course, possible to argue that Europeans and negroes differ *on the average* in terms of their intelligence.

6. Growth and Decline of Intelligence

Human perceptual capacities develop and show a decline with the onset of late middle age and senescence. General intellectual

capacity (or the separate capacities which together comprise 'intelligence' on the alternative view) also manifest growth and decline. The concept of mental age has reference to such growth, but does not allow for subsequent decline. In the normal individual, as chronological age increases mental age increases. The Stanford-Binet test allows for such increase, for slower intellectual development at the beginning of the thirteenth year and for the attainment of maximum capacity, in the average individual, at fifteen years of age. The contention that the intellectual capacity of the average individual reaches its maximum at fifteen years may be questioned in the light of subsequent investigation. For example, in such tasks as comparison and judgment and in Otis test performance Miles (1931, 1932) found the best levels of achievement in the 18–19 year group. From 20 years onwards Miles (1932), like Jones and Conrad (1933), found a decline in intelligence level. Thorndike (1928) placed this decline at a somewhat later age; he noted greater incapacity of the older subjects to perform tasks which involve new and unfamiliar ways of thinking. It is to be expected that, while older individuals may have an advantage in tasks of judgment which depend upon 'experience', they may be at a disadvantage in those which require setting aside long established habits of thinking. Thorndike's study supported the view that ability to perform intellectual tasks is, in this respect, composite. He studied the age at which the major works of both scientists and men of practical affairs were produced. In the case of the latter the mean age was 47 years; that of the scientists was somewhat earlier. These studies indicated that a decline in the ability to carry out eductive, relational, noegenetic thinking tends to occur before middle age. At the same time added experience is such as partly to compensate for this decline of present eductive capacity.

An important investigation of this problem was carried out by Raven (1948), and was based on a very large number of cases. Raven set out to investigate the growth and decline of human intelligence, but allowed for the possibility of the compensatory effect which increased experience can have upon performance in the ordinary verbal intelligence test. He used two tests designed by himself, the progressive matrices (non-verbal) and the Mill Hill vocabulary scale. The matrices test is regarded by Raven as a test of 'capacity to understand fresh methods of thinking', of an individual's 'capacity to reason by analogy'. As has been noted, the

test accords well with Spearman's psychological criteria of intelligence and appears to be a very satisfactory measure of eductive capacity. A study of Army and Navy personnel by P. E. Vernon revealed a 'g' saturation of the matrices test as high as ·80 (Slater 1949). Raven considers the vocabulary test to be a measure of 'the general fund of information' acquired by an individual 'as a result of intellectual activity of the past'. The results obtained with the two tests permitted observation of changes in the two variables at

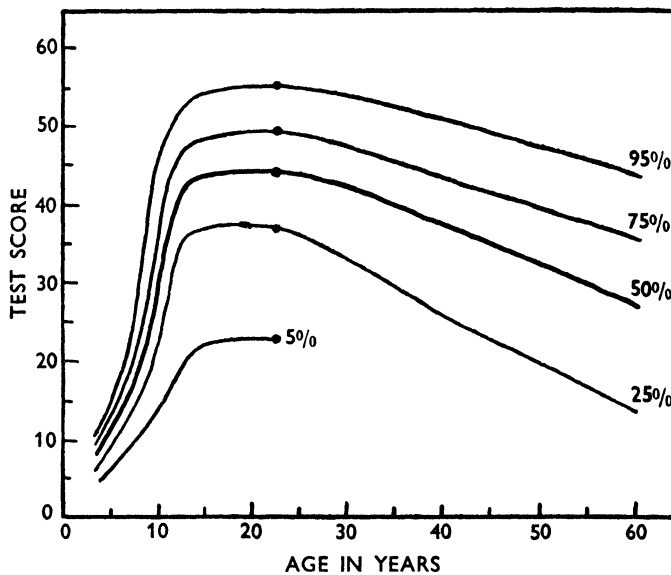

FIG. 12.—Changes in the Matrices Test percentile points as age advances [1]

intervals of 5 years up to 60 years. They revealed that the two followed different courses of maturation and decline. In the case of the average individual the eductive capacity measured by the matrices test reached its maximum at about the age of 14 years (see fig. 12). It remained constant for about 10 years and then declined slowly but 'with remarkable uniformity'. As the graph shows, this capacity declines, both with the average subject and with the 25, 75 and 95 percentile subjects, before the age of 30 years.

[1] Figs. 12 and 12*a* reproduced from Raven, J. C., 'The Comparative Assessment of Intellectual Ability', *British Journal of Psychology*, 39: 1, 1948, p. 16, by permission of the author and the editor.

The other variable, the ability to recall information and make use of the results of previous intellectual activity, revealed a different tendency (see fig. 12a). It increased steadily up to about 25 to 27 years, remained constant for the next 25 years, and then declined slightly. The graph shows the somewhat differing curves of the 25, 50, 75 and 95 percentile subjects, which all approximate to this general tendency. Raven's investigation is of some importance both practical and theoretical. Such a study indicates weaknesses of comparisons of different age groups (by the I.Q. method), in

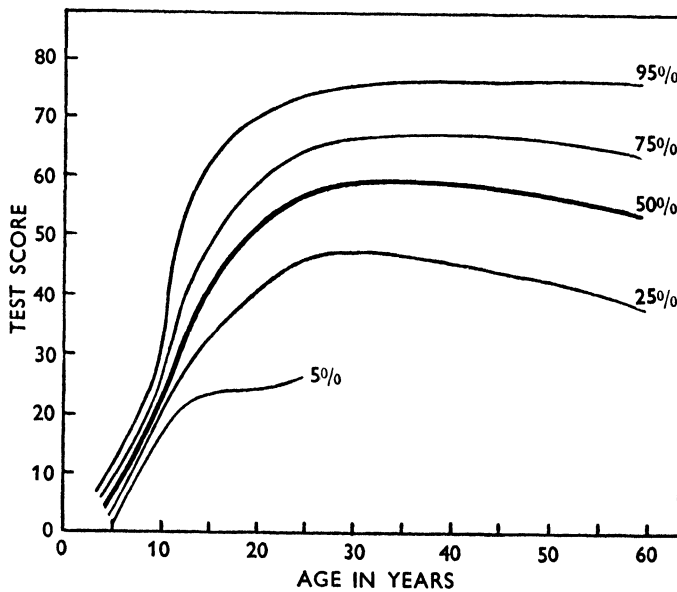

FIG. 12*a*

Changes in the Vocabulary Test percentile points as age advances

terms of the results of the more usual kind of verbal intelligence test. As the investigator concludes, the *two* intellectual processes essential for success in the usual test of general intelligence differ from each other in the time and speed of growth and decline. In the light of this important finding and of earlier studies of such investigators as Miles, Thorndike, Jones and Conrad, we may question the emphasis which Terman and Merrill (1937) place upon the vocabularly test of the Binet scale. Extent of vocabulary is obviously not a good measure of present reasoning capacity.

Vocabulary is certainly not a dependable measure of present eductive capacity. The study represents a convincing demonstration of the differences which may exist between present capacity and the available products of past intellectual activity.

A different approach to the question of intellectual growth and decline has been made by Hebb over a period of some years. Hebb (1939) investigated the intelligence of an adult whose pre-frontal lobe had been surgically removed, and found the individual able to pass the Stanford-Binet test at the adult I, II and III levels; an I.Q. of 160 was obtained. Unfortunately no pre-operative testing had been done. Other studies were carried out with similar patients. These revealed little decline of Binet I.Q. after the operation, sometimes no decline at all. For example, I.Q.'s of 110, 113 and 123 were obtained after removal of a substantial area of one lobe of the pre-frontal cortex.[1] Hebb advances the general conclusion that in certain essential respects the patient after this brain operation very frequently 'demonstrates an unimpaired level of functioning in his daily occupations'.[2] The reason advanced for this is one which accords with Raven's investigation. It was found that tasks involving vocabulary, information, repetition of digits, etc., and the solving of problems of a familiar kind could be performed without much difficulty by the patient despite the operation. Such tasks form a prominent part both of the Binet test and of the problems of daily life; as a result the Binet test is and remains a useful measure of the kind of 'intelligence' that applied psychology is concerned to assess. On the other hand, success in such tasks appears to involve *past* eductive and other capacities and *previous* integrity of the cerebral cortex. Performance does not necessarily indicate a similar level of eductive capacity at the time of testing. Hebb advances the theory that a destruction of cerebral tissue outside the speech area (Broca's area) will prevent the development of verbal abilities. If, however, such destruction occurs after development has occurred, these abilities will not be greatly affected. Hebb believes that 'intelligence' has two meanings, both of them of some importance. Intelligence A is 'innate potential'—a fully innate capacity for development. Intelligence B relates to the functioning of the brain after development has occurred; it has reference to the average level of performance of the mature or partially mature individual. If A determines B entirely, then 'intelligence' is simply

[1] Hebb 1939, 1939 (*a*). [2] 1949, pp. 290–1.

a matter of heredity and maturation. On the other hand, an innate potential for development is not a certain guarantee that such development will occur to the full extent of that potentiality. Thus heredity only sets limits to the extent of intelligence. Also of importance is early learning and its transfer effects, and such learning tends to be permanent in its influence. In support of his contention that early learning may affect intelligence Hebb refers to experiments carried out by himself at a previous date. These involved giving two groups of rats a suitably designed animal intelligence test. The animals of one group were blinded at birth; those of the other were blinded at maturity and before testing. Despite the fact that the rats were litter mates, those which had been prevented from having early visual experiences and the transfer effects resulting from them were inferior in their intelligence test performance. These experiments are being continued and extended.

The studies of such investigators as Raven and others on the one hand, and Hebb on the other, suggest that a distinction must be drawn between the ability, at the time of testing, to carry out eductive, relational thinking, and such ability as depends upon previous capacity. Evidence goes to support the view that neither the Binet test nor the traditional verbal intelligence test is a satisfactory measure of present eductive capacity. Raven found that ability to carry out such tasks as permitted solution on the basis of previous intellectual activity persisted with advanced age. Hebb found that a similar ability persisted despite removal of a substantial part of a frontal lobe. The two variables which appear to enter into intellectual activity are not, however, identical with what distinguishes 'eductive' from 'reproductive' ability. A person may recall products of non-eductive ideation and perception as well as products of previous reasoning. A distinction seems necessary between two kinds of intellectual tasks. Some such tasks depend merely on the availability of the by-products of previous eductive mental functioning. Other tasks can be solved only in so far as the subject can at the time attain to this level of eductive mental functioning.

SUMMARY

The psychology of intelligence involves two important aspects. The first of these has been regarded as the problem either of investigating cognitive structure, or of classification. Factor-analysis

has been conspicuously successful as a technique for performing this task. A related achievement has been that of refining and improving cognitive psychometric tests. The two-factor theory and its alternatives are considered. A second problem relates to mental functioning rather than to structure (or classification). It involves analysis of the psychological processes manifested in 'intelligence' as opposed to those associated with unintelligent behaviour. Criteria of relevance to this question have been formulated by Spearman and other psychologists. Variations in intelligence of cultural or possibly ethnic groups are considered. Investigations in this field raise questions of method, and may have considerable relevance to the future development of intelligence theory. General cognitive capacity manifests not only growth, but also decline at a somewhat earlier age than is ordinarily supposed. The important studies of Raven in this field, and of Hebb from a neurological standpoint, raise some interesting and fundamental issues.

RELEVANT READING

Burt, C., 1940, *The Factors of the Mind.*

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Spearman, C., 1922, *The Nature of Intelligence and the Principles of Cognition.*

Thomson, G., Spearman, C., Burt, C. *et al.*, 1939, 'Symposium on the factorial analysis of ability', *British Journal of Psychology*, 30, 2.

A brief but valuable account is to be found in Knight, R., *Intelligence and Intelligence Tests* (1933). Other references appear in the Bibliography under the names of Burt, Hebb, Piaget, Spearman, Thomson and Thurstone.

CHAPTER X

Unconscious Mental Life

Depth psychology is the branch of psychology concerned with 'unconscious' mental life. Psychoanalysis remains the most important of the schools of depth psychology, although others are associated with such names as Jung, Stekel, Groddeck and Horney. Psychoanalysis itself and these deviant derivatives arose out of the clinical observations of Freud. On the basis of these Freud created the system of theory whose relations to psychology are important and now more widely admitted. The notion of unconscious mental life is one which preceded Freud, though it was greatly enlarged and developed by him and those who came under his influence.

Psychoanalysis' is a word which refers both to a body of theory relating to unconscious mental life and a method of therapy. Its theory and principles can be approached by way of the method of therapy—from a consideration of the kind of phenomena which impressed Freud and led to the development of his thought. Our account is confined to psychoanalysis itself, that is, to 'analysis' of the kind recommended by Freud and adopted by the psychoanalytic institutes.

When a patient (or a student who undertakes analysis as part of his training) begins a psychoanalysis he reclines on a couch and the analyst takes up a position behind him, out of his field of vision. The analyst listens but does not take notes (Reik 1949). Nor, as is often believed, is the subject recommended or encouraged to write down his dreams, though these may be analysed as part of the significant data during the sessions. The patient is given one instruction and one only. He is told to speak whatever comes into his mind, no matter how trivial, irrelevant, absurd or contrary to conventional standards these thoughts may seem. This is known as the *fundamental rule of analysis*. The instruction is easily understood but exceedingly difficult to follow. Indeed, the whole course of a

psychoanalysis has been regarded as a process of making the patient aware of such difficulty and of the reasons for it. As a result of accepting this requirement the patient begins free association. Before long *conscious resistance* makes its presence felt and the patient is reluctant to continue. He has to be reminded of the agreement made and association proceeds. Conscious resistance may arise as a result of aggressive, sexual or otherwise anti-social thoughts of the kind which are not normally spoken. A frequent source of conscious resistance arises from the fact that an analyst, like anyone else, expects to be paid; many people feel reluctance about payment of bills in any case, but under normal circumstances one is not required to put this reluctance into words. As free association proceeds another kind of resistance makes its presence felt. *Unconscious resistance* manifests itself in various ways. The patient's consciousness may become 'blank' and he finds himself simply unable to go on, not because of absence of conscious intention, but because of some impediment of the associative process beyond his control.

Unconscious resistance can operate in other and more subtle ways. The patient may perceive a trivial feature of his immediate environment, perhaps the furniture of the room, and proceed to associate about this. Alternatively, a number of diverging associations may occur at once, each of which serves to inhibit the others; in this situation the patient may follow up the less emotionally significant of these associations. In the early stages the part of the analyst tends to be a passive one. He listens and says little. As is noted by Berg (1946), the outstanding mistake which those unaccustomed to the methods of analytic therapy tend to make is to be premature, to make some over-anxious early attempt to alleviate the patient's symptoms. The trained and competent analyst is cautious in making interpretations, and on his guard against the premature assumption of a more active role. He is readily distinguishable from the amateur whose facility in making 'Freudian interpretations' makes him an impediment to the scientific advancement of psychology.

A story is told of a patient of Freud's who, early in his analysis, paused proudly to allow of interpretation of what he had said. Freud said simply: 'Go on.' This is the role of the analyst in the early stages of the treatment.

After periods of analysis have proceeded for some time the

analyst plays a more active part; interpretations are more frequent. More time is spent in making the patient aware of the realistic factors which must inevitably prevent immediate gratification of some of the more primitive impulses and fantasies which arise under the sway of the *pleasure principle.* It is an analyst's task in these later stages to side with reality in the interests of the patient, and to strengthen the operation of what Freud called the *reality principle.* The patient is enabled to accept the course of prudence and long-term self-interest rather than adopt the line of least resistance to impulses which arise in his unconscious. We have taken the opportunity to introduce certain technical concepts. The trained and competent analyst can be distinguished from the 'amateur psychoanalyst' by his sparing use of such terms during the treatments. Among the many misapprehensions of the layman is the idea that the analyst bombards the patient with technical terms; on the contrary, he is much more likely to use plain English, as a doctor does when he wishes a patient to understand what is wrong with him.

The first and most important component of psychoanalytic technique is *free association.* Free association is 'free' in the sense of being, as far as is possible, undetermined by outward factors. Associations are not 'free' in the sense of being undetermined by internal factors. It is this which makes the method of therapeutic value. Association reveals information about the organization of the subject's mental life, both about what remains available to conscious remembering and what has been actively forgotten or repressed. It will be evident that analysis is a lengthy process, extending ordinarily over a number of years. In the (Freudian) psychoanalytic form it involves one hourly session each day over this period. This relationship between analyst and patient leads to a specific kind of rapport. The rapport which the patient develops towards the analyst is called *transference.* But transference is more than merely a reaction to present analytic circumstances; it is complicated by the influence of earlier inter-personal relationships. There is a carry-over of sentiments, notably those relating to the emotionally significant adults of the subject's early childhood, particularly his mother and father. As such sentiments are ambivalent in character, transference involves a similar ambivalence towards the analyst and the treating of him as though he were some person belonging to the patient's childhood.

Transference may even involve a sort of belief or half-belief that the analyst (who is out of the patient's field of vision) has changed into this other person. At times a patient may, for example, experience a transient awareness that the person seated behind him is his father, his mother, or perhaps his childhood nurse or some other person of emotional importance to him.[1] It is noted by Berg (1946) that as a result of the more active role of the analyst in the later stages, transference tends to be more manifestly hostile then than in the earlier period when the analyst maintains a passive, listening role. An important part of the treatment is analysis of the transference itself. By the time analysis is completed the patient has been made conscious of the intrusions of earlier attitudes into his fantasies, feelings and judgments about the analyst. It may be noted that psychiatrists, psychologists and psychiatric social workers quite often undergo a personal analysis as part of their training. It is required by the Institute of Psychoanalysis that those who want to become analysts themselves must undertake such a 'character analysis' as part of their course.

1. Psychoanalytic Theory

Psychoanalysis and other systems of depth psychology have had much to contribute to the psychology of motivation (Chapters I and II). There have been numerous over-simplified attempts to explain motivation in terms of some single concept: psychoanalysis is *not* one of these attempts. The statement that Freud 'reduces everything to sex' may be disregarded as a stereotyped expression of uninformed opinion. On the contrary, the concept of over-determination upon which Freud placed considerable emphasis is one likely to lead the depth psychologist to consider as many contributing motivational factors as can be ascertained (Chapter II). Psychoanalytic theory comprises a complex system of thought, and Freud modified his own views from time to time. Because of this we encounter a certain difficulty in summarizing psychoanalytic theory in its more important essentials. Fortunately, Freud himself suggested three standpoints from which his system of thought can be viewed. From the *dynamic* standpoint psychoanalytic theory relates to two basic instincts, or groups of instincts. The 'eros' instincts motivate the organism towards self-preservation and pre-

[1] 'Half-belief' is discussed in Chapter XIV.

servation of the species; the energy relating to these instincts is termed 'libido'. In contrast are the 'thanatos' instincts which motivate the organism towards destructive and self-destructive activities. It was suggested by Weiss that the term 'detrudo' might be used to denote the energy aspect of these instincts, as the counterpart of 'libido'; but this usage has not been generally adopted. In his later writings Freud used the term 'cathexis' to denote mental energy more generally. Since for Freud 'mental energy' has both its eros and thanatos aspects it follows that object-cathexes (a rough approximation to 'sentiments') tend to be ambivalent. The dynamic, instinctivist aspect of psychoanalysis has been a centre of controversy. Some investigators who have nevertheless remained within psychoanalytic circles (e.g. Flugel and Bowlby) have questioned the primary, instinctivist, destructive human tendencies postulated by Freud. Others, like Klein (1945), have greatly enlarged the concept. Jung, who deviated from psychoanalysis to found his own system of 'analytic psychology', adopted the alternative concept of a 'libido' which he equated with mental energy more generally. It was Jung's alternative contention that the instinctivist or other basis of such libido was better left undefined at the present stage of our knowledge

The second aspect of psychoanalytic theory is what Freud called the *topographical aspect*. This embraced three main concepts, ego, id and superego, which were introduced by Freud to facilitate the study of intra-psychic conflict. In noting these we may emphasize a point of difference between Freud and Adler. Both emphasize the importance of conflict in mental life and in the causation of neurosis. Adler is concerned primarily with 'conflict' between the individual and his social environment. Freud is concerned rather with 'conflict' between those aspects of the psyche most modified by the external world and those least modified by the external world. This least modified aspect is the 'id', which consists of the two basic groups of instincts noted above and is the centre of emotional life. The id is said to be wholly unconscious; nevertheless not everything that is unconscious is part of the id since the unconscious comprises also what has been repressed. The repressed is what has been conscious but has become unconscious, while the id consists of the primitive a-moral and a-social human urges which have never been conscious.

In contrast to the id is the ego, which is concerned with modifying

behaviour in ways that satisfy the demands of reality in accordance with perception and reasoning. The censorship which the ego exercises over the id is a censorship of rationality and reality.

The third component of the psyche viewed from this topographical aspect[1] is the superego. This comprises the social, moral, ethical aspect of the psyche; it exercises restraint in the interests of duty and obligation. Tension between ego and superego gives rise to guilt feeling (Freud 1923). Relations between superego and id are complex. It is Freud's view that the superego can form an 'alliance with the id', and can become a vehicle for the expression of destructive and self-destructive urges arising from the thanatos instincts. Such an alliance appears in gross form in the extreme guilt and self-reproach of the melancholic and the suicidal or self-punitive behaviour which may occur as a result of these. Libido which is directed on to the ego gives rise to the phenomenon of narcissism, or self-love, which Freud regards as a normal stage of infant development. Flugel (1945) adopts the suggestion of Rosenzweig that 'nemesism' is a useful term to denote the alternative situation in which aggression is turned against the self.[2] The immense variety of what Flugel would call nemesistic phenomena has been ably elucidated by Menninger (1938). From the standpoint of self-directed aggression Menninger considers purposive 'accidents', martyrdom, the constant seeking of surgical operations, self-mutilation, asceticism and several of the psychological factors involved in organic disease. Flugel's own contributions to this field are also considerable and important. The two psychologists differ in that Menninger maintains the existence of an 'instinct' of the thanatos kind, while Flugel is cautious about such instincts. Aberrations of the superego merit mention since the superego has sometimes been equated with 'conscience'. Although conscience certainly appears to be an aspect of superego functioning, the Freudian superego contains components which have little reference to the reality-adjusted 'conscience' postulated by Bishop Butler (1726). Flugel adopts the term 'ego ideal' for the reality-centred aspect of human morality, reserving the term 'superego' for the mental function as a whole and including the primitive and reality-unadjusted aspects.

From the third, the *economic*, standpoint psychoanalytic theory may be viewed in terms of the pleasure principle and the reality

[1] 'Mental relationships' (Rickman) aspect. [2] Murray, 1938,

principle. The pleasure principle is concerned with tension-reduction, the path of immediate satisfaction of an id-impulse; unconscious mental life is under the domination of this pleasure principle. In contrast the reality principle is concerned with reality-adjustment and with the long-term rather than the short-term welfare of the organism. The reality principle governs the ego. The task of the analyst is to strengthen the ego and this principle, to make the ego more independent of the pleasure principle of the unconscious id and of the unrealistic demands of the partly unconscious superego. Flugel's 'ego ideal' is the part of the superego which is compatible with this reality adjustment.

As will be apparent, psychoanalysis views motivation as an interaction of a number of motivational influences. The primary impulses, needs, emotions and instincts of the id may achieve direct expression in speech or in action. On the other hand, they may be subjected to the censorship of the higher processes associated with the ego and superego. They may be restrained on the grounds of prudence (ego) or on moral grounds (superego). Alternatively they may find a vicarious form of expression by way of the superego. Even within the id itself there are two fundamentally opposed groups of instincts; the one seeks to restore the organic to the inorganic state, the other seeks to maintain the existence of the individual and the preservation of the species.

2. Psychic Determinism

It is argued by Horney (1939) that the most important single contribution of Freud to psychology is his doctrine of 'psychic determinism'. An attempt will be made to develop this opinion for which there seems to be substantial justification. This concept has no relation to the philosophical controversy about 'determinism' and 'freewill', which has little reference to psychology. Freud's contention is simply that *mental phenomena are causally determined*; they do not cease to be caused simply because their causes are not available to introspection. There is a continuity in mental life, continuity between what is observable to others, what is observable to oneself, and what is beyond the range of introspection. Thus Freud refused to regard any psychological occurrence as trivial or irrelevant. His studies embraced what many before him had regarded as unworthy of scientific attention: the dream, the apparent 'co-

incidence', superstitious belief and practice, and rejected thoughts and impulses. He studied these as well as the more obvious manifestations of voluntarily determined behaviour. All psychological events were regarded as phenomena, an understanding of which would reveal the motives and traits of the human individual. In this view of continuity in mental life he had his predecessors. One of these was the Russian novelist and penetrating, though non-professional, psychologist, Fyodor Dostoevsky (1821–1881). Many of Dostoevsky's writings reveal an awareness of such mental continuity. The plot of *Crime and Punishment* reveals a continuity in Raskolnikoff's mental life, in his thoughts, plans, speech and actions. The emotional preoccupations which appear in his waking thoughts find expression in his dreams also. Guilt and remorse arise not only from what he does, but from what he plans to do, and even from what he dreams about doing. Again, in *The Brothers Karamazov* a person who is innocent of a crime accepts punishment for it partly as an escape from the guilt which he experiences. He has been innocent of the action, but not of the thoughts, fantasies and wishes; these he has shared with the criminal. An investigation by the writer (1949) supported Dosteovsky's implicit contention that guilt feeling can occur as a result of aggressive fantasies as well as of overt aggressive action. The study showed the amount of guilt to be roughly proportionate to the degree of intensity of fantasy aggression in the cases studied.

The phenomen of the dream, and the paradoxical occurrence of an innocent man's accepting punishment as a result of guilt arising from his thoughts rather than his actions, presented no mystery to Dostoevsky. It is upon the thoroughgoing application and extension of this insight by Freud that psychoanalysis and modern depth psychology depend. Freud's theory of the dream, of the psychopathology of everyday life, of wit and humour, and the technique of free association, all have reference to this standpoint; in this psychoanalysis has a fundamental unity.

The postulate that phenomena which occur are caused has long been accepted by physical science. Physics and astronomy would not have progressed far had it been assumed that earthly and celestial events 'just happened'. The assumption has been made from an early date that such observed events have, and must have, their causes. A formal statement of this postulate that effects are caused was contributed by Leibniz in the 'law of sufficient reason':

that for whatever happens there is 'sufficient reason' why it is so and not otherwise. It was not until the time of Freud that this principle was consistently applied to mental science, although it had long been applied in physical science. Up till this time dreams, together with the phenomena which Freud called the 'psychopathology of everyday life', slips of the tongue, forgetting, 'chance' occurrences, mistakes and 'accidents', were usually viewed from a pre-scientific standpoint. They were held to be the product of chance or accident, and no causal explanation was sought.

The finding of a causal explanation involved the doctrine of unconscious mental life. It became apparent to Freud that there were causal determinants of a kind not available to ordinary introspection. He discovered, however, that such techniques as hypnotism (later to be rejected), and free association would reveal the nature and existence of these causal factors. He sought the 'sufficient reason' as to why the phenomena which interested him were 'so and not otherwise', why just that dream, just that witticism, or just that mistake of speech or of writing, and no other, occurred. As a result an immense amount of hitherto neglected information about psychological functioning was given a unitary explanation and became meaningful. The doctrine was stated more formally and more fully at a later date (Freud 1904).

On Freud's view there is sufficient reason why just this and no other joke is made, why some things are remembered and others forgotten, why one kind of word distortion or slip of the tongue occurs, and not another. The postulate has reference not only to free association and the interpretation of slight visual cues, but also to the projective test which is an important part of the equipment of the personality psychologist.

3. The Oedipus Complex

A brief account may be given of the legend of Oedipus to which Freud's theory relates. Freud believed that the legend embraced important facts about the infancy of the normal human child.

> Laius and Jocasta, King and Queen of Thebes, learned from the priests of Apollo that the child born to them was destined to kill his father and marry his mother, and thus to bring misfortune upon his native city. To prevent the fulfilment of this prophecy Laius ordered a servant to carry away the boy and

destroy him. Instead of killing the infant the servant tied him to a tree, hanging by the ankles, and left him to die. He was rescued, however, by a shepherd and taken to the King and Queen of Corinth, who lacked an heir and gladly adopted the child. The swollen ankles led the Queen to give the child the name of 'Oedipus' ('swollen-footed'). Unaware of his real parents Oedipus grew up in Corinth. One day a quarrel which occurred suggested to him doubts about his parentage. The Queen would not give him the information he desired, so Oedipus consulted the Oracle of Delphi and learned that it was decreed that he should kill his father, marry his mother, and bring misfortune upon his native city. To avoid this fate the young man decided to leave home and those he believed to be his parents.

On Freud's theory the legend is an expression of certain universal human motives. As parallels to the patricide and incest themes of the legend he postulated an intense attachment to the mother and antipathy to the father.[1] These give rise to guilt and are ultimately repressed. The anxiety as to true parentage which appears in the legend is also regarded by psychoanalysts as a normal occurrence of infancy. Among others Flugel (1939) has noted that the legend further illustrates aggression and hostility on the part of the father towards the male child. The first aggressive act which occurs is that of Laius, not of Oedipus. The unconscious character of these motives and the occurrence of repression find a parallel in the legend in the fact that although Oedipus fulfils the prophecy he is 'unconscious' of what he has done.

In his wanderings Oedipus came to cross roads. While he stood there a party approached and its herald ordered to him stand aside. The herald struck Oedipus and a quarrel ensued in which Oedipus killed both the herald and his master. Thus he unconsciously fulfilled the first part of the prophecy, for the master was Laius, his father. Eventually the traveller came to the gates of Thebes and learned of the death of the King and about the Sphinx, a monster which was terrorizing the city. The hand of the Queen was offered to the one who would destroy the Sphinx. It was the habit of the monster to pose a riddle to its victims: 'What is it that walks on four legs at morning bright, on two at noon, and on three at evening?' And when they failed to

[1] For corresponding attachment and antipathy of the girl see p. 234.

answer the riddle correctly, to slay them. Oedipus sought out the Sphinx and answered the riddle correctly: that the creature in question was man, who crawled on all fours in infancy, walked upright at maturity, and hobbled with a stick in old age. After destroying the monster he returned to Thebes and married Jocasta, thus fulfilling the second part of the prophecy, again unwittingly. Plague descended upon the city. The Oracle of Delphi pronounced that the plague would continue until the murderer of the King was found and punished. Oedipus was slow to accept the evidence, but eventually came to realize what he had done when the evidence could no longer be denied. In his remorse he blinded himself, and Jocasta died by her own hand.

On Freud's view the superego is 'heir to the Oedipus complex'; it arises as a result of the repression of the complex. The blinding of Oedipus which occurred under the influence of his guilt and remorse (superego functions) is regarded by the psychoanalyst as a symbolic account of castration—the punishment which the male infant dreads. This fear is held to play an important part in the repression of the complex. The riddle of the sphinx is also taken as symbolic, as representing the problem which troubles the child, that of the difference between the two sexes. Finally, it may be noted that Oedipus is unable to realize the truth despite overwhelming evidence; he is reluctant to accept the fact of having committed the crimes of patricide and incest against which society has erected its strongest taboos. This inability to cognize facts which bring anxiety and unpleasure involves the mechanism of denial (see Chapter XI).

The Oedipus theme, believed by Freud to represent universal human motives which are subject to repression, and which give rise to these influential taboos, occurs in other legends. Thus in another Greek legend Cronus (Saturn) attacked and overcame his father Uranus, and usurped his throne. Cronus, like Laius, attempted to destroy *his* own offspring, but under the leadership of Leus they escaped and overthrew him and the other Titan gods. Allport and Postman (1947) hold that a legend is a 'solidified rumour'. They add that legends persist because they 'embody underlying states of mind' and survive because they illustrate 'human character in its universal aspects'.[1] The distortions which

[1] *Ibid.*, pp. 162–164.

appear in the symbolism of the legend would be explicable partly on this basis; Freud would emphasize the part which repression plays in inducing such distortion. Psychologists like Freud and Jung have rightly emphasized the psychological interest of legends and nature-legends or myths; the relevance of the principles which govern selectivity in remembering to the content of legends may be noted (Chapter VIII). It is Freud's view that the male child takes the mother as a love object. Early-awakened masculinity leads to the wish to take the place of the father and jealousy leads to the father's becoming the hated rival. The child is subjected to restraint upon his early sexual activities; he may be threatened with castration, or he may interpret such restraints as castration threats. With discovery of the difference between the two sexes this fear of castration becomes a very real one and the Oedipus complex is repressed. These and other important occurrences are believed to be stated symbolically in the Oedipus legend. With the female child the situation involves a reversal of these attitudes, but is in certain respects different. For example, it is contended that the female child believes her castration to be an accomplished fact and has in this an additional reason for hostility towards the mother. Sometimes the term 'Electra complex' has been used to denote the female Oedipus complex. This has reference to the legend of Electra who destroyed her mother Clytemnestra to avenge the murder of her beloved father.

It is perhaps unfair to argue that the opposition which the doctrine of the Oedipus complex has provoked is part of the evidence for it. Yet such opposition is to be predicted if the theory is valid. The aspect of the theory which has probably tended to arouse most controversy has been the view that sexual life begins before puberty, in early infancy. Probably few of Freud's hypotheses have aroused more opposition than this; on the other hand, the evidence for infantile sexuality is very strong indeed and certainly more conclusive than that supporting the theory of the Oedipus complex in its details. Freud postulates a 'latency period' between the period of the Oedipus complex with its repression and the event of puberty; he opposes the view of 'common sense' that sexuality begins with puberty. The latter view is becoming increasingly difficult to maintain in face of the considerable amount of evidence available to the clinical psychologist, and even to the more casual observer or interviewer. More questionable is the doctrine of the

Oedipus complex itself. The most serious weakness of the theory is its lack of precision; as Freud has admitted, there are many possible variations from the 'classical' Oedipus complex. In saying this he adopts a theoretical standpoint which has sufficient elasticity to fit the most varied cases, which could certainly not be embraced by the theory in its precise 'classical' form. Again, it has been argued by students of cultures other than our own that there are immense possible variations of parent-child relationships in different areas of culture. Since this is the case, it is likely that the Oedipus situation relates rather to what happens under a specific kind of cultural conditions than to any universal biological truth. Nevertheless the evidence on which the theory of the Oedipus complex rests is not available to the scientific world generally. In the light of this fact the safest attitude seems to be one of open-mindedness, and a waiting for more evidence with the passage of time. Time tends to result in the abandonment of purely emotional objections and in the establishment of verification or falsification of the scientifically valid kind.

4. The Dream

That the dream is related to the interests and motives of the dreamer, and is a source of information about his personality, is a view which accords with Freud's conception of psychic determinism. Mental life continues during sleep. There is evidence for this in the fact that the content of consciousness during sleep, the dream, can often be recalled without difficulty. An awareness of the psychological significance of the dream preceded Freud and is apparent in the undoubted insight of such scriptural characters as Joseph and Daniel. The associationists advanced the view that, if reproductive memory can be explained by association, then imagination and dreaming can be explained in terms of rearranged associations. We shall proceed on the assumption that what we know about waking mental functioning has a certain relevance to sleeping mental life and to an understanding of the consciousness of the dreamer. Association, remembering, perception, feeling and emotion all play some part in dreaming as in waking consciousness. The relation between sleep, the dream, and the Freudian 'unconscious' may be noted. In a descriptive sense a sleeping person may be said to be 'unconscious'; this is a different use of the term from

that of the depth psychologist. Some psychologists like Hart (1927) speak of 'subconscious' mental states and include in this category sleep, hypnosis, fugue, somnambulism, and trance. Sleep and the dream are phenomena which may be observed behaviouristically, or introspectively (by retrospective recall). The Freudian unconscious is not an observable phenomenon of this kind; it is a *concept* designed to explain certain phenomena of both waking and sleeping life. There is, nevertheless, an important relation between the phenomenon of the dream and the psychoanalytic hypothesis of the unconscious. In sleep, and during the dream, the higher centres of the brain are less active and there is a relaxation of inhibitory processes. A result of such relaxation is an emergence into the sleeping consciousness (and often, by subsequent recall, into waking consciousness) of images, memories and affect which would not otherwise be available to introspective awareness. Thus the dream becomes, as Freud has said, the 'royal road' to the unconscious; it permits the study of the repressed under conditions of minimal interference from the repressing forces.

Exteroceptor perception is the immediate or ultimate source of the content of the dream. This view would be acceptable to most psychologists, though some would accept Jung's contention that dream content may arise from archetypes or 'imprints on the collective unconscious'. These have never been perceived and arise from within rather than from outside the psyche. In the case of a given dream it is usually easy to ascertain that perception, particularly recent perception, is responsible for the apparent content. A dream may be viewed as a sleeping, as opposed to a waking, fantasy and it is to be expected that its content should be composed of present and past perceptions similar to those available to the fantasy of waking life. At the same time it is understandable that the fantasies of sleep have emotional tone and conative aspects; they reflect emotions and other motives. Freud emphasizes the conative and motivational aspect of the dream (Freud 1900). Dreams are wish-fulfilments. Those of the child tend to be simple wish-fulfilments; those of the adult tend to be disguised wish-fulfilments since repressing factors, though weakened, are not entirely without influence. But adults may likewise have simple wish-fulfilment dreams. To illustrate, on one occasion the writer was preparing an article for a psychological journal just before sleep. He went to bed, slept, and dreamed that the article had appeared in the journal. Such a

dream requires little 'interpretation'. The wish is obvious and, not being anti-social, appears in undisguised form. Freud draws attention to the dreams of numerous explorers that reflected wishes for foods and various luxuries or necessities which external circumstances denied them.

Often the wish which is fulfilled in a dream is of an anti-social type that violates some taboo. In such cases there is a very apparent discrepancy between the *latent content* of the dream and the *manifest content*; the latter represents a distorted and disguised version of the motive which is expressed in the dream. Thus Joseph dreamed of sheaves of wheat which bowed down before another sheaf of wheat. This was the manifest content. The latent content symbolically expressed was the wish that his brothers should humble themselves before him. In the case of Joseph's dream the interpretation is not a difficult one in the light of Joseph's position as youngest in a large family. He as the dreamer interpreted the dream, presumably on the basis of these available associations. Yet essential to any satisfactory dream interpretation is the presence of the dreamer and of his associations. Freud himself was strongly opposed to interpretations of dreams in the absence of available associations. It is important to determine the precise meaning, that is, the associative relations which the contents of a dream have for the dreamer himself, and this must be ascertained by free association. Interpretations of dreams on the basis of presuppositions as to what symbols mean, or ought to mean, is usually a sterile procedure and is the antithesis of the method recommended by Freud. The analytic method of dream interpretation is an associative one and interpretation consists in establishing associative relations. Jung employs an additional technique of 'active imagination'. The dreamer is required to engage in waking fantasy about items which appear in the dream; for example, he may be required to fill in parts of an uncompleted or half-remembered dream. Such imaginings are treated as of associative relevance to the dream.[1]

A dream may be regarded from the standpoint of conative unity. A sleeper draws upon available associations, perceptions, and other psychological content appropriate to the motive which expresses itself in the dream. The situation is not unlike that of a speaker who wishes to develop a point of view. In the service of this wish he organizes available ideational content so far as it is of relevance.

[1] Adler, G., 1948.

The content may include what he sees when he glances round the lecture room, a relevant memory from early childhood, a happening of the previous day, a humorous story heard that morning, and perhaps something he has read a week earlier. These spatially and temporally unrelated elements become a meaningful whole in the service of his present purpose, the argument or point of view he wishes to express.

The ideational content of the dream can be regarded as a similar system, organized by some motivational factor: on Freud's view, a wish. Considerable influence upon the content of dreams may be exerted. Experiments were carried out by Arnold-Forster (1921) who demonstrated the effect of auto-suggestion on her own dreams. By making opportunities to perceive, and think about, the flight of birds she was able to increase the number of flying dreams she had. Eventually, when experiencing an unpleasant nightmare, she was able to escape from the dangerous situation which occurred in the dream by flight, and to do this more or less at will. The experiments also led to the development of facility in 'switching off' unpleasant dreams from which she was able to escape in this alternative way. Dreams are unrealistic in that laws of nature, like gravitation, cease to function and the dreamer may fly. Thus on one occasion a person dreamed that his deceased brother had returned. On another occasion a young psychologist known to the writer dreamed that his infant spoke to him. The baby explained that she had been able to understand adult conversation for a long time, but had been limited in her powers of expressing herself! In both these dreams an additional interesting feature was that the dreamer experienced the emotion of surprise in the dream.

Affective and conative aspects of the dream may now be considered. Freud's view that a dream is an expression of a wish has been questioned by Rivers, who holds that a dream's emotional content, like its ideational content, is determined by recent happenings (Rivers 1923). Recent emotions are like recent unsatisfied wishes in that they may express themselves in dreams; a dream can be an expression of *any* affective state. It is regarded rather as a living over of waking problems and conflicts during sleep than as wish-fulfilment. The wish-fulfilment dream is considered as a special case within a wider and more comprehensive category. Rivers also adopts a different explanation of the 'distortion' of content which appears in the dream, and he abandons Freud's distinc-

tion between manifest and latent content. He regards the dream as a regressive phenomenon, a product of mental functioning of a lower level of complexity, rather than a result of the influence of repression or 'censorship'. There is evidence, however, contrary to this regression theory in the complexity which some dreams may assume. It seems safer to assume that the dreaming consciousness is *usually* functioning at a lower level and within a more limited field. Dreams are fantasies; they are not usually products of eductive thinking. In accord with this they are usually concrete, pictorial and primitive in content. Abstraction is rare, though rather complex higher functioning, including such critical thoughts as 'this is impossible, I must be asleep', may and do occur. The broader conception of the affective content of the dream which Rivers suggests seems more acceptable than his regression theory. Evidence supporting Freud's alternative censorship hypothesis appears in the readiness with which dreams are forgotten. This is what would be predicted on the hypothesis that dreams express feelings, thoughts and impulses which, as a result of repression, would not normally be available to the consciousness of waking life.

Dreams can be regarded as the fantasies of sleep as opposed to those of waking life. Freud gives an instance of a boy of eight who dreamed that he was being driven in a war chariot by two of the Greek heroes, Achilles and Diomedes. Before sleeping the child had been hearing stories about the Trojan war. Such a dream differs little from what might have occurred in ordinary waking life. In waking fantasy the considerations of reality, the natural laws and social restraints which prevent certain desirable things happening, likewise do not hold. An interesting product of childhood fantasy is a 'novel', *The Young Visiters*, written by a child of nine, Daisy Ashford. The heroine of the story is a little girl called Ethel who encounters numerous pleasant adventures. From the nature of these it is not difficult to discover much that the young authoress would have liked to happen to herself. Ethel mingles with kings and queens and other adults whose chief activity is that of making life extremely pleasant for her. An interesting feature of the story is the extent to which the young authoress attributes her own wants and desires to the adult characters also.

The fantasies which in this case formed the subject-matter of a fascinating book are not so different from those which occur in sleep and are called 'dreams'. As Freud notes in support of his

wish-fulfilment theory of the dream, we commonly hear unexpectedly pleasant occurrences described as 'beyond our wildest dreams'. The present writer recalls a recurrent fantasy of his own childhood waking life. In this he was the proud owner of a luxury liner which took him to new and pleasant parts of the world. Absent from the content of the fantasy were schoolmasters and examinations, together with such aspects of reality as finance, which combine to prevent such things happening to the junior schoolboy. The fantasy took place each night before sleep, but sometimes it continued during sleep in the form of a dream. Such a fantasy-dream quite unmistakably illustrates the continuity between waking and sleeping life. It also illustrates our contention that the psychological principles which operate during wakefulness are highly relevant to the subconscious mental states of sleep and their form and content.

The relevance of the postulate of psychic determinism to the understanding of all mental life has been asserted. An illustration of such psychic determinism, relating both to free association and the dream, may be given. The writer can vouch for the circumstances of this case; the subject in question was one of his students in the last year of her course and the incidents subsequent to the dream occurred in a room adjacent to the psychological laboratory. As a more than usually conscientious student the subject was making a study of her dreams. On one occasion she was engaged in typing out the dream of the previous night. She was unable to recall what appeared to be a significant part of the dream, but completed her typewritten account with this omitted. Later in the day she sat down at her desk to begin an essay on psychology. She abandoned this and returned to the uncompleted account of the dream. While reading the account through she added three words in three separate places, as corrections. On examining the three separate words she discovered that taken together they made a phrase. This phrase was the missing part of the dream which she had been attempting to recall.

The incident permits of the alternative interpretations of 'coincidence' and 'chance' on the one hand, or of the inescapability o psychic determinism on the other. The subject herself accepted the second alternative.

5. Derivatives of Psychoanalysis

In the early years of the movement Adler, Jung and Stekel each broke away from psychoanalysis to form different systems of depth psychology. When considering a choice between the two former Freud himself expressed his preference for Adler's system rather than Jung's (Freud 1914). This preference may have been ill-founded, as it is a matter of doubt whether Adler's system, despite its early popularity, will stand the test of time as well as that of Jung. With some justification Menninger (1930) has argued that inferiority is often an alibi which is more acceptable to consciousness than the guilt which is often hidden by such inferiority. The extreme emphasis which Adler places upon inferiority seems less than justified in the light of such facts as this. Again, much that was added to psychology by Adler—the concept of compensation, the emphasis upon ego functioning—has been embraced in an extended system of psychoanalytic thought under the influence of investigators like Anna Freud (1936), Flugel (1945), and Fenischel (1945). These extensions will be considered in the following chapter. On the other hand, Jung's word-association method has become a part of the standard equipment of the psychologist.

There is reason to believe that Jung's interpretation of projection is more in accord with the facts than the narrower conception of Freud.[1] The active imagination technique presents possibilities of integrating laboratory studies with those of the clinical psychologist (Chapter XII). Jung (1940) has also assisted integration of the older concept of dissociation with the depth psychologist's unconscious. The concepts of Jung are likely to appeal to many patients to whom psychoanalysis would be highly unacceptable. So far as analytic therapies have a linguistic aspect, in that they enable the patient to reformulate his problems in ways which exclude emotions which gave rise to the original symptoms, the existence of an alternative system of a strongly opposing kind is therapeutically desirable.

The concept of archtypes of the collective unconscious and their content is one about which there is much controversy. Nevertheless the archetypes of Jung appear to represent important regularities common to different societies. The elucidation of such regularities

[1] See Chapter XI and Sears 1936.

has been an achievement which may prove of great value to those who would reject Jung's own explanation for their occurrence. Much valuable work has been carried out by modern cultural anthropologists in showing the extreme diversities between different social structures. There also appear to be certain inevitabilities, or near-inevitabilities, which arise as a result of living in any human society. Adler drew attention to one such inevitability, that of first being an infant and a child and surrounded by adults. He noted as the effect of this inescapable happening the sense of inferiority which he believed to be universal, though this was socially rather than genetically determined. Freud drew attention to another such happening in the discovery by the child that there are two sexes, and of its membership of one but not of the other. Having a mother and a father are other such happenings (in the case of orphans it is probable that other adults will play mother and father roles). All these are occurrences which must be assumed to be emotionally important. They are of a kind likely to induce certain regular ways of adjustment irrespective of the area of culture to which the child belongs. It is probable that Jung's archetypes have reference to the ideational accompaniments of such adjustments. For this reason archetypes are of considerable interest to the psychologist and anthropologist even though they may reject the concept of a 'collective unconscious'.

There has been a profitable interaction of the observations of the depth psychologist and those of the social anthropologist. This has given rise to new systems of depth psychology under the influence of the concept of 'area of culture' (Boas) and its derivatives: 'culture pattern' (Benedict, Mead) and 'basic character structure' (Kardiner, Linton). Such depth psychologists as Horney (1937, 1939) have attempted to correct what they considered to be an excessively biological orientation on the part of Freud. They have stressed instead the facts of culture and cultural variation. Basic character structure comprises the aspect of personality to be found in the majority of the members of a society. It is held to be the effect of the early social experiences to which all such members have tended to be subjected. Kardiner combines the social anthropologist's emphasis on cultural diversity with the psychoanalyst's stress on the importance of the early infancy period. Cultures vary, but certain regularities of personality structure are apparent within a given area of culture. A somewhat different but relatedly 'social'

emphasis appears in the thought of H. S. Sullivan (1940). Sullivan rejects the Freudian conception of analysis of 'the unconscious' of an individual. His concern is rather with the unconscious ('parataxic') factors which exert their influence on inter-personal relationships. While the germ of Sullivan's basic concept is to be found in the psychoanalyst's 'transference', his general emphasis is different. He is not concerned with the interiorized counterpart of society within the individual (the superego). Direct attention is paid to the distortions of thought, judgment and behaviour which occur in the inter-relations of individuals. These are the result of previous personal relations of whose influence on present behaviour the subject is partly or entirely unaware.

A different kind of emphasis is found in the thought of Groddeck (1928), who believes that Freud's standpoint has not been biological enough. Groddeck's concern has been mainly practical and therapeutic rather than theoretical. He maintains an uncompromising opposition to any sharp body-mind distinction, and does this by postulating an 'It', a sort of vital principle which expresses itself, sometimes in bodily symptoms, sometimes in psychological symptoms. The result of this standpoint (or perhaps the cause of it) is that Groddeck has been greatly concerned with the psychological factors which contribute to physical illness. Psychoanalysis began as a method of treatment of hysteria, a condition intermediate between 'psychogenic' and 'organic' illness. Groddeck regrets Freud's failure to turn to 'organic' problems. He offers many intuitive observations of the kind unlikely to lead to the formation of a 'school', but which are a stimulating contribution in themselves.

Perhaps most important of all the movements which have arisen out of psychoanalysis has been the experimentalist one. Various psychologists carried the hypotheses of Freud into the laboratory and attempted to verify or falsify them. Sears investigated projection in this way (Sears 1936; see also Chapter XI). Rosenzweig and others have attempted experimental investigations of repression (Murray 1938). As has been noted above, Pavlov (1928) carried out laboratory studies of the experimental production and psychoanalytic removal of neurotic symptoms. Others like Mowrer (1939) have been concerned with animal experiments of direct reference to the central place which the concept of anxiety played in Freud's later thought (Chapter IV). Representative illustrations only have

been taken of this important attempt to apply other methods to the investigation of the phenomena and hypotheses of depth psychology.

SUMMARY

Certain psychophysical processes are not readily available to introspection, but nevertheless exert an important influence upon behaviour and motivation. Depth psychology is concerned with these, and speaks of such processes as 'unconscious'. The *technique* of psychoanalysis is illustrated with particular reference to the method of free association and the phenomenon of transference. Psychoanalytic *theory* may be considered from Freud's three standpoints: dynamic, topographical and economic. Most important of Freud's contributions to psychology was his realization, and the thoroughgoing application of it, that mental events, like physical events, have their causation. These causal factors are not necessarily accessible to the ordinary methods of introspective study. The legend of Oedipus and the related psychoanalytic theory are discussed. Relations of the dream to the psychoanalytic 'unconscious' are examined. Much can be learned concerning the form and content of the dream from the principles which govern human perception, motivation, feeling, emotion, and association. These have reference to sleeping as well as to waking life. Dreams may be considered as fantasies that occur in sleep, and in certain respects they resemble the fantasy creations of wakefulness.

RELEVANT READING

Berg, C., 1946, *Deep Analysis: the Clinical Study of an Individual Case.*

Flugel, J. C., 1945, *Man, Morals and Society.*

Freud, S., 1904, *The Psychopathology of Everyday Life*; 1923, *The Ego and the Id*; 1940, *An Outline of Psychoanalysis.*

Note: As Freud's own writings are available in excellent translations the reader is advised to consult these and avoid books 'about' Freud's views. The above three books are suggested as being representative of different periods of his thought.

CHAPTER XI

Mechanisms of Ego-Defence

As a result of the operation of unconscious mechanisms the subject's behaviour may be inappropriate to the situation with which he is confronted. His assessment of his own traits and motives may differ considerably from that of impartial observers. The phenomenon of transference discussed in the previous chapter is a specific case involving the operation of such self-deceiving mechanisms. Mechanisms of self-deception or ego-defence play an important part in normal interpersonal relationships. They involve the intrusion of irrational influences on thought, behaviour, judgment and motivation; such influences complicate greatly the interactions of individuals in social situations.

During recent years there has been a shifting of attention by various psychoanalytic investigators from unconscious processes themselves to the factors which maintain the unconsciousness of such processes. Various psychological 'mechanisms' or 'dynamisms' were implicit in psychiatry before the time of Freud (e.g. projection). Others were noted by Freud himself (e.g. repression, regression, reaction formation). Others again were contributed to depth psychology by his colleagues, e.g. rationalization (Ernest Jones) and introjection (Ferenczi). A more systematic listing and examination of such mechanisms has been carried out more recently by Anna Freud (1936), Flugel (1945), Fenischel (1945) and others. Some psychologists like Sears (1936) and Frenkel-Brunswik (1939) have attempted empirical investigations of other and non-analytic kinds.

Hilgard (1949), in an address to the American Psychological Association, emphasized two important characteristics of such mechanisms; they are defences against 'anxiety' and they are self-deceptive. Doob (1949) makes the additional point that ego-defensive mechanisms have a certain relevance to the judgments of

'sincerity' and 'insincerity' which tend to be made about the behaviour and motivation of other individuals. He suggests that such judgments underestimate the extent of human tendencies towards self-deception. Frenkel-Brunswik obtained assessments of their own traits and behaviour tendencies from a group of 40 advanced psychology students. These were compared with the ratings of four independent judges. As measured against this criterion the subjects gave evidence of many illusions about their own conduct and personal qualities. Judges' estimates of the extent to which the subjects carried out a stated principle of conduct correlated inversely to the extent of $-\cdot57$ with the subjects' own assertions. For example, the asserted quality of 'sincerity' correlated inversely with the judges' assessments of actual sincerity, to the extent of $-\cdot58$: self-assessments of helpfulness correlated only ·06 with actually being helpful (Frenkel-Brunswik 1939).

The ego-defensive mechanisms which maintain such illusions about personal qualities and conduct can be sub-divided in terms of the function they perform. Those like denial and introjection are primarily defences of the ego against external happenings of a dangerous or otherwise unpleasant kind. Other mechanisms like projection, isolation and reaction-formation are principally defences against affective states, emotions and impulses, against threats to the ego from within rather than from immediate external happenings. Others again, like rationalization, regression and repression, may serve both these ego-defensive functions. Since perception has primacy in mental life it seems logical to begin with a brief discussion of the mechanism of denial.

1. Denial

Failure to perceive is termed 'denial', when such failure results from the influence of emotional and conative factors rather than sensory or intellectual incapacity (Anna Freud 1936). Theoretically, subtypes of denial relating to each of the sense departments can be distinguished, though not seeing and not hearing are the two most important kinds of denial. Denial may accompany deafness in the case of the individual who exploits his incapacity and fails to hear even what remains with the range of his limited auditory capacity. Such selective hearing as results from denial can be distinguished from the deafness itself and conscious decep-

tion, both of which may also exert their influence. Anna Freud has pointed out that parents may assist the development of ego-defences of the denial kind by telling their children that their injury is 'better now' or that the medicine 'isn't a bit nasty'. Negative hallucinations and anaesthesias of the kinds which occur in hypnosis and in cases of conversion hysteria illustrate denial; in these conative factors seem to play an important part. An illustration of denial both visual and auditory is found in the case of the child first confronted with the death of a close relative or other person of emotional importance to him. Unmistakable evidence that such a death has occurred may be not perceived or not accepted.

Denial of the painful fact of the death of a loved person may occur also in the case of the adult. The simplest form of such denial is actual fainting, an immediate shutting-out of the distressing stimuli from conscious awareness. But denial, or a closely related mechanism, appears to operate at various stages between first perception and final acceptance of the painful facts. It may involve apperception as well as perception. Thus the adult may not faint, but may assert that the facts are 'not true' or 'a terrible mistake', though other facts from the same source of information would be accepted without question. Even when facts are accepted as true, a denial defence may continue in that the subject finds himself 'unable to realize', despite intellectual comprehension. Related mechanisms appear to operate under the influence of sentiments, prejudices and complexes. Intelligent individuals are unable to apprehend relations in certain fields though they can grasp equally complex relations in others. Failures to cognize, involving the memory process, of this emotionally-determined kind are, of course, called repression. Perceptual denial and repression, together with the related 'not realizing', 'not understanding', and otherwise 'not apprehending', might be regarded as special cases of a more general mechanism of 'not cognizing'. If 'denial' is confined to perceptual denial, and taken to exclude apperception and memory, the existence of these related mechanisms should be noted. Perceptual denial is itself unquestionably one of the most important of the ego-defensive mechanisms. It operates mainly as a protection of the subject from awareness of sense data which, if perceived, result in unpleasure and anxiety.

2. Projection

Projection is an attributing of one's own psychological processes or traits to an outside agency. Jung (1940) regards the pseudo-sciences of astrology and alchemy as arising from projection of psychological content into respectively astronomical and chemical events. Projection involves a confusion of the psychological and subjective with the external; it may be an attributing of one's own traits to another individual who does not possess such traits.

An empirical investigation of projection was carried out by Sears (1936). Three important conclusions emerged. Individual differences in tendency to project were demonstrated. Absence of insight into the nature and possession of a trait was found to be the factor most favourable to projection. The investigation failed to support Freud's hypothesis that there is a greater tendency for projection of traits which the subject condemns in himself. As a point of methodology it may be noted in passing that failure to confirm an hypothesis is a very different thing from falsifying that hypothesis. Further investigation of the unwanted trait hypothesis is needed. On the other hand, Sears's study supports the hypothesis of both Freud and Jung that projection occurs in the absence of insight. In the classical type of projection the subject attributes a quality not possessed by another person to that person. To take an instance, a woman blamed her brother for his meanness and questionable honesty in business dealings. The accusation was singularly inappropriate as the man in question was neither mean nor dishonest. On the other hand, the attributed traits were found to be those of both the sister and her husband; such traits had been very much in evidence in their business dealings with the brother to whom they had been attributed. But it may be questioned whether a factual basis for the projection is always absent, as it appeared to be in this case. In discussion of hallucination (Chapter III) attention has been drawn to what has been called the 'principle of economy' in mental life, the principle that sense data actually present tend to be utilized in perception, though they may be subjected to considerable distortion. This has its relevance to what is often called 'projection', but might be named more appropriately 'projective distortion'. The subject exaggerates psychological attributes which are in fact present in the other person, though present to a lesser extent than perceived. Absence of insight into similar

traits in the subject's own personality appears to be a factor favourable to such projective distortion. A distinction can be drawn between this related mechanism and true projection, since the other person shares with the subject something of the qualities which are projected. An illustration of the mechanism may be found in the case of the persecution of a minority group. A person who has been subjected to severe persecution may continue to attribute hostile qualities to those around him after he has escaped to the society of a wholly tolerant group. This is projection. On the other hand, projective distortion may occur *during* even intense persecution, in that the subject attributes additionally threatening qualities to his persecutors.

Bettelheim (1943) was himself a Jewish prisoner in a Nazi concentration camp. He noted an interesting effect of persecution upon prisoners. There arose a clash of stereotypes, of the Nazi's stereotype of the Jew with the Jewish prisoner's stereotype of the Nazi. Under conditions which did not permit outward expression of their own hostility the prisoners tended to attribute additional hostility to their guards. Such additionally threatening qualities were projected, though on the basis of genuinely present persecutory qualities in the guards.

It is probable that projective distortion plays an important part in inter-personal relationships under more normal circumstances. In the case of hostility reality may provide some basis for projection, and this is utilized by the subject in his projection.

Related to, but nevertheless distinct from, projection is a mechanism to which La Rochefoucauld (1693) drew attention many years ago—the tendency to blame in others qualities which the subject would like to deny in himself. There seems also to be a particular hostility which the subject reserves for another individual who reminds him of his own unwanted traits or reprehensible conduct. In Dostoevsky's novel *The Brothers Karamazov* old Karamazov is asked why he has such an intense hatred for a certain person. Karamazov replies that this individual has never done him harm; on the other hand he (Karamazov) once behaved in a highly dishonourable way towards him. Karamazov declares that he has developed such hatred as a result of his own action. One wonders whether the incident related is purely imaginative, or whether it is based upon some actual observation by Dostoevsky.

Hostility may also arise towards another person with respect to

one of the subject's own qualities, when that quality is introspectively inconspicuous to the subject but brought to marginal awareness by its exaggeration in the conduct of the other person. An ego-defensive mechanism of this kind seems to operate in the case of the 'honest' and 'law-abiding' citizen who reacts with quite disproportionate intolerance to the faults, crimes and delinquencies of others. In such cases the subject often appears to be reacting with a more than necessary degree of 'justifiable indignation' against another person who represents a gross exaggeration or caricature of his own traits and rejected impulses. The parallel is closest in the case of the honest citizen who demands a vindictive punishment for the person accused of a crime of violence. Advocates of law and order often write to newspapers on such occasions to advocate penalties in a manner which seems to express traits which they possess in common with the criminal. The aggressiveness of the law-abiding citizen and of the punishment advocated by him often equals, if it does not exceed, that of the criminal and his crime. Such anti-social impulses express themselves, however, in a socially permitted demand for the enforcement of law and order. Yet it is apparent that the motivation of the criminal and of the citizen of this kind have many characteristics in common, though an ego-defensive mechanism interferes with recognition of the similarity. This mechanism is related to projection, as normal objectivity is made difficult by the self-reference involved. It is probable that, as Jung has suggested, 'there can be no indifference to the carrier of a projection', nor perhaps, we might add, to those who manifest the subject's own repudiated personal qualities.

The mechanism named *altruistic surrender* by Anna Freud involves projection together with a rather pathological degree of sympathetic identification with another person. Sympathetic identification is regarded as a socially desirable attribute in our society; it is perhaps a necessary quality in the psychologist (Allport 1938). Nevertheless it has its more or less abnormal and unadjusted forms. In the case of altruistic surrender the subject abandons prudent self-interest, but finds a vicarious satisfaction in the life and activities of another person. Anna Freud relates a rather extreme case of a young woman who took a lively interest in the welfare, dress, marriage and children of her friends. When she appeared for analysis she was shabbily dressed; she had remained unmarried and childless. Analysis revealed that as a child the

patient had been obsessed by two ideas, of always being beautifully dressed and of having children of her own. She had emptied her life of interests and wishes and had expended her energy in a pathological kind of sympathetic identification with other individuals for whom she cared. The altruistic surrender in this case had been complete.[1]

Another illustration of the same mechanism as a dominant purpose is taken by Anna Freud in the personality of Cyrano de Bergerac (presumably the historical figure rather than the literary creation of Rostand). This young French nobleman devoted his courage, aspirations and intelligence to the service of his rival's suit, not his own. When his rival dies he is strangely unable to pursue his own purposes. Less extreme illustrations can be taken. The writer recalls a case which occurred during the second world war of an ambitious young man who, when pressed, finally admitted his own disappointment at the slowness of his promotion. Before such insight was gained he had busied himself pressing for the promotion of a friend, and had showed a rather exaggerated anger when this was delayed. Later events showed that the disappointment had indirect reference to his own case, though some degree of altruistic surrender to his friend had occurred. Flugel notes instances in which altruistic surrender operates as an adjustive rather than a maladjustive mechanism in, for example, the pride and pleasure the child may take in the greater knowledge and power of his parents. These, in turn, can experience similar delight in the progress and achievements of their offspring. As Freud noted at an earlier date, parents can find a vicarious satisfaction of their own unfulfilled ambitions in the successes of their children. Again, it may be added that an unhappily married person, particularly a wife, may turn to her children and live her life vicariously by altruistic surrender to theirs. Such altruistic surrender may be extreme, it may be statistically abnormal, but it may perform an adjustive function.

3. Introjection

Introjection resembles projection; it involves not a treating of the subjective as though it were external, but rather an incorporation of the external as part of oneself. It is usually a reaction to environmental forces, particularly those of a threatening or de-

[1] Freud, A., *op. cit.*, pp. 133 ff.

priving kind. The nature of introjection can be best understood from the standpoint of its reality-adjusted prototype, self-criticism. The demands and prohibitions of significant adults become internalized to form the child's moral sentiments and values. To a large extent, also, such moral standards are acquired by imitation rather than by spoken words. But intellectual as well as moral standards are introjected. A good illustration of this is to be found in the self-criticisms made before the public presentation of the products of one's thought.

Much verbal thought passes through a stage of censorship before being spoken. Such censorship depends on anticipations of criticisms others may make; the standards employed are themselves products of previous perceptual experience of the spoken criticisms of others. The individual who undergoes a psychoanalysis may experience much embarrassment as a result of the free-association rule which requires that what is thought be spoken. Such embarrassment is particularly likely to occur should the thoughts of the subject relate to intellectual matters. They must nevertheless be spoken without intellectual censorship. As a result the patient is never a match for the analyst in a difference of opinion since he must speak arguments which he would under normal circumstances reject, and which he realizes to be invalid. Ordinary conversation and discussion differ from free association in this respect. Again, in the preparation of a piece of writing, an essay or a scientific paper, the author will submit this to his own introjected critical standards before obtaining the criticisms of others. These standards of judgment have come into being as a result of previous perception of the kinds of criticisms others have made; an author is thus able to anticipate such criticism to some extent. What is anticipated in these cases may be either alternative hypotheses or additional information which has not, at first, occurred to the writer. Before external evaluations are sought such self-criticisms tend to be made. When a writer feels his own critical standards to be inadequate he will, as is usual, obtain the assistance of others. For example, a person about to speak in a debate may approach friends and thus obtain anticipations of the lines of argument his opponents in the debate may adopt. In doing this he makes use of the introjected critical standards of other persons from whom such criticisms are more tolerable to his ego than from strangers or opponents during the debate. More study is needed of introjection

as an adjustive mechanism which functions at stages intermediate between original thought and its first and its final public expressions.

Emphasis has been placed upon the importance of introjection in the development of moral standards in recent years by Melanie Klein (1945) and her school. Earlier theorists such as McDougall (1908) have dealt with related processes. Such investigators as Menninger (1942) have paid considerable attention to the place of introjection in its relation to sex-typing. The normal psychological traits which accompany physiological masculinity are regarded by the male child as being introjected from its father, and equivalent processes occur in the female infant. Such introjection may result in duplication of other parental qualities in the child which may be incorrectly assumed to be due to inheritance. An example may be taken: One adult male suffered from a serious stammer. Investigation revealed that in this case the father also suffered from a very bad stammer. The hypothesis of inheritance might possibly be advanced, particularly by a layman, in such a case. Other circumstances afforded evidence such as to suggest that an alternative hypothesis had some plausibility. The son who stammered had a close friend who, in the course of daily association with the stammerer, himself developed a similar stammer. In this case at least introjection had occurred. The presence of the stammer in the son as well as in the father is probably explainable in the same way; the son had introjected not only his father's general qualities of 'maleness', but also his speech defect. That this explanation is plausible is suggested by the fact that a similar stammer developed in his admiring friend and that in this case the genetic hypothesis is excluded. More satisfactory criteria of what is hereditary are adopted today than formerly when presence of a trait in both parent and child was often regarded as evidence of inheritance. There seem to be many cases of pseudo-heredity for which introjective mechanisms rather than genes are responsible. Some evidence that introjection may to a large extent explain such resemblances is found in the occurrence of the phenomenon that husbands and wives may introject each other's qualities and grow alike in such ways that strangers may mistake them for brother and sister. Freud (1917) places emphasis upon introjection in the face of loss and deprivation in connection with grief and mourning, as well as in the psychosis, melancholia.

A special case of introjection is called by Anna Freud *identification*

with the aggressor. An individual reacts to danger by introjecting the threatening qualities. Anna Freud mentions the case of the child who declared that by pretending she was a ghost she had lost her fear of ghosts. Flugel[1] gives an example of the mechanism in a dance tune, *The Bomber Parade*, which was very popular in London during the height of the 1940–41 blitz. In this the dancers pretended that they themselves were bombers, and declared that they had no reason to experience fear when making this identification, though the sirens were sounding. Old Karamazov's hatred of the person to whom he had done an injury, noted above, also illustrates this mechanism.

4. Reaction Formation

Reaction formation is regarded by Fenischel (1945) as a secondary line of ego-defence. It is secondary in the sense of being both a result of and an assurance of previous repression. The subject may react to internal emotion and impulse by making a change in one or other of his personality traits. Reaction formation as a widespread phenomenon is illustrated in the hypothesis of Suttie (1935) of the presence and influence of a strong taboo on expression of tender emotion. The male child, Suttie contends, develops qualities of masculine toughness at certain stages of his development; these qualities amount to reaction formations against an inward craving for maternal protection. Reaction formation can give rise to qualities which are socially undesirable, as in the case of the prude whose reaction formations against sexuality are seldom those that promote the happiness or virtue of others. Another anti-social kind of reaction formation is well illustrated in a remark about one of the characters which occurs in Somerset Maugham's play *The Sacred Flame*: 'She is a very conscientious woman and she mistakes a hatred of me for the call of duty.'

Many instances may be found in which anti-social, morally athletic qualities develop as reaction formations against hostile emotions and impulses. One of the best historical instances is that of Father Joseph, the Capuchin friar who lived a life of asceticism amidst the splendour of Cardinal Richelieu's court and was Richelieu's unobtrusive but influential adviser. Most of the policies advocated by Joseph were disastrous to the welfare of others. He was largely responsible for the continuation of the Thirty Years

[1] *Op. cit.*, p. 73.

War and the suffering which this brought to Germany and to Europe. Among his unsuccessful projects was a persistent attempt to engage Europe in a crusade against the Moslems. These policies were advanced in the name of his country, France, and of his religion. There is abundant evidence in their actual and obvious consequences for others that they were an expression of highly anti-social impulses, which had given rise to these misguided extremes of patriotic and religious reaction formation. An excellent biography of this sincere but self-deceived man, *Grey Eminence*, has been written by Aldous Huxley (1949). In this and in other instances there is some evidence that the traits and impulses against which reaction formation occurs may nevertheless express themselves vicariously through such reaction formations.

Some forms of what are conventionally assessed by society as 'virtue' appear to be reaction formations against anti-social qualities. Ibsen has shown considerable understanding of this form of ego-defence, more especially in the central character of his play *Brand* and in Gregors Werle in *The Wild Duck*. Brand with his 'naught or all' sense of duty is almost magnificent in the success with which he achieves the maximum amount of suffering of those with whom he comes in contact. It may perhaps be desirable to distinguish a specific ego-defensive mechanism of *moralization* as the kind of reaction formation which permits the expression of anti-social qualities in ethically respectable forms. Some psychologists maintain a distinction between reaction formation and Adler's compensation. On the whole the two mechanisms seem to resemble one another closely, and compensation may be regarded as a special case of reaction formation.

5. Isolation

In isolation the psyche is compartmentalized in such a way as to isolate ideas and affect from one another. This ego-defence is one of the psycho-analytic concepts most relevant to the phenomena of dissociation which engaged the attention of psychopathologists of an earlier period (Chapter XIII). Isolation is primarily concerned with protection of the ego from threats from within the psyche, from anxiety, conflict, and unpleasantly toned memories. Obsessions illustrate isolation. In these the emotions belonging to one set of ideas become attached to another set of ideas. Again, in the case

of compulsions the subject carries out what he will probably admit are 'meaningless' actions. Such patients typically comment on their obsession or compulsion in such terms as 'I know it is absurd, but I just can't help it'. This awareness of absurdity results from absence of conscious awareness of the original links between ideas or impulses on the one hand and emotional tone on the other. What are conscious are only ideas or impulses to action which have become isolated from their original emotions. Washing mania is a commonly found psychotic symptom. The relevance of this to isolated guilt affect was appreciated by Shakespeare, as is evident in his treatment of the character of Lady Macbeth. Washing manias have a lesser but obviously related counterpart in the scrupulous and exaggerated cleanliness which may affect the compulsive neurotic and the otherwise normal person. Such cleanliness is inappropriate to the external circumstances, but is appropriate to guilt feeling (inner uncleanliness), awareness of which the subject urgently seeks to keep from consciousness by carrying out this activity.

Obsessions and compulsions occur in many, perhaps most, individuals at some time or other. Introspection will probably enable the reader to recognize past or present obsessions and compulsions in himself. Examples may include the carrying out of some action before an important event, obsessive recapitulation in thought of the events of the day, having to go back to bed and get up again, carrying some charm to an examination, having to avoid the lines and walk on the squares of a paved street, having to think irreverent thoughts on inappropriate occasions, etc. Introspection will show the immense anxiety which accompanies nonconformity to a compulsion or obsession, and these may be said to be, for this reason, anxiety-driven. There are close relations between superstitious practices and the obsessive-compulsive mechanisms. Tension and emotional discomfort may occur with non-performance of such practices long after critical thought processes have resulted in their intellectual rejection.

The mechanism of isolation has an interesting normal prototype in many of the higher thought activities in which objectivity must be preserved. Scientific thinking involves such isolation of ideas and emotions, as Fenischel has pointed out. Conventions demand that the scientist observe, think about, and state his findings in an impartial and unemotional way. As a result scientific writings are usually free from evidence of triumph in achievement, malevolent

enjoyment of having overcome a disliked opponent, humorous anecdotes, and emotional accompaniments of intense interest. Such influences as these may nevertheless have sustained the investigator during his study.

The process of isolation of ideas from affect which scientific thinking involves may be seen in many incidents in the history of psychology and other sciences. When Pavlov, with his characteristic integrity, had occasion to retract certain conclusions he made his statement without evidence of the deep disappointment he must have felt. Eve Curie (1939) relates how her mother and father would return to their laboratory to admire the new element radium which they had obtained after four years of laborious work. Pasteur's hand shook with excitement and hampered his control of the microscope as he approached the final stages of his experiments. We may look in vain for evidence of these understandable human emotions, which motivated the investigators, in their scientific papers about their conclusions. One way in which such isolation is maintained in scientific thought is by the use of a technical language from which emotion is excluded. Some of the objections provoked by Freud's investigations arose from his use of the emotionally toned words of ordinary speech when giving an account of phenomena contrary to the expectations of the layman.

Note may be taken of the relevance of isolation to the subject-matter of psychology and the thought-processes of its students. The subject-matter of psychology includes emotions and psychologists, like other scientists, experience emotions. Dangers arising from this fact can perhaps be best suggested by noting the phenomenon that it is usually easier to say things involving emotion in a foreign language than in one's own. The emergence of technical terms in psychology presents the danger that the psychologist will manipulate verbal symbols and remain too remote from the emotionally toned realities which he seeks to describe and explain. It is, of course, necessary to think and write in the more precise language of science. On the other hand the student of psychology is sometimes faced with the temptation to think only in the language of science about certain issues and a hampering *rigidity of thought* develops.[1] A related problem arises from the influence of different

[1] I have to acknowledge my indebtedness to my former colleague, Miss Sylvia Shimmin, for her contributions to the many discussions we had about these problems of psychology teaching.

schools of psychology, each with its system of technical terms. Those accustomed to think in the concepts of one such system may be unable to appreciate relevances stated in the concepts of another. The seminar class often results in valuable work of translation between lay and scientific concepts, and between partisan scientific concepts. A solution to the problems of the rigidity of thought which arises from isolation of idea and affect in the subject-matter of psychology can be found in translation, in development of ability to reformulate thought in alternative ways. Those who have read about, but not understood, such systems as psychoanalysis may be particularly liable to make over-slick use of technical terms. Serious investigators of depth psychology have been much hampered by the discredit which such amateurs have brought upon this aspect of our science.

Finally, there are complex problems which arise from isolation mechanisms in the case of the serious investigator himself. Science is a device for conceptualizing specific occurrences; the concepts used may more than a little distort the character of what is being studied. For example, Darwin noted a decline of his own powers of appreciation of poetry and literature as a result of his objective, scientific interests. Such atrophy is not disastrous in one concerned with the subject-matter of biology. It is, however, a serious handicap to one who wants to make a psychological study of aesthetic emotion or standards of taste. It may result in a laborious missing of the main points with regard to both artistic creation and artistic appreciation. Similar problems obviously arise in investigations of the psychology of religion and studies of humour; they are probably never absent in any branch of psychology. In conclusion, we note the relevance of the ego-defence of isolation to the problem of comprehension of the subject-matter of the science which the reader himself is studying. A realistic contact with such subject-matter, and a retention of the ability to think and feel like a non-scientific human being, are attributes which it is desirable to retain in the face of temptations towards isolation.

6. Repression

Repression may operate alone or in connection with other mechanisms like projection, isolation and reaction formation. The tendency to repress rather than adopt some alternative ego-defence

has been investigated by Rosenzweig and Sarason (1942) and found to correlate with hypnotizability. One of the best illustrations of repression occurs in connection with the dream. The content of a dream tends to pass rapidly from conscious memory. An individual waking after a dream may remember that he has dreamed, but forget the dream's content, which seems to pass from his conscious awareness during the very act of waking. Again, a person may be unaware of having dreamed at all. An incident during the day may recall the fact of having dreamed, and may bring to consciousness some of the content of the forgotten dream. Such phenomena are understandable from the standpoint of the Freudian hypothesis that dream-content tends to be emotionally toned in such ways as are incompatible with the standards of consciousness.

Other memories which have been forgotten may return to consciousness, either spontaneously or as a result of free association and other such techniques. It is held that such repressed memories maintain some kind of intermediate or 'unconscious' existence. Other evidence for the occurrence of repression is to be found in the phenomenon of infantile amnesia and the fact that some such early memories can be reactivated by free association and related techniques.

The term 'repression' itself implies a political metaphor: 'The policy of Metternich after 1815 was one of "repression".' This is *not* the usage adopted by Freud, though it may be noted that shades of the original meaning have sometimes clouded the thought even of scientific psychologists. Repression cannot be equated with non-expression. Repression means active forgetting: it might be regarded perhaps as a special case of some general mechanism of 'denial' in the field of memory. Nor does the forgetting of whole incidents, to which Freud first drew attention in connection with hysteria, appear to be the most typical form of repression. It is aspects of incidents, and relations between such aspects, which are more typically repressed. The subject is, as Freud later showed (1904), often unable to remember details of happenings though he remembers the generalities of such happenings. Reactivation of memories in their full detail may be necessary to release affect. Many people can talk quite unemotionally about previous sufferings, grievances and misfortunes in general terms. Yet when they are pressed to give details the result is 'catharsis', a release of associated affect. This emotion may be of an intensity which will sur-

prise and overwhelm the subject himself. Psychoanalytic treatment involves reactivation of the affect involved in such details in order to assist the patient to make a more realistic adjustment to these past happenings.

Psychoanalysis has been regarded as a process whereby a patient is given greater 'insight'. If such a word is used it is desirable that it should not be interpreted in a purely intellectualistic way. Such 'insight' involves not only reality-adjusted thinking, but also reality-adjusted feeling, intellectual awareness *plus* an emotional realization of the personal implications of such awareness. The writer will not readily forget being present with a psychiatrist during an interview with a very bad obsessional patient who had been 'analysed'. He remained a bad obsessional patient, and was none the better for possessing an ability to expound his symptoms and their causes in the technical language of one of the less well known 'schools' of depth psychology. Intellectual knowledge was perfectly compatible with retention of such symptoms since it constituted a defence in their service. The competent analyst is naturally aware of such dangers and takes obvious steps to avoid them. In this case idea and affect had been very effectively isolated; though memories were available to conscious awareness affect remained repressed.

Though the reader is likely to find confusion in others, particularly those critical of psychology, little time need be spent upon the gross confusions of many laymen about 'repression'. Such critics will, from the viewpoint of their very limited understanding, regard the Freudian injunction not to repress as 'immoral'. It may, however, be noted in passing that repression is neutral in the matter of expression or otherwise. Repressed impulses and memories are in fact very likely to find expression, though remaining repressed. Removal of repression enables the subject to decide whether to express in speech or in action, or not to express, such emotion and impulse. Absence of repression enables such decisions to be made with the minimal amount of judgment-distorting emotional influence. There are probably rare cases of amnesias in which it is, on the whole, both humanely and therapeutically desirable to allow repression to remain, though it should be noted that such cases are exceptional rather than typical.

7. Other Mechanisms

Other ego-defensive mechanisms may be noted. *Regression* is often a defence against severe environmental stress, which is met by a return to a developmentally earlier way of behaving. The relation between 'frustration' and regression has been experimentally investigated by Barker, Dembo and Lewin.[1] From regression may be distinguished *fixation*, in which the individual remains at an early developmental level in one or other of his characteristics. Alcohol, drugs and hypnosis may have the effect of inducing regression. On one occasion in a laboratory demonstration of hypnotism the writer had opportunity to observe the regressive behaviour of a subject as a result of hypnotically-induced intoxication. It was suggested to the subject that a glass given him contained strong alcohol. The writer, who assisted in this experiment and drew the liquid in question from a nearby tap, can testify that it was pure water.

The mechanism of *undoing* often accompanies isolation, as in the case of the compulsion 'washing mania'. This may be regarded either as a way of maintaining the isolation of idea and effect, or as an attempt to undo some previous action about which the subject has experienced guilt. Extreme cases of undoing may result in self-mutilation of the hand or other part of the body with which guilt is associated; the crime for which this punishment is inflicted may be actual or merely fantasied. An interesting case of undoing occurs when an innocent person manifests a need for punishment which may even lead him to seek and secure such punishment. Freud (1915 (*a*)) drew attention to cases of criminality in which guilt-feeling preceded rather than followed the occurrence of the crime. Such behaviour becomes understandable if viewed as a way of achieving release from the guilt-feeling which committing and being punished for a crime may bring. A real basis for guilt is more bearable to consciousness than guiltiness which is felt but to which the subject is unable to attribute meaning. A characteristic of undoing is that it involves behaviour of kinds incomprehensible and meaningless to an observer fully acquainted with present *external* circumstances. It becomes understandable if viewed as a way of obtaining release of intense emotional tension, often tension of the guilt kind, which exists but the causes of whose existence are not

[1] In Barker *et al.*, 1943.

always understandable to the subject. One form of undoing may involve, as Fenischel notes, actual repetition of a former act, but repetition with a different mental set towards that act.

A rather interesting mechanism of considerable relevance to normal human living has been given the name of *restriction of the ego* by Anna Freud. Despite its adjustive functions the mechanism can develop in pathological and unadjustive ways. It is obvious that no person can be equally successful in all the activities he carries out. Self-esteem is maintained by the fact that he can in some regard himself as an amateur, and in these his failures do not matter so much. On the other hand, there are a number of activities in which success or failure matters a great deal. The subject's ego is in these ways restricted. To illustrate, a person may view without undue distress his poor performance at tennis, but with the implication that while he makes no claims to be a tennis player he is quite a good golfer. A lecturer in a university staff club may feel quite seriously discomfited if unable to answer a question about his own subject. On the other hand, he tends to feel no discomfort if he asks questions which betray his ignorance of subjects which are the special study of other lecturers. Such a person feels he ought to know his own science, but is content to retain the status of an amateur in sciences remote from his own. Sometimes there is what Sherif and Cantril (1947) would call a considerable 'ego-involvement' with one's speech and activities; at other times there is not. In Anna Freud's language the mechanism of 'restriction of the ego' operates. On the other hand, a person may persist in adopting a chronically amateur attitude towards all or nearly all human activities. He may refuse to accept the involvement of his own ego in such things when reality demands its involvement. For example, a confirmed alcoholic may refuse to take life seriously, and react with singularly inappropriate lightheartedness to every aspect of his hopelessly disorganized personal affairs. This phenomenon is termed by Hart (1912) 'drunkard's wit'. Other pathological cases involve what Menninger (1930) calls 'repudiation of masculinity' and 'repudiation of femininity'. A man or a woman may refuse to accept the role which society assigns to his or her sex. Anna Freud gives an instance of a little girl who at the age of 10 years was rejected by a boy to whom she made advances. She was teased and ridiculed by him. As a result of this incident she gave up feminine interests and set about excelling in masculine pursuits. Menninger

regards 'Don Juanism' as a form of repudiated masculinity, an inability to accept masculine responsibilities which is at the same time an attempt to obtain frequent reassurances of possession of masculinity.

Reference has been made from time to time to the two mechanisms of *rationalization* and *moralization*. These perform the function of maintaining the illusion that conduct and motivation are more rational and more ethically respectable than they really are. Rationalization can perform the function of protecting the ego against unpleasant or disappointing external circumstances. Allport (1938) discusses in this connection the alternative types of 'sour grapes' and 'sweet lemons' rationalization; the former is a reaction to disappointment, the latter an adjustment to unpleasant inevitability. In her empirical study of self-deceptive mechanisms Frenkel-Brunswik (1939) noted a form of rationalization involving understatement, for which she suggested the term *justification of a defect*. For example, one subject who was categorized by others as extremely aggressive reported of herself: 'I do not let myself be intimidated.'

Frenkel-Brunswik notes another important and interesting mechanism which she called *distortion into the opposite*. This is somewhat related to reaction-formation, and takes the form of maintaining self-esteem by proclaiming to oneself and others possession of qualities quite unlike those actually possessed. For example, one of this investigator's subjects was categorized by all four judges as lacking in sincerity. Of himself the subject declared that he was 'sincere under all conditions'. The serious claiming of qualities which are the apparent opposite of those actually possessed may be a frequent source of unconscious humour. Thus the overthrifty person may assert, 'Well, anyway, nobody would call me mean'; the anti-Semite, 'I am not prejudiced against the Jews, but . . . '; and the self-opinionated, 'I am essentially modest.' It may be noted that distortion into the opposite is like isolation in that it has some bearing upon the subject-matter of psychology.[1]

The reader will find observational and introspective instances of these and other ego-defensive mechanisms. More empirical investigations of the kind noted in this chapter are needed. A valuable contribution to scientific psychology and its applications has been

[1] A theorist may assert his awareness of principles that in fact he ignores in his theory construction.

made by Anna Freud (1936), whose theoretical discussion and illustration of such mechanisms is strongly recommended for further reading.

SUMMARY

Various mechanisms of ego-defence are distinguished and illustrated. These serve the function of protecting the ego against unpleasant environmental happenings, and against strong affect and impulse. They result in many illusions about one's own personality and motivation. Much work of systematic elucidation of these mechanisms has been carried out by recent psychoanalytic writers. Some non-analytic empirical investigations have been attempted, and more are needed. Among such mechanisms are: denial, projection, introjection, reaction formation, isolation, repression, regression, fixation, undoing, ego-restriction, rationalization, moralization, and distortion into the opposite. It is suggested that some of these mechanisms, notably isolation, introjection, and distortion into the opposite, have reference to the psychological analysis of scientific thinking and of errors of such thinking.

RELEVANT READING

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CHAPTER XII

Personality and Personality Exploration

The psychology of personality is concerned with experience, behaviour and motivation from the standpoint of what characterizes an individual and distinguishes him from others. Personality arises from an interaction of the organism with its environment. Although personality may be viewed as an integrated whole it may also be studied in terms of its component parts, its traits. Some techniques for personality study are designed to measure such traits. Others are designed to allow the subject to project his characteristics on to some standardized but unstructured medium. The resulting projections are then analysed. There is, unfortunately, little agreement as to the main categories in terms of which personality can be studied. It is probable, however, that here as elsewhere factor analysis will have much to contribute to the task of classification in this area of psychology. The earlier approach in terms of personality types is not favoured by the contemporary psychologist.

In his important contribution to this field of psychology Allport examines forty-nine definitions of *personality* and arrives at his own as a synthesis of contemporary usage:

> 'Personality is the dynamic organization within the individual of those psychophysical systems that determine his unique adjustments to his environment' (Allport 1938, p. 48).

Allport distinguishes personality from *character*. Personality is a purely positive concept; character is the equivalent normative concept:

> 'Character is personality evaluated, and personality is character devaluated' (*op. cit.*, p. 52).

Personality can be regarded simply as the body-mind which we call 'John Doe' as opposed to the body-mind we call 'Richard Roe'. John Doe's representative personality traits might be extraversion,

need for autonomy to instigate his own activities and resist coercion, high intelligence and average level of aspiration. The configuration of these and other traits is such as to characterize John Doe as an individual, as one whom we can distinguish from Richard Roe and others. The representative character traits of John Doe might be honesty in money matters, conscientiousness, loyalty and reliability. Character traits, unlike personality traits, have reference to some system of ethical evaluation. On the whole the psychologist is concerned with personality and cause and effect, rather than with evaluation of such personality in terms of one or other set of ethical norms. Nevertheless the applied psychologist may be interested in the character of persons he interviews as applicants for certain occupations. He may be interested in their dependability, financial honesty and (in the case of military personnel selection) in such character traits as courage. An important investigation in the field of character (the 'Character-Education Inquiry') was carried out by Hartshorn and May (1928). Children were subjected to a variety of situations in which copying, telling untruths, and other forms of cheating behaviour were possible. The investigators were concerned to discover the extent to which honesty and dishonesty are consistent character traits, whether, for example, the child who tells untruths is likely also to be dishonest in other ways. Interpretation of the results of the investigation has been a matter of some controversy. There appeared to be evidence, however, that honesty is a more consistent trait than dishonesty. The generally honest child tended to resist situational temptations, while the child who was dishonest in some situations might or might not behave honestly in others.

Allport's distinction between 'personality' and 'character' will be adopted in the present text. To avoid confusion it may be noted that some psychologists, including McDougall and Shand, use the word 'character' in a different sense. Character (McDougall) approximates closely in its meaning to the term 'personality' as used by Allport and probably most contemporary psychologists. From personality and character we may, following Allport, distinguish *temperament*. Temperament comprises the characteristics of an individual's emotional life, the subject's degree of emotionality, the sthenic or asthenic direction of his emotions, and his general or more specific emotional thresholds (for fear, anger, etc.). A fourth term of current usage is *ego*. From the standpoint of mental struc-

ture the ego may be regarded as the aspect of the psyche to which such words as 'I', 'me' and 'mine' have reference. Introspection supports a distinction between the ego as the self in the narrower sense, and the impulses, emotions, 'temptations', and compulsive-obsessional tendencies which, in an important sense, seem to come from outside the self. From the standpoint of mental functioning the ego may be regarded as the aspect of the individual which is concerned with reality, adjustment to reality, perception of the external world, and with the reasons and rationalizations which the subject advances for his behaviour and its motivation. Some psychologists have distinguished from the ego the *shadow* or 'alter ego', the rejected, repudiated parts of the personality. The shadow has been held to have played a part in literature in the qualities attributed to such characters as Stevenson's Mr Hyde, Goethe's Mephistopheles and Dickens's Quilp. It is probable that rejected 'shadow' aspects of personality have exerted an influence on the development of products of collective thought, and upon the development of the conception of the negative, destructive and malevolent deity—such imaginative creations as Satan, Iblis, Ahriman, Mara, Set and their equivalents.

The nature of the subject-matter and methods of personality psychology will become apparent from a consideration of an important study in this field. This study was carried out by Murray (1938) and his colleagues of the Harvard Clinic and represents probably the most intensive investigation of normal human personality yet made. It was confined to a small group, namely fifty male individuals 'of college age'. The co-operative activity of a large team of experts in different fields enabled very detailed accounts to be obtained of the more important personal characteristics of each subject. Such an investigation may be criticized on the grounds that its findings are unrepresentative of the population as a whole; on the other hand, it can be defended on the grounds of its intensiveness and thoroughness. Strictly speaking, the results of any investigation apply no further than the group on which they are obtained. On the other hand, the very intensiveness of this group investigation makes us more than usually confident that the findings are applicable to the individuals studied. Again, in view of the valuable contributions made to personality and other branches of psychology by results obtained on such admittedly unrepresentative groups as those studied by the psychoanalysts, the Harvard

Clinic investigation seems worthy of special attention. The subjects of the study were fifty *normal* young men. The investigators included in their number some of the more important of the contemporary students of personality. The findings were stated in terms of a set of concepts agreed upon by all who took part.

1. Need and Press

Personality may be approached in terms of the motives which characterize an individual and distinguish him from others. Two important concepts accepted by the investigators as a basis for their study were those of 'need' and 'press'. 'Need' implies an approach to personality from a motivational standpoint; the subjects were studied in terms of the nature, strength and organization of the motives which distinguished them as personalities from other personalities. Some of the concepts agreed upon to denote specific needs were taken from common psychological usage: narcissism, dominance, aggression and deference. Others were contributed to psychological terminology by the investigators themselves: blame avoidance, sentience, succorance and infravoidance. It is apparent from the study that care was taken to avoid catholic categories that might include several variables which might vary independently of one another. Thus Murray's 'aggression' is something rather specific. What some other psychologists might loosely term 'aggression' was sub-divided to include not only 'aggression' (Murray), but also such needs as achievement, counteraction (making up for failure by re-striving), dominance, achievement and autonomy. The rather broad categories of 'ascendance' and 'submission' which make up the test designed by Allport (1928) may be contrasted with the careful elucidation of constituent variables carried out by the Harvard investigators. A distinction is made by the investigators between 'first level functioning' or overt, public behaviour, and 'second level functioning', or ideation. On the basis of comparison of the fantasy products of the thematic apperception test with other data, it was possible to calculate correlations between such outward, public behaviour and ideational activity for the various needs investigated. Thus no correlation was found between overt, public behaviour and ideation in respect of the needs achievement and aggression. The need dominance correlated to the extent of 'over ·40, and the need sex inversely as highly as from

·33 to −·74' (Murray 1943). It is evident that the motivational variables with which the investigators were concerned had reference to personality both in terms of experience and in terms of behaviour. They had reference both to the outward, behaviouristic qualities which distinguished one individual from another, and to similar differences in experience—in ideational and fantasy life.

Press is contrasted with needs. Needs comprise the motives of a personality. Press comprises the specific environmental influences on such a personality. To illustrate, one personality might show a strongly developed need for nurturance—the need to support, comfort and behave in a generally maternal way towards others. Another individual might be subjected to a press of nurturance—to forces from his environment of a supporting, protective and sustaining kind. Again, instead of himself manifesting a need for deference, for the admiring and eulogizing of some other person, the subject might be subjected to press of the deferent kind: others in his environment who try to admire and eulogize him. It is apparent, then, that many of the terms used to designate needs are applicable also to press. To avoid confusion the investigators employed either the letter *n* or the letter *p* before such terms as had both applications.

Particularly if some form of rating scale is used, the concepts of need and press, and the more specific kinds of need and press distinguished, provide a valuable basis for conceptualizing an interview. They may be used in autobiographical exercises relating to the influences (press) of relevance to the formation of the reader's own personality. They have reference to the development of the kinds of motives (needs) which have arisen. To gain familiarity with the concepts it is suggested that the reader attempt an account of his own experiences during some limited period of time, let us say the time elapsing between reading this page and consulting the original text referred to. In the period of an afternoon or a day an individual may be subjected to such press as aggression (criticism), nurturance (sympathy of a friend), narcissism (the vanity of some associate), dominance, etc. In the same period he will manifest in overt behaviour, or perhaps ideationally, certain needs. The exercise of listing such needs and press is a profitable introduction to the subject of personality psychology.

As has been noted in earlier chapters, there is a difference between the social situation which confronts an individual and his

cognition of such a situation. Sometimes there may be considerable discrepancy. In Koffka's terminology (1935) press has its 'geographical' and its 'behavioural' aspects. For example, press of aggression may be cognized when imagined rather than actually present, perhaps as a result of projection on the part of the subject. This distinction is admitted by Murray (*op. cit.*) and it is pointed out that in the last analysis it is behavioural rather than geographical press which is of ultimate importance to the psychology of personality. For example, in the course of an interview it is important to elicit the subject's own ideas about what has happened to him. It is his *awareness* of having been spoiled, victimized, dominated or flattered which is available to the psychologist in the interview. It is probably safe to assume that this awareness, whether valid or otherwise, is of ultimate importance in the determination of personality. A general classification of kinds of press is offered by the Harvard investigators. Press may be positive, of the supporting, helping kind; it may be negative, of the rejecting, isolating and aggressive kinds. (Contrast *p.* nurturance, order, counteraction, etc., with *p.* rejection, aggression, insupport, etc.)

A brief account of some of the procedures adopted in the study may be given. They included interviews supplemented by questionnaires and projective tests. Six months later a check-up was carried out of the subject's memories of the interview. Each subject prepared an autobiography in his own words; this was subsequently interpreted by the investigators in terms of need, press and other concepts. Other interviews, conversations, questionnaires and free association techniques were employed in the study. A substantial amount of testing was carried out: intelligence, special aptitudes, sensori-motor learning, memory, etc. Attitudes and sentiments were assessed. Various projective techniques, including the Rorschach and thematic apperception tests, were used. Character, conditioning, hypnotizability, level of aspiration and aesthetic interests, together with numerous other characteristics, were investigated. Each individual was assigned to one of the investigators, who collected all observations and other data relating to the subject. Hours were spent in conference on the report prepared on the basis of the data, which were summarized. A detailed account of a single case history of one of the individuals investigated appears as an illustration in the account of the study.[1]

[1] Murray 1938, Ch. 7.

2. Personality Typology

Since science has important classificatory functions it is understandable that many attempts should have been made to divide human personalities into types. It has not always been fully appreciated by the serious investigator that the potential number of personality typologies is infinite. For this reason reference may be made to the contributions of a humorous writer who has often ably exploited this fact. Thus P. G. Wodehouse has postulated two types of personality—those who can and those who cannot stop a dog fight. Again, G. W. Allport in a lighter moment suggests a threefold typology in terms of the kind of toothbrush used. *Punch* has made many such attempts at personality typology; many of these will be well known to the Londoner. For example:

> Are you a peer, or a millioneer,
> Bottled, or bitter or mild?
> A butt, a buffoon, or a heavy dragoon,
> Or a chef, or a churl or a child?
>
> Whether you're beautiful, baleful or bad,
> Slatternly, slipshod or sleek,
> There's no need to look so uncommonly sad,
> Have you seen *Punch* this week?[1]

With an awareness of the unlimited possible ways of typing personalities we may proceed to examples of serious typologies. It is emphasized that there are no 'correct' or 'incorrect' ways of typing personality. There are only useless, though sometimes amusing, ways and more useful ways.

One of the best known classifications is that of Jung in terms of 'direction of libido' (see Chapter IV). The *introvert* is characterized by an inward turning of the libido, or mental energy; the *extravert* by an outward turning of the libido. Both types can perhaps be viewed from a somewhat different aspect. Extraversion seems to involve a kind of generalized avoidance of one's own psychological processes (emotions, fantasies and impulses). Introversion involves rather a generalized avoidance of the external world, of the facts of exteroceptor perception. Introversion and extraversion have reference also, it would appear, not only to human types, but also to

[1] Reproduced by kind permission of the proprietors of *Punch*.

more temporary mental sets. Many readers will probably have had the experience of escaping from a conversation which is beginning to touch on deeper emotional involvements by making reference to or perceiving some trivial feature of the immediate environment; attention is referred to this external thing and away from the internal emotional preoccupations. A patient during analysis may intentionally or semi-intentionally start to associate on the analyst's room and its furniture, and thus avoid a chain of associations which he would prefer to leave unspoken. Readers will be acquainted with the grosser kind of extravert whose reluctance to face his own psychological processes has become habitual. As has been noted (Chapter IV), such investigators as Burt and Eysenck have presented factor-analytic evidence in support of an introversion-extraversion dimension of personality. The modern tendency is to regard introversion-extraversion as a trait or bipolar factor, rather than as involving two distinct personality types. Jung's original typology had other aspects. In addition to the 'attitude types' mentioned, he included four 'functioning types': thinking, feeling, sensation and intuition. There are thus eight possibilities, e.g. extravert feeling type, introvert thinking type, etc. Further intermediate types were added, e.g. sensory-thinking as opposed to intuitive-thinking, etc. Such division and sub-division tends, however, to be somewhat unsatisfactory, particularly if methods of typing are of the subjective kind. The outstanding *reductio ad absurdum* of such division and sub-division is to be found in the typology of Fourier (1772–1837). Fourier postulated no less than 810 types. His claims for his typology are not greatly enhanced by his placing of himself in the exalted category of 'super-omnigyne', a rare type occurring only four times in every three billion people (Allport 1938). Fourier's classification is of historical and methodological interest; it provides a warning for all times against over-elaborate typologies.

Other typologies were those of Plato and of the Pythagoreans whose thought probably exerted much influence upon Plato. In more recent times we find Galton's typology in terms of human imagery, and Jaensch's attempt to type human beings in terms of the phenomena of eidetic imagery. On the whole, however, the contemporary psychologist is unsympathetic towards the typology approach to personality. He deals with personality, either as a unique whole or in terms of a number of measurable traits. Some typologies, for example those of Jung and Spranger, have formed a

basis for such traits, and for tests designed and standardized for their measurement.

3. Psycho-Somatic Typology

The view that there are significant relations between type of physique and type of temperament is an old one; it dates back to such early thinkers as Empedocles (490–430 B.C.) and the Pythagoreans. It was not, however, until the time of Kretschmer (1921) that a thorough empirical investigation was attempted of this hypothesis. Kretschmer's somatic types, asthenic, athletic and pyknic, are more satisfactory than his temperament types—schizothyme and cyclothyme. It is difficult to maintain that schizothyme-cyclothyme forms, in any way, a continuous series. It may be asked what must be added to, or subtracted from, a temperament characterized by cyclical swings of mood to turn it into the shut-in temperament of the schizothyme. The two temperament types do not readily resolve themselves into a continuous temperament trait. Kretschmer's work is nevertheless historically interesting and important; it formed a basis for the subsequent investigations of Sheldon and his colleagues, to which we may now turn as an example of a recent contribution of some importance made from the standpoint of typology. Our summary cannot do justice to the qualities of the investigation as an instance of thorough scientific method competently applied; for this reason Sheldon's work is worthy of attention in its original texts.[1]

This typology, both on the somatic and temperamental side, has the advantage of being quantitative, of being in terms of a seven-point ranking scale. The three basic components of physique are *endomorphy*, *mesomorphy* and *ectomorphy*. Thus the modal physique type is stated as a '4 : 4 : 4' (endomorphy 4; mesomorphy 4; ectomorphy 4). In contrast to the modal '4 : 4 : 4' body type are the three possible extremes: '7 : 1 : 1' (extreme endomorph), '1 : 7 : 1' (extreme mesomorph), and '1 : 1 : 7' (extreme ectomorph). Intermediate possibilities between these extremes are thus allowed for in wide variety, and in a form compatible with normal distribution of the three somatic components. Thus a '6 : 4 : 4' would be a body type, modal in other components, but predominantly endomorph. The same notation is used for the three temperament variables of

[1] Sheldon *et al.*, 1940, 1942.

viscerotonia, somatotonia and *cerebrotonia.* Objective assessment of body-type is possible, and such assessment may be made (on the basis of the criteria laid down) by semi-skilled assistants. The temperament-typing is of a more subjective kind, but satisfactory inter-correlations have been demonstrated between the assessments of different investigators in check experiments. Endomorphy is characterized by a predominance of the digestive viscera; it has much in common with Kretschmer's pyknic type. Mesomorphy involves predominance of body-structure of the bone and muscle kind; it bears comparison with Kretschmer's athletic body type. Ectomorphy is distinguished by relatively poor protection of the nervous system and sensory tissue from the external world. There is slight development both of viscera (endomorphy) and of somatic bone-muscle structure (mesomorphy). The type has features in common with Kretschmer's asthenic category. A parallel to these three body types was found in the three temperament categories mentioned above. The main correlations obtained may be given:

Somatic type	*Temperament type*	*Correlation*
endomorphy	viscerotonia	·79
mesomorphy	somatotonia	·82
ectomorphy	cerebrotonia	·83

A general conclusion is advanced by Sheldon (1942). If we are to regard correlation as a measure of the degree to which two variables are made up of common elements, these (and other) correlations suggest that body-build and temperament may be an expression, at their respective levels, of essentially common components.

The temperament types were arrived at from an examination of 650 temperament traits found in psychological writings. These were eventually reduced to 50. The traits which comprised the three components were required to satisfy the criteria of positive inter-correlation of at least ·60 with one another, and consistent negative correlation of at least −·30 with every trait in each of the other two groups. The three trait clusters thus established comprised viscerotonia, somatotonia and cerebrotonia. Viscerotonia involved a predominance of influence (prepotency) of the digestive viscera over the activities of the subject. Traits included relaxation, love of comfort, pleasure in digestion, and needs for affection approval. Somatotonia involved a prepotency of the body-muscles over activities of the subject. Traits included assertive posture,

need for exercise and for action, and the possession of generally 'energetic' characteristics. Cerebrotonia involved predominant influence of the cerebrum, of mental activity together with inhibition of visceral and somatic muscular processes. Traits included unsociability, poor sleep habits, need for solitude when troubled, restraint in posture and inhibition in social relations.[1] Of the three types Sheldon notes that the viscerotonic is 'glued firmly to the earth'; the somatotonic 'has wandered somewhat' from satisfaction of nutritional and other needs, but has developed powerful equipment for offence and defence; the cerebrotonic has wandered further still, and has abandoned both visceral mass and bodily defence in the interests of greater exposure and higher sensitivity of the receptor organs. The study represents an important approach to personality and its possible typings from, as Sheldon says, 'the solid bone and flesh' of the individual upwards. Methods are those of careful physical measurement, psychometric testing and experimental and statistical procedures; apart from the conclusions reached Sheldon's methods are worthy of study in themselves. We may await further contributions from this standpoint; such contributions are of interest to the anthropologist and the comparative anatomist as well as to the psychologist.

4. The Interview

It has often been held that the most satisfactory technique for the study of personality is the interview. For example, in a symposium on the subject of personality Maberly (1946) asserted that clinical interviews are 'far more reliable' than tests. Maberly, perhaps wisely, cites no figures as to the reliability and validity of clinical interviews in support of his contention; such omission is often apparent on the part of those who maintain this viewpoint. This assertion is nevertheless worthy of examination, since the views expressed are not unusual and represent a more sophisticated statement of a viewpoint which often greatly hampers the application of scientific methods in this field. In his summary of the symposium Burt (1946) notes that he and the other contributors, G. W. Allport and Thomson, are in agreement that the study of personality can and should be pursued by scientific methods. An essential accompaniment of scientific method is validation of the techniques

[1] Sheldon, *op. cit.*

employed, whether these be tests or interviews. Validation studies of the interview have, on the whole, been unfavourable. Vernon and Parry summarize a number of studies of reliability and validity of interviews. Some showed inter-correlations of as high as ·86, others as low as ·23 between interviewers. An investigation carried out by Magson of subjective assessments of intelligence yielded a correlation as low as ·12 between interview assessments and intelligence test scores. The two writers stress the superiority of the psychologically and psychiatrically trained interviewer. Of lay interviews it is contended, on the basis of data surveyed, that though these are *sometimes* as good as those of the trained scientific interviewer, 'there are such large variations' that it is as well to rely primarily on psychometric tests.[1]

In connection with this evidence of extreme variability of the skill of interviewers it may be noted that there is the likelihood that the less skilful interviewer will be one who will have little awareness of his own incapacity. He may place an altogether unrealistic value upon his assessments while maintaining a generally antagonistic attitude to measures of reliability and validity. The sharp distinction between interview and psychometric testing which is often maintained by the advocate of the interview also needs examination. The choice is not necessarily, as it has often been held to be, between interview and test. In respect of the cognitive aspect of personality (intelligence, aptitudes, etc.), the superiority of the group test to the subjective assessment has been so often demonstrated as to need little defence. On the other hand, in the orectic, temperament field, the choice may be one of unaided interview or of testing of a kind which involves an interview situation anyway. The choice is between the interview alone and the interview plus 'other techniques'; the term 'test' is not always strictly applicable to such other techniques: projective methods, free association, word association, active imagination, etc. With this kind of choice in mind we may turn to further illustrative information about the unaided interview and what it may mean. In one study interviewers' assessments were correlated with the occurrence of the event predicted by them. The skill of different interviewers was found to vary widely and correlations ranged from ·15 to ·80 for one series of cases. Despite the validation study equal weight continued to be given to the assessments of the interviews

[1] Vernon and Parry, 1949, p. 163.

valid to the extent of only ·15 and to those valid to the extent of ·80. It was statistical validation itself, not the invalidated method of selection, which was rejected by the authorities concerned.

The method of unaided interview must be examined from a cautious and critical standpoint. As in the instance taken, the high social prestige of the interview and the low prestige of statistics may hamper the application of scientifically sound methods of selection. Vernon and Parry report that those engaged in the selection of air crews during the second world war had to overcome certain questionable assumptions. Among these was the belief that the 'right' and 'wrong' types for air crews could be detected by the simple interview. The superiority of scientifically validated methods of military personnel selection to the 'old methods' is very convincingly demonstrated by these two psychologists.[1] The dangers of unaided and unvalidated interviews is that future lives are likely to be greatly influenced by the results of them. It is important to realize that the skill of interviewers varies within wide limits; an interviewer's assessment of his own abilities may bear no relation at all to his actual competence. The choice is not necessarily one between interviews and tests, but often between unaided interviews, which have probably never been validated, and the fullest available equipment of modern psychology, together with acceptance of adequate validation. Between two such alternatives there is no doubt as to the choice which the applied scientist himself must make. On the other hand, it is not always possible to induce others in a military hierarchy to accept this. A difficulty arises in the matter of validation of interviews; it is often impossible to compare interviews in terms of a single set of variables. Standardization of concepts, such as was achieved in the Harvard investigation considered above, and the use of the method of five or seven point ranking scales is desirable. This both assists satisfactory interviewing and facilitates validation of such interviewing.

5. Measurement of Personality

For the moment we are concerned with personality rather than temperament, which is an *aspect* of personality. There is much disagreement as to the orectic dimensions of personality—the more important temperament traits. On the other hand there are avail-

[1] Vernon and Parry, *op. cit.*, esp. pp. 119 ff.

able very satisfactory measures of the cognitive aspects of personality—of intelligence, of factors of the 'v' and 'g' kinds, and of manual, mechanical and other aptitudes. In his study of the personalities of the principal Nazis during the period of the Nuremberg trial Gilbert, the official psychologist, administered such tests as the Rorschach. Nevertheless he also included tests of intelligence. It is quite evident that the higher I.Q.'s of individuals such as Seyss-Inquart, Schacht and Goering distinguished their personalities from those of Streicher and Kaltenbrunner in quite important respects. The reactions of Goering to a comparison of his own I.Q. with those of the others was also an illuminating line of approach to personality study.[1] A profile of personality traits should therefore include results of tests of the cognitive aspects of personality; ability and capacity exert their influence as limits within which personality develops. Aptitudes may also be of some relevance both to understanding and predicting important aspects of behaviour. Without well defined aesthetic abilities Beethoven and Rembrandt would have lived very different lives. Again, the eidetic imagery of the poet Blake exerted its influence upon his personality, upon his religious affiliations, upon his poetry and his painting. Likewise the colour vision abnormalities of some investigators have probably influenced their scientific interest in problems of vision, including that of colour blindness itself.

There is an important cognitive aspect of personality and the best methods of assessment in this field are unquestionably those of psychometric measurement. Similar methods have been applied with success in the field of temperament. As has been noted (Chapter IV), Burt found evidence for a general affective factor of 'emotionality' and for a second important factor of a bipolar kind which had reference to Jung's concepts of introversion and extraversion. A third important orectic factor in the field of conation was established by Webb and is considered in the following chapter. Eysenck asserted a general neuroticism factor which seems to coincide closely with that established in Webb's investigation. Eysenck's studies have also supported the Burtian bipolar temperamental factor, and have extended the inquiry into the field of psychopathology. Another attempt to establish the more important temperament traits, by the method of factor-analysis, has been that of R. B. Cattell (1947). One of the traits with which Cattell

[1] Gilbert 1948, 1948 (*a*).

has been particularly concerned is 'perseveration'. Individuals differ in the extent to which they manifest mental inertia—the extent to which their mental processes continue after cessation of the conditions which begin these processes. Thus without, and even in spite of, any act of will, a verbalized thought or image may persist. A tune 'runs through the head', and continues to do so despite the subject's contrary wishes. The extreme of low perseveration is evident in the 'flight of ideas' of the manic; the opposing inertia of high perseveration appears in obsessions and compulsions. Fatigue and oxygen lack are two constituents favourable to high perseveration. On a number of occasions the present writer has watched the performance of subjects in a decompression chamber when asked to write '20,000 feet without oxygen' (this being a description of the pressure conditions in the chamber at the time). Frequently what was written was '2000000 . . .' the '0s' continuing indefinitely under the influence of perseveration. This phenomenon was named 'perseveration' by Müller in 1900. As a variable personality trait it has been studied by numerous factorial investigators.

Comparisons between factors established by Cattell and those of such investigators as Burt and Eysenck must be made with caution. Difficulties arise from differences of factorial methods, and in the kind of 'existence' attributed to two different kinds of factors. These are discussed in an earlier chapter (Chapter IX). The studies of Eysenck and his colleagues (1947) embraced physique and constitution, intelligence and aptitude, and more especially the field of temperament. Numerous tests were designed or adapted. For example, a combination of the scores of tests enabled hypnotizability to be predicted with a very high degree of accuracy. A multiple correlation of ·96 was obtained.[1] Eysenck presents evidence for at least two, and possibly three, different kinds of suggestibility. Various factors were established in the field of aesthetic appreciation, sense of humour, and in relation to expressive movements.[2] Eysenck concluded that there are two important categories of neurosis: hysteria and dysthymia. Significant differences between them were shown to occur in terms of a very large number of variables, to which the tests designed had reference. Another field of inquiry still being pursued is that of attitudes. Eysenck (1947 (*a*)) factor-analysed replies to an omnibus attitude test and showed that specific attitudes inter-correlated. Two important bipolar factors

[1] Eysenck and Furneaux, 1945. [2] *Op. cit.*

emerged and were named 'radicalism-conservatism' and 'tender mindedness-tough mindedness'. That attitudes towards specific issues relate to generalized attitude-variables is an interesting and important finding. Factor-analytic research may prove to be as successful in establishing the main orectic dimensions of personality as the method has been in the past in the classification of the cognitive dimensions.

6. Projective Techniques

The projective technique has characteristics which resemble those of free association and dream analysis. It has an additional component—some standardized but ambiguous, unstructured material. The investigator obtains the subject's associative or interpretative response to this material, and the response is then analysed. A defect of the alternative pencil-and-paper kind of personality test is the amount of constraint it imposes upon the subject's self-expression. In the case of the projective technique the subject and investigator are more likely to agree that a satisfying and satisfactory expression of the personality has occurred. Possibly the reader will have experienced (as subject or investigator) the very different emotional reactions which accompany the administration and performance of many of the alternative pencil-and-paper personality tests.

The material used in projective tests may be visual-verbal, pictorial, or of some other kind. Alternatively it may be auditory—verbal or non-verbal. Examples may be cited:

I. *Visual Tests*
   (*a*) *Verbal:* Sentence completion.
   (*b*) *Pictorial:* Thematic apperception test (Murray). Picture-frustration test (Rosenzweig). Szondi's test.
   (*c*) *Other:* World construction tests (see Katz 1948). Mosaic test (Lowenfeld). Rorschach test.

II. *Auditory Tests*
   (*a*) *Verbal:* Active imagination (Jung).
   (*b*) *Non-Verbal:* Tautiphone test (Skinner, Rosenzweig).

The visual but non-verbal kinds of materials are those most commonly used. In 1895 Binet and Henri suggested the use of inkblots in the study of imagination. Early studies with this medium

were carried out by Whipple. But it was not until 1921 that the Swiss psychiatrist Hermann Rorschach laid the foundations of a standardized approach to personality exploration on the basis of the subject's interpretations of a set of bi-symmetrical ink-blots.

The *Rorschach Test* comprises a set of ten standard ink blots; some coloured, others achromatic. The *Rorschach Research Exchange* is a journal devoted to this test and its applications. In a recent work Bell (1948) lists no less than 798 references to the test, its history and its research applications. Effective administration and scoring of the Rorschach requires considerable experience. Administration of the test in its usual form involves individual presentation of each of the ten ink blots to the subject, who is required to tell the examiner everything he sees in the card. The investigator records what is said by the subject during the testing; a set of symbols which have been evolved in connection with the test greatly facilitate such recording. Mastery of some system of speedwords or shorthand or a sound-recording apparatus is of assistance with this and other projective tests. Recording of responses is followed by what is termed the 'inquiry', in which the subject is questioned about his responses. Klopfer and Kelley (1942) suggest an additional third stage of what they call 'testing the limits'. This involves questioning of a more direct kind; the replies obtained are of assistance to scoring, but are not themselves scored. Other investigators have introduced monochromatic reproductions of the standard ink blots used; after the test the subject is required to indicate in pencil the position and other features of the shapes which he has seen in the blots. After these or other alternative methods of administration the data obtained are scored. The traditional system of scoring the Rorschach test is highly complex. Its complexity is not diminished by the vocabulary and symbols which have developed in connection with the test. Many of the abbreviations used have reference to the German rather than the English language. Illustrative aspects of scoring may be noted.

The investigator assesses, among other things: (1) Extent to which the subject employs or rejects the use of colour; (2) ratio of whole responses (total ink blot) to part responses; (3) total number of responses, total time and reaction time for specific blots in the series; (4) the proportion of unusual responses and the nature of these; (5) extent to which form and movement play a part in responses.

The Rorschach test has reference to the cognitive as well as to the temperamental aspects of personality; assessments of intelligence may be made. The test has been used not only in psychopathology and normal personality psychology, but also in that branch of medical psychology which deals with the kinds of personality associated with different organic illnesses. It has been employed in the study of alcoholism, fatigue, stammering and malingering (Bell 1948). Stern (1938) contended that the symmetry and sharp outlines of the Rorschach test imposed limitations on imagination and free fantasy. He and Struve developed an alternative technique involving *cloud pictures*. These were without either symmetry or sharp outline.

The *Thematic Apperception Test* (TAT) ranks with the Rorschach as one of the two main projective techniques in present use. It was designed by Morgan and Murray and employed in the Harvard Clinic personality study discussed above. Murray's concepts of need and press are of basic importance in the scoring of the test although, as we have seen, they have other useful applications. The TAT comprises a set of 30 pictures: from this four sets of 20 pictures suitable for men, women, boys or girls can be made up (Murray 1943). Pictures are presented to the subjects in two sessions, each involving showing ten of the total twenty. The subjects are required to make up stories about each of the pictures, such a story including what has led up to the events portrayed, what is happening, and the subsequent outcome. Such stories are likely to reflect the subject's own interests, emotional preoccupations, needs, and the press which he has experienced. Recurrence of theme in a number of stories is believed to be of special significance. In addition to needs and press the TAT reveals information about personality characteristics of other kinds. Two personality traits to which the test has relevance may be taken as illustrative examples. 'Conjunctivity-disjunctivity' relates to the degree of harmony of the various needs and purposes of the subject. This aspect of personality is discussed in the following chapter.

A second important trait is 'intraception-extraception'. Intraception reveals itself in a preoccupation with the thoughts, feelings and other psychological processes of the characters. Extraception is indicated by the construction of stories which depend for their plots more on objective happenings than on such psychological pro-

cesses. Since standard TAT pictures give rise to stories which are readily scored in terms of this dimension, the same concepts would appear to have relevance to literary creation more generally. One may contrast the characteristically intraceptive poetry of Coleridge with, for example, the highly extraceptive character of Sir Henry Newbolt's verse. It does not necessarily follow that a person who produces intraceptive literary creations rather than extraceptive ones is necessarily of an intraceptive personality type. It seems possible to describe the art products—though not necessarily the personality of the artist—in terms of this variable. Intraception-extraception is a motivational trait which is fairly easily assessed and of some fundamental importance. Fiction may be considered in terms of this variable. For example, the characteristics of two famous detectives of fiction, Sherlock Holmes and Sexton Blake, seem to differ very much in such a respect. As Turner, in his valuable study of this field has pointed out (1948), Holmes is unquestionably superior to Blake in matters of observation and deduction. Blake is unable to tell from a sheet of alternatively regular and irregular writing that it was done 'in a train travelling between Norwood and London Bridge'. The plot of the Holmes novels is predominantly more intraceptive, and Doyle endowed his character with these personal qualities. The same traits seem to have been markedly apparent in the real character on whom Holmes was based, the surgeon Bell of Edinburgh. On the other hand the anonymous and often eminent authors whom Turner tells us contributed to the literature about Blake endowed him with different qualities. Among such qualities Turner lightly comments on skill with fire-arms and 'such specialised attainments as the power to outstare cobras'. The differences between the two kinds of literary production parallel somewhat those between two kinds of TAT story.

A consideration of literature in terms of intraception-extraception would take us a long way to the understanding both of what tends to appeal to young people, and of what their elders are liable to assess as 'good' or 'classical'. While this is only one aspect of a large and complex problem it is an important aspect. In TAT stories and in other products of creative human thought extraceptiveness may be regarded as concern with external happenings. Intraceptiveness involves more concern with thought (including 'deduction'), feeling, and other psychological processes. Human individuals differ in the extent to which they show one or other of

the qualities. Intraception-extraception has been taken as an illustration of the kind of quality with which the TAT is concerned.

The best approach to the Rorschach, TAT and other projective tests is to do the tests oneself first. The more complex concepts may be familiarized by practice with simpler techniques such as self-ranking, autobiographical study or questionnaire. Two variations of TAT administration may be noted. Each story can be restricted to a time limit. Alternatively the investigator may adopt a directive rather than an indirective role as in the Rorschach procedure of 'testing the limits' (above). He can question the subject about his imaginative creation from time to time, particularly towards the conclusion of the test period.

Another projective test that employs pictorial material is the *Szondi*. This is a series of 48 photographs of human faces made up of six sub-sets. Each sub-set contains pictures of eight different kinds of individual, e.g. a paranoiac, an hysteric, a manic and so on. The subject chooses the two pictures most liked and the two least liked from each set of eight. The assumption made is that these preferences for or antipathies towards representatives of the grosser forms of abnormality will reveal the personal characteristics of the normal and abnormal individual himself. The investigator assesses the subject's motivational characteristics, both manifest and latent. Szondi's theory of personality centres on the view that latent traits exert an important influence upon choice of mate, construction of personal ideals and selection of vocation. Some major theoretical contributions have been made by Deri (1949), whose book is at present the best account of the test available in English. Deri draws on the thought of both psychoanalysis and field theory. The concepts introduced by this investigator allow interesting applications of this projective test to the study of either day-to-day or more long-term changes in the emotional life of the individual studied. Much research remains to be done in the investigation of personality in its changing aspects. The Szondi test may well prove a useful tool for future studies in this field.

The *picture-frustration test* of Rosenzweig (1947) comprises 24 line-drawn cartoons, each portraying a 'frustration situation' of the kind which might occur in daily life. Subjects are required to provide first verbal reactions for the person frustrated in each of the situations; these are taken as indicative of the subject's own reactions in similar circumstances. Examples in the adult series of this

test include a 'wrong number' phone call in the middle of the night ('ego-frustration') and the assertion that the subject is a liar ('super-ego-frustration'). Since it is apparent that there may be a discrepancy between what a person will say in such circumstances and what he would like to say, if free from the consequences of such expression, Rosenzweig places his emphasis upon the latter. He is concerned with the first reaction rather than the more considered and probably censored response. The test is scored in terms of modality, type of reaction, and direction of aggression. Direction of aggression includes extrapunitiveness (blaming of another person), intropunitiveness (blaming of oneself), and impunitiveness (a non-aggressive reaction). The reactions are held to be associated with a preference for one or other of the mechanisms of ego-defence (Chapter IX). Thus extrapunitiveness is associated with projectivity and impunitiveness with repression; intropunitiveness has reference to such a mechanism as isolation. Rosenzweig and Sarason (1942) found evidence that impunitiveness correlated with repression as a preferred mechanism of defence and with the trait of hypnotizability. The contention that these three traits are closely associated with one another is termed by Rosenzweig the 'triadic hypothesis'.

The second set of concepts in terms of which the picture-frustration test is scored comprises obstacle-dominance, ego-defence and need-persistence. The obstacle-dominant reaction involves emphasis upon the obstacle; the ego-defensive, emphasis upon the ego; and the need-persistent, emphasis upon the attainment of the original goal despite the occurrence of the frustration. The two sets of categories are combined in the final scoring, and there are, in all, nine possibilities—e.g. predominant, extrapunitive, obstacle-dominant, etc. The test provides a method of approach to the study of individual differences of preference for one or other of the mechanisms of ego-defence. The characteristic ego-defences of an individual are, of course, an important aspect of his personality. Rosenzweig's categories of direction of aggression have been used by him and others in experimental studies.[1] To illustrate, Gatling (1950) presented delinquents and other children with ten puzzles, five of which were soluble, five insoluble. Frustration reactions were assessed. The delinquents showed a much stronger tendency to make extrapunitive responses than the control group.

[1] Murray *et al.*, 1938.

The large number of projective tests at present available makes it impossible to do more than refer to illustrative examples of these. Such tests have given rise to new concepts. While many of the terms may seem strange and unfamiliar, those of such tests as the Rorschach, TAT, picture-frustation studies and others have the important advantage of being directly applicable to the *normal* human personality. Earlier tests, and some contemporary ones, are scored in categories which relate to various kinds of abnormality—neurotic, psychotic or psychopathic. For example the Minnesota 'multiphasic personality inventory' is scored in such categories, and the Szondi test is far from free of this feature. While it may be admitted that the difference between the normal and the abnormal can be over-emphasized, it seems on the whole misleading to deal with the normal personality in terms of psychiatric categories. Not least of the services rendered to psychology by the projective test has been the introduction of many new concepts which are directly applicable to the normal personality without an excursion into psychopathology.

The most serious weakness of even the most widely used projective tests has been the slow progress of statistical validation. To establish the validity (and reliability) of these techniques is not a simple procedure. Much work in this field is being carried out and very much more remains to be done.

7. Other Techniques

Numerous pencil-and-paper tests of personality have been designed. Some have been of poor quality and dubious validity and have for this reason soon ceased to engage the attention of the psychologist. Others have been of more satisfactory design and better standardized and validated. As an example of this better type of test we may take the Allport and Vernon 'study of values' (1931). This is based on Spranger's attempt to deal with personality in terms of six value types. Spranger's six types are taken as value *traits* and the test measures the predominance of religious, social, aesthetic, political, economic, or theoretical values regarded as influences upon the long-term motivation of the subject. Personality is approached from the standpoint of its predominant integrating factor or factors—what McDougall would have called its 'master sentiment'. Much research has been done with this test. It

has been found that there is a basic sex difference, that religious, social and aesthetic values predominate more frequently in women, and political, theoretical and economic values more frequently in men.

Various kinds of association technique have been discussed in Chapter VI. Other methods involve study of expressive movements. There is, for example, some evidence that graphology approaches are not necessarily invalid, and that the study of handwriting as a form of expressive movement may contribute to the understanding of the human personality. Other methods involve modifications of the interview procedure. For example, in the 'stress situation interview' the subject is confronted with conditions likely to induce emotional upset, and assessments are made under these conditions. He may be given a task of sensori-motor co-ordination or some other such task. Assessments both of expressive movements and of emotional upset, liability to fluster, etc., during performance of a co-ordination task have been found to have considerable predictive value in the personnel selection of air crews (Rabey and McKellar 1944). A less drastic variant of the interview has value in personnel selection for, let us say, a technical trade. The interviewer himself is possessed of a certain technical skill. He and the applicant perform a task of a kind which belongs to the trade for which suitable persons are being selected. The performance of the subject is observed by the interviewer and his capabilities assessed from this performance.

We conclude with a brief reference to the technique of 'active imagination' derived from Jung's clinical procedure. This is held to involve 'keeping passive and receptive' while paying attention to what 'emerges from the unconscious' (Adler, G., 1948). For example, the subject may be asked to give an account of the thoughts and feelings which arise when he thinks about a half-remembered dream. He may be asked to describe, with eyes closed, what he imagines the contents of the room to be like. Or he may be required to supply some information which he does not possess and about which he must employ imagination—for example, to name a person whose real name he does not know. Such circumstances are particularly favourable to the revelation of emotional involvements, sentiments, personal needs and other traits. The procedure embraces features of introspection, free association and the projective technique, though it lacks the material medium employed in the

latter technique. The implicit assumption is that there will be a 'sufficient reason' why just this response and no other will be made. In Adler's phrase active imagination involves simply 'intentional concentration on the processes taking place'.[1] This simple technique merits emphasis in view of the features it has in common with other procedures. Systematic application of active imagination techniques with large groups of subjects might provide further important points of contact between academic and applied psychology on the one hand, and the intensive (rather than extensive) studies of the psychiatrist and clinical psychologist on the other.

SUMMARY

The psychology of personality deals with the individual and the behaviour and motives which distinguish him as an individual, rather than with those he has in common with others. Allport's distinctions between personality, character and temperament are considered and adopted. The important Harvard Clinic study of 1938 approached personality largely from a motivational standpoint in terms of the nature and strength of each individual's motives or needs. A second basic concept was 'press', the specific rather than general cultural influences to which each personality had been subjected in the course of development. The typology approach to personality is considered and illustrated. It is emphasized that 'types' are categories in terms of which personalities may be classified. Some such categories are valuable, others less valuable. Sheldon's work on physique and temperament represents a modern and quantitative variant of the typology approach. Interview and psychometric approaches to personality are considered. The superiority of psychometric methods in the study of the cognitive aspect of personality is asserted. In the case of temperament investigation the choice is not necessarily one between interview and test. It is sometimes rather between unaided interview and interview *plus* additional techniques, psychometric, associative, projective, or of some other kind. Interviewers, particularly interviewers unreceptive to the claims of other methods, vary greatly in their skill. Whatever methods are used it is essential that they be subject to accepted tests of reliability and validity. The projective method has certain advantages over the psychometric test of the usual type, but reliability and validity are more difficult to investigate and establish. Rorschach, T.A.T. and other projective tech-

[1] Adler, *op. cit.* p. 90.

niques, together with associated concepts and methods of scoring, are discussed.

RELEVANT READING

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CHAPTER XIII

Personality Integration and Volition

Personality is not the mere sum of its parts; it is an organized and integrated system. It follows that one of the most significant aspects of personality will be the degree of such organization and integration. Early contributions to this aspect of personality psychology were made by Morton Prince and others concerned with dissociation and personality disintegration. These were to some extent anticipated by the Russian novelist Dostoevsky at a still earlier date. McDougall made an important attempt to relate dissociation to normal psychology. 'Character' (personality) was regarded as a system of elements (the sentiments) organized into an hierarchy under the influence of a master sentiment. The degree of personality integration was held by McDougall to be an approximate equivalent of the layman's conception of 'strength of will'. There has been an interesting convergence of clinical, experimental, introspective and factorial studies in this field. Factor-analysis has gone a long way towards the clarification and more precise formulation of the problem of personality integration. Individual differences in this dimension have an important bearing upon other problems of psychopathology.

To the layman differences of 'strength of will' are important and interesting. There appear to be variations between individuals in their ability to sustain action in the face of external difficulties. Scientific psychology has a contribution to make to the understanding of these facts. Plato adopted an hierarchical conception of the human individual and was followed in this centuries later by Joseph Butler (1726). In recent times McDougall (1908) and Shand (1914) came to regard character (personality) as hierarchical in its organization. Among contemporary psychologists Allport (1938) and Burt (1949) represent a similar viewpoint.

1. The Nature of 'Will'

McDougall's conception of 'character' as an hierarchy involved a theory of the nature of 'will' and 'conscience'. McDougall wrote:

> ' "The Will" is character in action: and "conscience" is moral character—character developed under moral guidance.'[1]

Personality or 'character' was for McDougall an 'hierarchy of conative tendencies', an 'ordered system dominated by a master sentiment'.[2] What is involved is a subordination of diverse tendencies to some dominant and integrating principle, the 'master sentiment'. McDougall thus rejected the view that 'the will' is a faculty. He held that the type of action we call 'willed' rather than 'impulsive' is an expression of the integrated character (of the personality functioning as a whole). The additional mental energy which appears to be available to the subject in acts of willing is explained as arising from the sentiment of self-regard, the most important of the master sentiments. At times McDougall appears to assert that integration of the personality under the self-regarding rather than other possible master sentiments is an ethical desirability rather than a mere psychological fact. Despite this normative intrusion, McDougall appears to be correct in stressing that the notion of the self, and a generally heightened degree of self-consciousness, accompanies acts of willing. Such self-awareness might be expressed in the phrase: 'I am and I will'.

Evidence that self-awareness accompanies willed action is to be found in the introspective experiments of Ach and later of Aveling (1926). The notion that the sentiment of self-regard is involved in willing provided McDougall with an explanation of the lessened capacity for such volition which results from a serious blow to self-esteem. Loss of respect for oneself results in weakening of the self-regarding sentiment and thus a lessening of ability to perform willed acts. Most readers will be able to recall experiences of mild degrees of aboulia in themselves—inability to get up in the morning or to settle down to some task. In theory at least a distinction may be drawn between aboulias relating to inability to perform tasks and the obsessional-addictive aboulias which result in inability to give up a task. There is some difference, introspectively, between not being able to begin and not being able to leave a book,

[1] McDougall 1923, p. 442. [2] 1926, pp. 536, 538.

and the aboulic drug-addict may perform extremely persistent actions in efforts to obtain the substance he needs. McDougall's theory of aboulia as being related to the self-regarding sentiment permits analysis of an interesting vicious circle. He argues that loss of self-esteem results in lessened capacity for willing, and that this in turn lowers self-esteem further as a result of experience of failure in volition. The result is still greater aboulia, more loss of self-respect, and further inability to perform acts of will. McDougall takes as examples alcoholics, drug addicts and beachcombers. In these such a vicious circle occurs since 'volition is undermined if self-respect is destroyed'. (1923, p. 442). The beachcombers portrayed by such writers as Somerset Maugham, and also such historical characters as Rousseau, Coleridge and De Quincey illustrate such a process. De Quincey wrote in his *Confessions*:

> 'I seldom could prevail upon myself to write a letter—an answer of a few words was the utmost that I could accomplish, and often that not until the letter had lain weeks or even months on my writing table.'

McDougall argues that so long as some self-respect remains, so long as an individual is capable of resenting an insult, things are not hopeless. When a person loses all respect for himself and does not care who knows it he is then 'beyond the power of human aid'.

A view of volition similar to McDougall's seems to be assumed in such a method of treatment as the 'active psychotherapy' employed by Hertzberg (1945). This psychiatrist holds that the neurotic is a person less capable than the normal individual of the acts of volition necessary in ordinary living. His treatment involves setting a series of tasks to be performed. Mild degrees of conscious volition are needed to perform the first of these, but as the tasks proceed they are so chosen as to involve progressively more 'difficult' acts of willing. Successful performance of the earlier and easier tasks raises self-respect and facilitates success in the harder ones. Eventually the neurotic patient is able to face and accomplish in a satisfactory way what are, volitionally, difficult tasks. He is discharged on attaining the normal individual's ability to achieve willed action in the difficulties he is likely to encounter in ordinary life.

It has been objected to McDougall's theory that sentiments

other than that of self-regard may perform the integrative and associated volitional functions equally well. It has been further suggested that the sentiments of the Christian and Buddhist mystic are the very negation of self-regard, but that, nevertheless, such mystics often retain extremely strong powers of volition (Thouless 1923). There seems to be little doubt that other sentiments—religious, social and even master sentiments towards specific individuals—may enable a person to achieve willed action. Yet such sentiments are not incompatible with self-respect and differ from those of the aboulic beachcomber. A religious person may 'deny self' or see himself as unimportant in relation to his God. Nevertheless he differs fundamentally from a person like McDougall's beachcomber who 'knows he is a rotter and doesn't care who else knows it.' The religious individual who sees himself in terms of God retains an important conviction which directs his long-term behaviour. Certain things matter and matter a great deal; he differs from the aboulic to whom nothing matters, and who prostrates himself quite indiscriminately before anybody and everything. The other humbles himself before his God, but before God he and others are equal.

At the opposite extreme to aboulia is the person whom McDougall terms the 'moral athlete'. Such an individual can be relied upon to do the hard thing and is one whose chief satisfaction seems to be to demonstrate this fact to the world. A detailed analysis of the often unattractive kinds of personality which may develop with a high degree of personality integration of a rather rigid kind is to be found in Flugel's study (1945) of the ascetic types.[1] The man who accepts and practises a morality of 'all or nothing', Brand in Ibsen's play of that name, is an excellent example of such a character in literature.

In contrast to willed acts McDougall distinguishes simple conation. Simple conations correspond to what Spinoza (1662) called 'desire' as opposed to 'will', and what the ascetic calls 'temptations'. Various kinds of conflict may arise between desire and the master sentiment itself, or between the conations associated with two sentiments. There may be a struggle between two potential master sentiments. Charles Reade's *The Cloister and the Hearth* is a novel dealing with such a conflict. Conflict of the lesser kinds can be solved either by overcoming the incompatible impulse by will

[1] See also Chapter XII.

(that is by the master sentiment), or by one or other of the ego-defensive mechanisms. Conflict between two potential master sentiments is fundamental since each of the sentiments involved is an integrated system of lesser sentiments. A consequence of such intra-psychic conflict can be a separate and unintegrated functioning of both sentiments, a dissociation of personality in which each system maintains itself independently of the other. Such rare but interesting cases of dissociation may be taken as involving either secondary ego systems or, if we prefer it, a 'splitting' of the ego. McDougall regards dissociation as such a failure of the integration process, and in this respect the opposite of a high degree of integration of the personality (1926).

2. Dissociation of Personality

Earlier anticipations of the thought of scientific investigators of dissociation of the personality are to be found in Dostoevsky's novels. In *The Brothers Karamazov* (1880) one of the leading characters, Ivan, experiences such dissociation. Dostoevsky allows to Ivan moments of insight into the psychological events involved, and is thus able to express his own view of the factors relevant to dissociation. Ivan has a recurrent visual hallucination of the devil, with whom he also has conversations. The hallucinations are the more interesting in the light of the earlier judgment of the thoughtful and introspective Ivan: 'I think if the devil doesn't exist, but man has created him, he has created him in his own image and likeness.'[1] The part which conflict and his own rejected personality traits play in the occurrence of the dissociation and the hallucinations is suggested in his words to his brother, Alyosha: 'And he is myself, Alyosha. All that's base in me, all that is mean and contemptible.' To this he adds in an earnest and confidential tone: 'I should be awfully glad to think that it was *he* and not I' (p. 692). Dostoevsky's awareness of the part which repression plays in dissociation is illustrated in another part of the book. The hallucinated devil relates a story. Ivan recognizes this as an imaginative creation of his own which he had forgotten. He is, for the moment, triumphant that he now has conclusive evidence that the devil who has appeared to him is not a reality, but is something he has himself created.

[1] Translated by Constance Garnett, Heinemann, 1945 edition, p. 244.

In these incidents is to be seen the novelist's acute insight into the part which fundamental intra-psychic conflict plays in producing dissociation. The intensity of such conflict is shown by the fact that the separate functioning system represents what Ivan in his normal moments most repudiated in himself. We note his intense wish to be able to believe that the traits involved belonged to some person other than himself, and yet his reassurance when he knows that the devil who appears to him is not a reality, but a part of himself and thus something over which he has at least the illusion of control. The second and third quotations given above represent an anticipation of later psychological theory that hallucination and accompanying dissociation are the result of conflict, and that the dissociated component represents the personal qualities which the normal ego most strongly rejects. It is of interest to note that an hallucinatory 'devil' also appeared to Martin Luther at the time when he was abandoning his old beliefs and facing the crisis of a new religious orientation. The measure of Luther's struggle is shown by the bitterness of subsequent conflicts between Catholics and Protestants. Ivan Karamazov's conflict was also fundamental; it was that between the generally accepted Buddhist and Christian ethics and the alternative morality which Nietzsche (1885, 1888) was later to uphold. Russell (1946) has offered the judgment that the so-called 'slave' and 'master' moralities are quite possibly each logically irrefutable but opposed systems of ethics. Dissociation appears to occur with, and along the lines of demarcation of, intra-psychic conflicts of such fundamental kinds as these. When dissociation results in the development of dual or multiple 'personalities' (ego-systems), it is noticeable that these 'personalities' are highly incompatible.

In one of the best known cases of multiple personality, that of 'Miss Beauchamp', both psychological incompatibility and actual dislike were apparent. (See Morton Prince 1909.) One of these personalities, 'Sally', had an exceedingly strong aversion to 'B.1'. Among other things her aversion expressed itself in a painstaking undoing of knitting equally painstakingly done by B.1 on the previous day. The third principal personality, B.4, made persistent attempts to end the existence of the impish Sally, while Sally's sense of mischief did much to irritate both other personalities. Morton Prince in his detailed account of this case of dissociation presents evidence from the subject herself of the opposition of the

B.1 and B.4 personalities in matters of personal taste, including food preferences. These are summarized in an accompanying table.

OPPOSITION OF TASTES AND HABITS IN DISSOCIATION[1]

'Miss Beauchamp'

B. 1. *Personality*	*B.* 4. *Personality*
Appetite usually poor.	Appetite usually good.
Drink coffee, never sugar or cream.	Drink coffee with sugar and cream.
Rarely take wine, easily affected by it.	Always take wine; have a strong head.
Very fond of vegetables.	Dislike all vegetables.
Like soups and broths.	Never eat soups or broths.
Fond of ice cream.	Never eat ice cream.
Dislike smell of smoking, and have moral objections.	Fond of smoking; heavy smoker.
Like rings very much and wear them.	Dislike rings; never wear them.
Never read newspapers.	Devour newspapers.
Hate sewing.	Like sewing.
Very fond of children.	Regard children a great nuisance.
No fear of dark.	Great fear of dark.

Morton Prince gives instances of the co-existence of Sally along with other of the Beauchamp personalities. On one occasion Sally intervened to save one of those other personalities from unnecessary emotional distress. On another occasion Miss Beauchamp in one of her personalities was seated before a mirror. She experienced a strong impression that the image of herself in the mirror was one of her 'selves'. After an attempt at the impossible task of ordinary conversation with 'herself' she found a solution by speaking the questions and writing out the answers contributed by the alternative ego-system. Automatic writing permitted a form of 'conversation' between the two personalities. As was to be anticipated from the place of conflict in dissociation, there were in this conversation quite sharp disagreements.

Numerous studies of personality dissociation have been contributed by other investigators, and a good collection of these case

[1] Abridged by permission of Messrs. Longmans, Green & Co., New York, from Morton Prince, *The Dissociation of a Personality*, 1906, pp. 288–294.

histories appears in McDougall (1926). It is unfortunate that the psychoanalysts have been little concerned with such phenomena, though some attention has been paid to them by Jung (1940). There is need for more clarification of the relation between psychoanalytic concepts and the phenomena of dissociation. A valuable discussion of this relation has been contributed by Hart and we shall consider its main features.[1] We may note Hart's emphasis that dissociation and accompanying subconscious mental states are phenomena; there is as much evidence for these as for conscious mental states, and it is the same kind of evidence. The psychoanalytic terms 'repression' and 'unconscious' refer not to phenomena, but to causal *hypotheses* about phenomena. Thus repression may maintain dissociation, and will contribute to the qualities of the dissociated personality; repression is not dissociation since dissociation is a phenomenon and repression a causal concept. Instances of the phenomena of dissociation include the fugue, dual and multiple personality, somnambulism, automatic writing, and probably a number of para-normal occurrences like crystal-gazing (probably a specific form of visual hallucination), and the trance personalities of the 'genuine' spiritualist mediums. Many of the cases of demonic possession in former ages could be re-formulated in terms of dissociation and subconscious mental states.

The beliefs held by the dissociated person will naturally determine the interpretations he places upon such dissociation. This is illustrated in cases of 'trance personality', in which a spiritualist hypothesis is accepted by the subject, and in the reincarnationist interpretation which Hélène Smith gave to her dissociations.[2] One of the commonest phenomena of dissociation among psychotic patients is hallucination. In these as in other cases of dissociation there is an autonomous functioning of psychological processes independently of the subject's normal ego. The grosser cases of dual and multiple 'personality' involve a development and independent functioning of secondary ego-systems. Introspective relations between such systems may be complex. Thus in the case of 'Spanish Maria' one personality remained awake while the other slept; the former could force thoughts upon the sleeping personality in the form of dreams.[3] As Hart has shown, in view of such complexity of relations possible between the memory-systems of two such

[1] Appendix in Hart, 1927. [2] McDougall 1926, Ch. 32.
[3] Cory 1919; McDougall 1926.

personalities, a spatial conceptualization of dissociation may be misleading. Dissociation is perhaps better regarded as a matter of the 'gearing' of functioning systems than as a 'split' within the personality or within consciousness (Hart, *op. cit.*). Whether a dissociation is interpreted naturalistically, as in the case of 'Miss Beauchamp', or supernaturally as in the case of spiritualist mediums, the psychological processes involved appear to be similar. What has occurred is a rather extreme manifestation of failure to achieve personality integration; this failure results from deep and fundamental conflict within the psyche. More evidence is needed about the extent to which aboulia accompanies dissociation. Aboulia certainly seems to be a noticeable correlate of the commoner forms of dissociation which occur in conversion hysteria.

3. Factor-Analysis and its Contribution

One of the most fundamentally important variables of personality is the subject's general level of cognitive capacity. 'Intelligence' sets limits within which the personality develops. The most important investigations in the field of intelligence have been those of factor-analysis.[1] In 1915 Webb, a student of Spearman's, reported on the results of a factorial investigation into orectic psychology. He found evidence for a counterpart to 'g' in a general orectic factor, 'w'. This seemed to bear a relation to 'will' similar to that of 'g' to intelligence (Webb 1915). Spearman himself accepted this judgment and with it the importance of Webb's 'w' factor (Spearman 1937); 'w' was identified psychologically as 'will', or as degree of character (personality) integration and was shown to be different from the 'g' factor. The nature of this new orectic factor can best be indicated with reference to the more specific traits to a greater or lesser extent 'saturated' with it. For the purpose of discussion Webb referred to the opposing categories of 'w plus' and 'w minus' traits; 'w plus' traits included persistence, perseverance, energy, tact, steadiness of mood, kindness on principle, and 'conscientiousness'. The 'w minus' traits included fickleness, wilful changeability, inertness, inconsiderateness, instability of mood, unreliability and tendencies to be unguided by principle. In our previous discussion of aboulia we have dealt with individuals whose personalities were of the 'w minus' kind. Similar illustrative instances are taken by Webb.

[1] See Chapter IX.

The establishment of such a 'w' factor offers strong empirical evidence for McDougall's theory of will and personality integration.

In 1942 Wolfle prepared a list of fifty alleged personality factors, and from this a shorter list of the seven factors which had been reported in three or more studies. Wolfle named four such confirmatory studies in the case of Webb's 'w' factor, those of Studman (1935), Cattell (1933), Reyburn and Taylor (1939), and Brogden (1940). To these we may add Eysenck's subsequent study (1947), which has additional features of interest.

What has been one of the most thorough and intensive studies of personality structure from the factor-analytic standpoint resulted in the emergence of a number of orectic factors, together with well validated tests of these. The studies included substantial groups of normal, neurotic and unadjusted individuals of both sexes. On the basis of his findings Eysenck advances the conclusion that there is a basically important orectic general factor of 'neuroticism'. Eysenck's 'neuroticism' appears to be inversely related to Webb's 'will' factor; 'w plus' corresponds to neuroticism minus. As alternative names for the factor Eysenck (1946) lists the following: 'maladjustment, neurotic constitution, lack of integration, and lack of will-power.' The same investigator's data support an interpretation of the factor as the conative aspect of the personality.[1] Among the best individual tests of the trait—the purest measures of 'neuroticism'—were an objective version of the Rorschach, the body-sway test of primary suggestibility, and measures of motor persistence. Factor-analytic evidence for an important trait of this personality integration kind is strong. There are now available tests for measurement of individual differences in this variable, which appears as the counterpart of the general cognitive factor 'g', in the field of volition and will.

4. Environmental Stress and Maladjustment

Neurosis and other forms of maladjustment can be considered from this standpoint of degree of personality integration. Minor maladjustment, neurosis and (psychogenic) psychosis may be supposed to occur as a result of two kinds of causal influence. On the one hand are the stresses, frustrations and tensions of the environment—the exciting causes. On the other hand are such causes of

[1] Eysenck *et al.*, 1947.

maladjustment, neurosis and psychosis as have been subsumed under the heading of 'constitution'; these are the predisposing factors. From the standpoint of clinical psychology Rosenzweig (1944) has suggested the term 'frustration tolerance' to denote the amount of stress which an organism can withstand without exhibiting neurotic or other symptoms. Frustration tolerance can be regarded as ability to withstand negative press (Murray). Neurosis is essentially a reaction to negative press which has exceeded the organism's level of frustration tolerance.

In his animal studies of experimental neurosis Pavlov (1928) found marked individual differences in the susceptibility of different individual dogs to such neurotic breakdown. Some animals readily exhibited neurotic symptoms, while others showed the capacity to endure a great deal of experimental strain without any markedly neurotic effects. Such experiments revealed individual differences in an important variable closely related to Rosenzweig's 'frustration tolerance', a concept evolved from clinical studies of human individuals. Again, one of the significant variables which emerged from the Harvard personality study (Murray 1938) was 'conjunctivity-disjunctivity'. This related to harmony and co-ordination and freedom from conflict within the personality (conjunctivity), or the opposing qualities (disjunctivity). It would appear to correspond closely to the variable of degree of personality integration with which we have been concerned, and to relate both to McDougall's theories and to the factorial studies of numerous investigators. Observation, introspection, experiment and factorial study have all tended to emphasize, in their several languages, the importance of some such personality integration variable. It has been noted that Eysenck (1946) found evidence in a number of investigations that this quality has an approximately normal distribution. Unless we assume, contrary to clinical evidence, that neurosis and other forms of personality breakdown are entirely the result of initial predispositions, it seems reasonable to assume that these can occur in individuals with high as well as with low degrees of personality integration. 'Constitutional causes' probably involve *both* hereditary qualities *and* predispositions arising from early experiences of the kinds emphasized by psychoanalysis. There is evidence that exciting causes like thwarting, deprivation and 'suffering' generally play some part in causing and maintaining not only neuroses but also psychoses. For example, many cases of war

neurosis made spontaneous recoveries when removed from the undue stresses of the battle front. Again it has been noted by, for example, Curran and Guttmann (1944), that even severe and chronic psychoses will respond favourably to changes of environment.

Psychiatric disturbance results from the combined influence of these two types of causes; the relative influence of each may vary. If we take the extremes there are two kinds of case. At one extreme there is the individual whose personality lacks integration, and who develops psychiatric disturbance primarily as a result of predisposing constitutional weakness. Frustration tolerance is low and the normal degrees of stress of ordinary living bring about psychiatric disturbance; the immediate exciting causes are of minimal importance. At the opposite extreme are persons with little or no hereditary and early environmental weakness, whose personality breakdown is the result of an abnormally large amount of severe and extreme stress of kinds which human beings as a whole usually escape. War and the sufferings it brings produce many such cases. The writer has had the opportunity of interviewing and submitting mental tests to institutionalized individuals of this category, including some who had been inmates of prisoner-of-war camps, particularly in Japan. Other maladjusted persons of this kind had been in concentration camps in Europe. It is probable that without the more than bearable extremes of human suffering that they had experienced many such persons would have remained normal and adjusted. The difference between these and other categories of patient is both practically and theoretically an important one. Eysenck (1947, p. 261) notes that 'liability to succumb to stress' and 'amount of stress experienced' both appeared to be necessary to account for the neurotic patients investigated by himself and his colleagues. He assumes the former to be hereditary. We should prefer to consider such liability to succumb to stress as 'predisposing', leaving open the possibility that early environmental influences in infancy and childhood may partly account for such predisposition.

Whatever interpretation is adopted, predisposing and exciting causes are important, and individual differences of personality integration appear to be highly relevant to psychopathology. Probably most psychiatrists recognize in practice a difference between patients who have well integrated personalities but have experi-

enced extremes of stress, and the 'constitutionally weak', unintegrated individuals who have experienced only the more usual degrees of stress. In psychopathological theory the issue is more explicitly stated by Suttie (1935), who distinguishes between 'need syndromes' and 'self-frustration syndromes'. The need syndromes, on Suttie's view, include hysteria and schizophrenia, in connection with which the term 'dissociation' has often been used. Such cases represent, in terms of our distinction, a predominant influence of constitutional factors, a low frustration tolerance and an inadequate degree of personality integration. Suttie notes that patients of the need syndrome type experience considerable secondary gain from their symptoms. It is therefore understandable that prognosis is bad and that attempts at suicide are attention-attracting rather than really meant. In contrast are the self-frustration syndromes, illustrated by depression and anxiety states. Prognosis here is more favourable since there is unmistakable evidence of absence of secondary gain from symptoms, and attempts at suicide are genuine and often successful. We may add that it is the reactive rather than the psychotic depressions which, together with the anxiety states, best illustrate our argument. The term 'reactive' itself indicates and emphasizes the effect of severe adverse environmental press. This plays a more important part than 'constitutional' weakness. Individuals who develop such conditions are very often conscientious, dependable and otherwise highly integrated personalities who have been subjected to abnormal degrees of stress. Suttie would reject the traditional distinction between neurosis and psychosis in view of the resemblances between certain neuroses and certain psychoses which it obscures. Within the category of neurosis, however, we may note the somewhat parallel distinction made by Eysenck (1946) between hysteria (need syndrome neurosis) and dysthymia (self-frustration neurosis). Similar distinctions between two kinds of neurosis were made by Janet, McDougall and Rivers. These are approximately equivalent to that of Eysenck.

It is possible that the personality integration variable has some bearing upon the *kind* of maladjustment which is most likely to occur in a given individual. The integrated individual, on subjection to stress of abnormal degrees of intensity, may be more likely to develop neurosis of the anxiety or depressive kind than hysteria. Suttie's standpoint suggests such a possibility, and provides further extensions of theory based on the resemblances between hysteria

and schizophrenia on the one hand and the anxiety neuroses and depressions on the other. Eysenck (1947) likewise considers the possibility of important identities between the schizoid-cycloid and hysteria-dysthymia dimensions of personality. He notes, however, that the establishment of such possibilities belongs to the future development of psychopathology and that 'we must end our discussion of this important question on a note of uncertainty' (*op. cit.*, p. 251).

5. Adjustment to Stress

As has been seen, one of the two important determinants of personality maladjustment, neurosis and psychogenic psychosis is subjection to conditions of deprivation, danger, hardship and suffering. Some psychologists have used the term 'frustration' to denote all press of this negative, adverse kind. Thus Rosenzweig includes in his category of 'frustration', to which 'frustration tolerance' has reference, such things as privation, deprivation and conflict. Such a usage is legitimate provided it is recognized that the reactions to 'frustration' are numerous, and that 'frustration' itself means many things. On the other hand the concept of 'frustration' as used by some psychoanalytic writers (e.g. Turquet 1949) is not a little misleading. Frustration has too many meanings. It may imply one kind of adverse press, or alternatively a number of different kinds of such press. Clarity of thought has not been assisted by a group of psychologists at Yale University who have advanced the hypothesis that reactions to frustration are inevitably 'aggressive'. The frustration aggression hypothesis (Dollard *et al.*, 1944) has the very serious weakness that its two central concepts, 'frustration' and 'aggression', are both highly ambiguous. It may be asked legitimately just what kinds of frustration lead to just what kinds of aggression. The writer has attempted to show in a series of empirical investigations that the factors which lead to the development of enduring hostile sentiments (dislike, contempt and hatred) necessarily involve an ego-threatening component which is not invariably present in those which provoke simple anger. In the absence of this additional component in the cases studied there was no evidence that hostile sentiments developed (McKellar 1949).

On the basis of animal experiments Maslow (1943 (*a*)) had similarly presented evidence that the psychopathic effects attributed

to frustration in general arise only as a result of a particular kind of threatening frustration. The same investigator makes the important point that it is the situation as cognized and incorporated by the organism, not the situation as such, which determines reaction. As we have pointed out, the unusually 'sensitive' or 'paranoid' individual *experiences* hostilities, threats, and thwartings which are very largely, and sometimes entirely, the results of his own projections. Again Sargent (1948) has emphasized that some forms of aggressiveness are the result of simply learning the ways of behaviour of a sub-culture, for example a 'tough' neighbourhood; to account for these 'frustration' need not be presupposed. That aggression is neither the most obvious nor the most prominent of the consequences of frustration was shown by Allport and others in their study of the personalities of individuals who had escaped from the Nazi regime.[1] It seems better either to recognize, as Rosenzweig does, the more specific sub-categories within the unduly broad category of 'frustration' (Dollard) or to approach the problems in terms of a more neutral concept such as the negative press to which Murray and others have drawn attention.

Bloch's study (1947) of the personalities of many thousands of ex-inmates of concentration camps certainly showed that aggression was one important response of these individuals. Other widespread reactions included apathy, dejection, bewilderment and 'general desocialization' (Bloch 1947). The data of this investigation, though unfortunately purely qualitative and not compiled quantitatively, seem to support the reasonable assumption of differences between those subjected to longer and those subjected to shorter periods of deprivation and suffering. Such conditions may result over short periods of time in resentful anger and related aggression, but over long periods of time rather in apathy and indifference. A study by McCary (1950), using the Rosenzweig picture frustration test, revealed differences between American negroes in the northern and southern states. The northern negroes were more overtly aggressive, the southern negroes more passive in their reactions to 'frustration'. It seems reasonable to suppose that the deeper and regressive personality changes to which the term 'general desocialization' (Bloch) has been applied result primarily from *long exposure* to hostility, deprivation and thwarting. From time to time an unusually insightful observer is placed under condi-

[1] Ed. Kluckhohn and Murray 1948.

tions of severe and extreme stress. Resulting observations and introspections are exceedingly valuable. An outstanding example was the imprisonment of Dostoevsky in a Siberian convict settlement. The largely autobiographical novel which followed, *The House of the Dead*, deserves mention and study in this connection. The Nazi revolution produced more than one similar occurrence. Of particular interest are the records of Bettelheim, himself a professional psychologist, who was one of those subjected to imprisonment in a concentration camp.[1]

Bettelheim distinguishes the new prisoners (one year of imprisonment or less) from the old prisoners (three years or more). The predominant conscious motive of the new prisoner was to return to the outside world as approximately the same personality as had left it. Records of his observations and introspections kept by Bettelheim while himself a prisoner were motivated by this; here was something which retained a link with the past and enabled him to remain unchanged. The old prisoners revealed somewhat different characteristics. In their case the predominant motive was to try to live as well as was possible within the camp. Such old prisoners tended to incorporate some of the standards of the Nazi guards. They tried to identify themselves with the Gestapo in external matters by acquiring and wearing discarded pieces of Gestapo uniforms. Many of the older prisoners accepted the attitude of the guards towards the 'elimination of the unfit'. Behaviour of kinds very like, and often more severe than, that of the Nazis was indulged in by the old prisoners, particularly, of course, towards traitors and informers.

The nature of this difference between the older and newer prisoners becomes more understandable in terms of the aims of the Nazis and the actual intentions behind the kinds of hardship imposed. What was attempted was to produce personality changes in the prisoners that would make them desirable citizens of the Nazi state. The older prisoners represented, both in their experience and behaviour, the partial success of this policy; the newer prisoners represented a struggle against such a policy. As was to be expected, some of the reactions of the prisoners to concentration camp life were of a regressive kind. A less obvious secondary reason for such regressive behaviour was the nature of the Nazi's policy of subjection—making the prisoners perform nonsensical tasks, pro-

[1] Bettelheim 1943, and in Newcomb and Hartley 1947.

voking quarrels between them, and inflicting punishments of the kind which might have been inflicted upon a small child. Fantasy life was important. Bettelheim records a diminishing relation to reality in the fantasies of the longer-imprisoned individuals.

Somewhat similar to fantasy was a phenomenon observed, introspectively and externally, by both Bettelheim and Dostoevsky. There occurred at times what appeared to introspection to be an emergence of two 'selves'. To one self things happened, while the other stood by as observer. Such a phenomenon is an obvious defence with the function of preserving the integrity and structure of the personality under conditions of more than bearable suffering. The phenomenon described has analogies to the psychiatric occurrence of de-personalization, the state in which experiences are no longer regarded as belonging to the self (Hilgard 1949). It is perhaps not out of place to note the extreme objectivity of Bettelheim's observations and exposition, though they relate to occurrences which must have strained human powers of objectivity to the utmost. Such objectivity and impartiality should not pass unnoticed in a book designed, as this is, to illustrate the methods and attitudes of science.

Another investigation, similar in its subject matter, was carried out by Allport and others (*op. cit.*). They obtained a large number of essays contributed by refugees from Nazi Germany; ninety of the essays were given detailed analysis. The analysis showed a widespread occurrence of the mechanism of 'denial' on the part of the subjects in the early period of the Nazi regime. The belief or half-belief that the Nazis would 'make exceptions' seems to have been maintained in the face of strongly contrary evidence. This conviction that the subject is himself an exception probably plays an important part in the thought of individuals experiencing other kinds of danger. Though they may give intellectual assent to the possibility, probably many soldiers do not 'realize' the likelihood of their own death in battle. Allport's study revealed instances of another ego-defensive mechanism—'undoing'. Spontaneous and unexpected acts of kindness on the part of individual Nazis were mentioned by no less than 53 per cent of the 90 individuals studied. Such actions were suggestive of attempts to appease guilt feeling on the part of the oppressors. Related to 'undoing' was the feeling experienced by many of the prisoners (and also noted by Bettelheim) of having atoned for guilt through suffering. This plays a

prominent part in the analysis referred to, as well as in the writings of Dostoevsky. Allport's data support the conclusion that increase of fantasy life tended to occur under such conditions and refers to a related phenomenon, enjoyment of sleep and looking forward to one's sleep as a temporary release from unendurable reality. Among the reactions noted in the Allport investigation were:

> Depression and resignation, regression, conformity, adoption of temporary standards, changes in values, lowering of levels of aspiration, heightened in-group feeling, increased fantasy and much behaviour of the planning and problem-solving kind.

In these various studies is an illustration of some of the reactions to conditions of extreme stress, reactions of the kinds which permitted either preservation of the original personality, or changes of a kind which society was prepared to admit as normal. What are in this sense 'adjustive' reactions may be made by some individuals to the most extreme and abnormal conditions of stress.

Other kinds of hardship result from the conditions which a subject's own purposes, along with unanticipated events, inflict upon him as traveller or explorer. These include extremes of temperature, food deprivation and, in the case of Himalayan mountaineers, oxygen lack. Conventions of former ages have tended to restrain explorers from giving accurate and objective accounts of their reactions to such events, but such data are now more readily available. Hostility and aggression towards one's companions are certainly prominent among such reactions. One mountaineer with an interest in psychological matters contributed a short story to a university paper. The story concerned two individuals, short of food and forced, by bad weather, into the company of each other within the confines of a small mountain hut. The growing hostility and intolerance of each individual towards the other is developed, and the story concludes with the death of one at the hands of his companion.

It is highly improbable that such murders occur often—if at all —in reality. The writer's own introspections in situations like the one described lead him to believe that they are very often committed in fantasy. Of the reactions of men to one another, complicated in this case by the effects of high altitude and anoxia, the Himalayan mountaineer Eric Shipton writes:

'All manner of things, great or small, are liable to promote dis-

cord. Garrulity is notoriously hard to bear; silence can be no less trying. . . . One is quick to resent the way a man drinks his soup or wears his hat, or the silly manner in which his beard has grown, or a thousand other trifles that in normal circumstances would pass unnoticed.'[1]

The same author notes that the feeling that one is redundant and superfluous is highly conducive to hostile reactions disastrous to morale. He stresses that the leader should ensure that each member of the expedition has, and knows himself to have, an important function to perform in the work of the unit as a whole. In itself oxygen lack over prolonged periods seems to be conducive to quickness of temper. The writer had an opportunity to observe the effects of both immediate and chronic oxygen lack during the war. Oxygen lack was experimentally produced with the aid of a decompression chamber employed in selection and instruction work. Those who had had long periods of duty in the chamber soon began to suffer from quickness of temper; a regulation had later to be introduced that no member of the unit was obliged to make more than one 'ascent' daily. Food deprivation also appears to have somewhat similar effects on temper. During the second world war experiments were carried out at Minnesota University on volunteer conscientious objectors. The subjects for a period of six months experienced conditions of semi-starvation. Irritation with one another over matters which would ordinarily have passed unnoticed, anger outbursts over minor personal mannerisms, and fantasy solutions to the food-seeking problem were among the phenomena observed. Another accompaniment of severe food deprivation is its effects on other drives. There was both a noticeable absence of sexual drive and a more general apathy. Again a deterioration of ethical standards was shown both in respect of giving way to the temptation to buy food or steal it and in stealing behaviour of other kinds.[2]

There appear to be individual differences in capacity to withstand severe stress without personality changes. Sometimes conditions may be such that the normal, or even highly integrated ('w plus') individual will change, and exhibit psychiatric disturbance when he has passed his (high) point of frustration tolerance. Within the limits of a subject's level of frustration tolerance he

[1] Shipton 1943, p. 207. [2] Keys *et al.*, 1945.

may adopt a variety of more or less adjustive reactions. Hostility and aggression as defences against encroachment upon his personality and activities are prominent among them. The frustration-aggression hypothesis is, however, an over-simplification, and its basic concepts are ambiguous; reactions to 'frustration' are not always aggressive and are in fact of many kinds. Attempts to adjust to severe adverse press include adopting temporary and conforming standards. These can be assimilated into the personality and may become permanent. The extent of time over which an individual experiences such conditions appears to be important in addition to his degree of personality integration or frustration tolerance. Exposure for a limited period of time to adverse press, particularly thwarting and being subjected to humiliation or threats to values, is likely to result in hostility and aggression. Prolonged exposure results in more fundamental personality change rather than these personality defensive reactions. Such changes may remain within the limits of what is socially accepted as 'normal' and be more or less adjustive. They may, nevertheless, involve minor or major degrees of apathy, desocialization, regression and deterioration of moral sentiments. These can be regarded as environmentally determined changes towards lesser degrees of personality integration. As would be predicted on McDougall's hypothesis, aboulia tends to accompany such fundamental personality change.

Summary

McDougall's theories of personality integration and 'the will' are expounded and discussed. They have a certain relevance to early studies of 'personality' dissociation. Work of the Würzburg School, of Pavlov and of factor-analysis has converged on these issues. Webb's discovery of a general orectic factor of personality integration (*w*) has been supported by subsequent factorial investigations. Eysenck has validated tests of this factor and carried out extensive investigations into psychopathology from this standpoint. Suttie's important approach to the problem of psychiatric classification suggests the relevance of the personality integration variable. Data on human reactions to extreme stress are given and it is contended that the widely used concept of 'frustration' is misleading in this connection. Degree of personality integration is highly relevant to individual differences in reactions to adverse environmental press.

RELEVANT READING

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Flugel, J. C., 1945, *Man, Morals and Society.*
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Also recommended: Hart (1927), *Psychopathology*, pp. 154–175.

CHAPTER XIV

Social Structure

Personality develops under the influence of a society. A society comprises a visible, audible and otherwise perceivable number of individuals, who exercise their influence upon learning, motivation and other psychological processes. Reference to such processes is thus implied when we turn to the social group and its standards. Social norms influence the subject largely through the medium of visual and auditory perception. Again, primary motives are modified and secondary motives acquired through learning and under the influence of social norms. Social learning is not limited to the confines of actual inter-personal contact. Such media of mass communication as the printing press, the cinema and the radio expose the individual to the influence of others whom he may never meet. In this chapter we are concerned with the group, its norms, and the ways in which these exert their influence upon the individual. The phenomena and concepts involved may be said to be 'social'. They are nevertheless also 'psychological'; they have reference to, and are ultimately dependent on, such basic and universal psychological processes as perception, learning and motivation.

Regularities appear in the experience, behaviour and motivation of numbers of individuals. These are of two kinds. *Uniformities* result from membership of the same species; as has been said, there are certain 'basic inevitabilities of being human' (Money 1946). Uniformities that arise from inescapable biological needs differ from *conformities*. These conformities may be of the broad, general kind which distinguish members of a large group like a nation from other national groups. For example, Gorer (1948) has advanced the hypothesis that rejection of coercive, authoritarian standards is an important and distinguishing characteristic of the American people as a whole. This quality is held to pervade American national life in many of its important aspects. On the other hand, conformities may be of more specific kinds,

like those which distinguish families, occupational groups and less widespread social movements. Cantril (1941) has contributed an analysis of the general characteristics of the social norms of such movements as the Oxford Group, the Townsend Plan and the Nazi Party. The socialized adult is a member of a good many specific groups; the fact of such membership affects his behaviour in important ways. Each such group has its *social norms*. These comprise its standards of thinking, feeling and acting. While there will be individual differences in the extent to which different members will conform to these norms, they are nevertheless important conformity-producing influences. They thus indicate the probable behaviour of members of a social group, and distinguish such individuals from those who accept membership of other groups. There are important differences also in the extent to which the individuals who comprise a group are aware of that group and its conformity-producing influences. On the whole the members of national, political and religious groups tend to manifest such *group consciousness* with some degree of intensity. Group consciousness is partly established and maintained by perception of the *social products* of a group, its buildings, badges, flags, books, and other symbols and material possessions.

1. The Group Illusion

It is an interesting psychological fact that the members of a group commonly believe in their group's existence as something other than, and more than, its mere membership. In an obvious and not very important sense this is the case. A group tends to have material possessions and symbols. But the impression referred to relates rather to something immaterial, about which there is a tendency for unnecessarily 'mystical' and woolly thinking to develop. Groups are spoken of, and written about, as entities, sometimes as though they were persons. A newspaper report from Belgrade during 1948 twice attributed 'surprise' to Yugoslavia. The headlines asserted: 'Yugoslavia hits Russia'. To Yugoslavia was attributed an 'attitude' towards Russia, an inability to 'err' and the possibility of being 'insulted'.[1] Such ways of thinking and speaking about national and other groups are misleading, though what is meant is more or less apparent. It is, of course, possible to

[1] *New York Herald Tribune*, Paris, 1st October, 1948.

summarize certain broad tendencies of group behaviour. But there is little reason to believe that journalists and others who choose to write in this way have carried out the painstaking investigations which are necessary to establish what such tendencies are.

This way of thinking and writing about groups has not been confined to journalists and other laymen. Some psychologists and sociologists have adopted a similar standpoint, and have gone so far as to postulate a 'group mind'. To this 'mind' have been attributed collective psychological functions of thinking, feeling and willing. The analogy has been drawn that, just as the cells of a body together form a total organism, so the individuals that make up a group form a social organism which has additional and unique characteristics of its own. This is a possible way of writing about groups, but a misleading and unprofitable one. It takes little account of individual differences, of the facts of social conformity and nonconformity, and of the precise parts which specific individuals play in determining the activities of their group.

But the phenomena which gave rise to the 'group mind' hypothesis cannot be disregarded. The fact remains that the investigator may retain a strong impression that groups cannot quite be regarded as 'nothing but' their members. An additional and quite important 'something else' requires further analysis. At first sight little assistance is gained from a closer consideration of what the 'social norms' of a group really are. They consist, in the last analysis, of the sentiments, values, beliefs and attitudes of the individual members of the group. Such standards may be those of the majority of members of a group or those of its leader, but this is not necessarily the case.

Sherif (1936, 1949) carried out a series of experiments on the ways in which social norms develop. Alone and in groups subjects were required to make judgments as to the distance which a stationary point of light, in an otherwise totally dark room, appeared to move. The illusion is known as the 'auto-kinetic effect'. Sherif was able to show that certain individuals exercised more than their share of influence in establishing norms of central tendency and scatter in the group situations. It was also found that, should such a 'leader' deviate from the norm once a norm had been established, it was the norm and not the leader which determined subsequent judgments made. The tendency was for an influential individual

who deviated from the group's established norm to be rejected as a leader. Richardson (1948) has also presented evidence of the limitations of even highly influential individuals upon their group's behaviour. Instances are given of specific occasions on which such persons, despite their prestige and status, were unable to bring about peace during periods of war. Their efforts proved unfruitful until a sufficient amount of 'war-weariness' had developed within the groups concerned.

Sherif speaks of 'polarisation' around the more dominant and influential individuals of a group in the formation of social norms. At the same time, as his experiments showed, there are limits to the influence of individuals high in the social hierarchy if they attempt to deviate from an established social norm. It is not correct to assume that each member of a group of a hundred will exert one per cent of influence upon that group, its norms and its activities. This is very clearly illustrated in Whyte's study (1937) of the social structure of a non-criminal gang of young men, 'the Nortons' (see fig. 13). The leader of this gang was called 'Doc'. Doc and his closest associates, 'Mike', 'Danny' and 'Lone John', are considered as the 'leaders', in contrast to the other members of the gang, the 'followers'. Doc, Mike and Danny were the men primarily responsible for instigating the group's activities. When Doc left the gang the social structure changed very considerably, and the remainder of the group reorganized itself in new ways around two individuals who had previously been 'followers'. A number of those who had positions low in the social hierarchy left the group at other times, but their leaving had little effect on the activities and social structure of the Norton Street gang.

As Whyte's study illustrates, such a group's norms and social structure, so far as they comprise something 'other than' the mere personal qualities of members, depend largely on established *relations between individuals*. The characteristics of a group are those of its members in certain socially defined relations to one another. Status is important in such relations as a determinant of a group's structure and activities. Yet it is not the only important factor. For example, in the case of the Norton Street gang a young man called 'Nutsy' had not the status of a leader, but was nevertheless an important link in the relationships of the group as he had five close associates, all of whom accepted Nutsy as of higher status than themselves. Again, though Lone John had the status of a leader, he

had little personal influence. He tended, in fact, to be something of a social isolate from the followers, and his position depended largely upon the three other leaders' acceptance of him and not on his own personal qualities of leadership.

To take another example, Martin Bormann was a man of high status and considerable power in Hitler's Germany. His position in the Nazi hierarchy depended very largely upon Hitler's personal acceptance of him, and thus it was to his interest to maintain his leader's power. When Hitler's death occurred Bormann's status

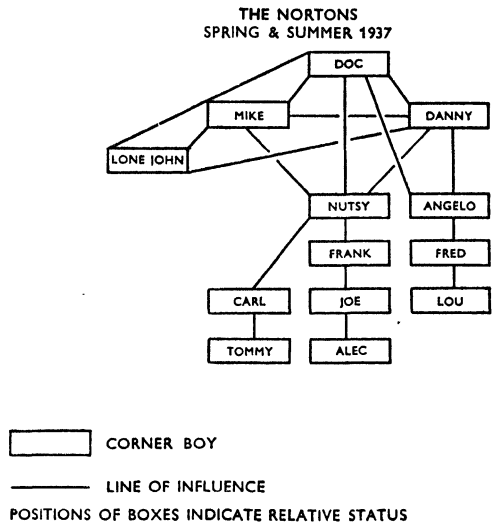

FIG. 13
The Norton Street Gang[1]

fell, and the influence which had been his passed into other hands (Trevor-Roper 1947). Acceptance by individuals high in the hierarchy may thus be an important determinant of status and influence, as in Bormann's case. Such a person may exert his influence through the leader himself. The Capuchin friar Father Joseph remained in the background but exerted considerable influence through Cardinal Richelieu (Huxley 1949). These kinds of relationship between individuals, together with position in the social hierarchy, will tend to make the norms and activities

[1] Reproduced from Whyte, W. F., 1937, *Street Corner Society: the Social Structure of an Italian Slum*, by permission of the Chicago University Press.

of a group something other than a mere expression of the sentiments, values and attitudes of its members as individuals. They may also be something other than a mere expression of the personal qualities of the leader or leaders. Under certain conditions other combinations of power may be stronger than that of the leader. Even a totalitarian leader may recognize such a fact, and allow influences contrary to his own to operate in less important matters.

There is, then, a genuine social and psychological basis for the impression that a group has additional 'something other than' qualities. Admittedly these arise as a result of the personal characteristics of individuals. But these characteristics exert their effect *through relationships of status and mental nearness* of individuals to one another. It is an over-simplification to consider a group purely in terms of leader-follower relationships. Intermediate between leader and follower are those who occupy subsidiary leadership positions—the cabinet ministers rather than the premiers, the committee members rather than the presidents of societies. Such subsidiary leaders may be influential in the determination of the activities and norms of a group.

2. Types of Social Norm

An important kind of social norm is the *folkway*. Ogburn and Nimkoff (1947, p. 29) equate folkways with 'customs'. The term folkway, introduced by Sumner (1906), is applied to routine and socialized ways of performing actions that frequently recur; folkways avoid the necessity of making decisions in matters of minor importance. Conformity to folkways depends partly upon their convenience as standardized ways of behaving in daily life. Thus folkways govern the beginning and ending of letters with such words as 'Dear Sir' and 'yours faithfully' or 'yours sincerely'. The usefulness of such folkways may be assessed from the difficulties encountered on the occasions when such wording seems inappropriate. The writer is then left with the difficult task of expressing the right degree of social nearness or distance which may lie intermediate between the cold 'yours faithfully' and such expressions as 'yours affectionately', which may be slightly too strong for the letter in question. Evidence of such difficulty was found in an analysis of one batch of personal correspondence, which revealed the frequency with which the non-committal plain 'yours' was

used.[1] Other societies have different folkways relating to letter-writing. Thus in Spain it is usual to end a letter to a man with 'q.v.s.m.' ('who kisses your hand'). In a letter to a woman 'q.v.s.p.' ('who kisses your foot') is used. The hand and foot kissing implied in these endings has, of course, no more significance than the 'obedience' of the 'your obedient servant' ending which some writers in our own society reserve for their least kindly letters.

Differences between the aesthetic folkways of her own and African society were made apparent to the wife of the explorer Sir Samuel Baker who accompanied her husband on one of his journeys. The Englishwoman was told by an African chief's wife that her beauty would be improved if she would have her front teeth extracted, her under-lip pierced, and her hair done with red ointment (Baker 1866). Folkways of our own society permit a woman to make up her face in public. On the other hand, when a man took out his razor and shaved himself on top of a London bus, the incident was regarded as sufficiently unusual to be worthy of newspaper report and comment.[2] It is emphasized by Katz and Schanck (1938) that the criterion of folkway is not so much content as the social consequences of its violation. In Europe and America today the washing of hands before a meal is a folkway. Omission of the act brings little, if any, social disapproval. Nevertheless, as these writers note, a similar omission on the part of the followers of Jesus brought severe social condemnation from the orthodox, for whom such omission was a violation of a more stringent social norm.

From folkways can be distinguished the *mores*. Mores are strongly coercive in their conformity-producing influence, but are not enforced by any organized authority (Sumner, *op. cit.*). The mores are moral sentiments which are influential within a group. We have seen above how the sentiments of one individual may be more influential than those of others as a result of the established status and other relationships which comprise group structure. Acts which violate the mores are 'immoral'. They bring about severe social condemnation, though what is immoral is not necessarily illegal. A distinction can be drawn between two kinds of mores. Those of some groups remain categorical, unexamined and highly resistant to change. Mores of other groups are more related

[1] Personal communication, Pope, A., 1948.

[2] *Evening News*, London, 17th July, 1950.

to consequences and of a more 'liberal' and humanitarian kind. The difference parallels that which divided the obligation-centred ethics of Kant from the value-centred ethics of Aristotle.[1] Psychoanalytic investigations that have uncovered the destructive and self-destructive potentialities of the rigid, unexamined and unconditional kind of mores were anticipated by Nietzsche (1885) when he wrote: 'Fancy no one's having thought Kant's "Categorical Imperative" destructive to life.' Comparative studies of the mores of different areas of culture in terms of this difference would be of considerable psychological interest.

Violation of the law, if not also a violation of the mores, does not bring about the same intensity of social disapproval. In earlier times failure to pay gambling debts was regarded as a violation of the mores, though not legally punishable. Some men preferred to face the legal penalties for non-payment of other debts rather than incur the social disgrace resulting from failure to pay their gambling 'debts of honour'. Certain legal offences today do not appear to be serious violations of the mores; many travellers who commit customs offences are praised rather than censured by those to whom they relate their stories. On the other hand, legal offences such as those involving cruelty to children tend to carry penalties which are probably inadequate in terms of mores-standards. Members of the underworld, like the law-abiding citizen, have their own mores. As Sutherland (Ed. Newcomb and Hartley, 1947) has noted, 'to inform' against another is the most serious offence a professional thief can commit. Such informing is rare, not only because of fear of possible punishment, but also because of group consciousness and group loyalty.

It was Sumner's contention (*op. cit.*) that the mores 'can make anything right'. Unless the 'group illusion' is upheld, and the mores are regarded as some sort of super-social 'something' not inherent in the moral sentiments of members of the community, then such a statement is a tautology. It means simply that in societies where people hold certain things to be right and others wrong, then these things will be held to be right or wrong. On the other hand Sumner very correctly draws attention to the immense variations of mores and moral sentiments prevalent in different communities. Despite these variations the mores of any parti-

[1] The difference is one of the relative primacy of the concepts of right, duty, obligation or of those like value, good, etc. (cf. Ross 1930).

cular group may be regarded as among the most influential determinants of conformity.

The mores of a group are not identical with its *institutional ways*. While the two may coincide this is not necessarily the case. Most important of the institutional ways in our own society are those of the state, the law of the land. In other societies, and in earlier times in our own, the institutional ways of the Church were equally, or more, influential. Ecclesiastical courts and the sanction of excommunication upheld and enforced institutional ways just as criminal courts with their penalties enforce the law today. Smaller groups within a community may have their own institutional ways; the institutional ways of professional organizations enforce conformities on their members. For example, a doctor, a lawyer, or for that matter a psychologist, who violates such norms is liable to expulsion. Although an excommunicated individual or an expelled professional may continue to carry on his occupation, the effects of the punishment upon his life and livelihood are likely to be considerable. In his interesting study of the underworld Sutherland (*op. cit.*) notes the respect with which the profession of theft is regarded. The occupational group 'defines its own membership'; one who is accepted by this group *is* a 'professional thief', one who is not accepted is *not*, regardless of his way of making a living. Members of such a group will have nothing to do with those who do not follow the correct methods of stealing.

As distinct from folkways, mores and institutional ways, *beliefs* may be social norms which define a group and act as a conformity-producing influence. There have been cases of exclusion from political, religious and other groups as a result of deviation in matters of belief. Events of recent years have shown both in Nazi Germany and Soviet Russia that deviations from political doctrines may result in exclusion from even 'scientific' in-groups. In an earlier period Leibniz reacted to similar social pressure in matters of belief by producing two philosophies, the one published and conformist, the other unpublished and nonconformist. Apart from cases involving choice of conformity or exclusion from more specific groups, political, religious and professional, there is the question of being assessed as either eccentric or insane as a result of deviation from the general beliefs of one's community. Thus people who assert that the world is flat, that insanity is due to possession by evil spirits, or that the earth is the centre of the universe, would be

assessed by a sophisticated European group as at least eccentric, and possibly 'deluded'. Yet in earlier ages these very beliefs were not only themselves accepted social norms; they were norms to which conformity was enforced, often with extreme severity. Another kind of norm related to beliefs is what might be called *half-beliefs*. These may also characterize a group and distinguish it from another group. Superstitions may involve either belief or half-belief. Many who would intellectually reject a superstition nevertheless allow it to influence their thinking and actions. Superstitions appear to be very widespread even in highly educated groups.

Conklin (1919) studied 500 American university students. He found superstitious belief in 40 per cent of males and 66 per cent of females. Of those denying superstition 61 per cent admitted to former superstitions; these tended to be assigned to ages between 12 and 16 years. From actual superstitious belief we should distinguish superstitious half-belief. A little honest introspection may show the presence of such half-belief in oneself. Many who would deny any possible effects from walking under a ladder would either not perform this act, or feel unhappy if they did so, when on the way to an important examination or their own wedding. Those who do not throw spilt salt over their shoulder in public may sometimes feel the impulse to do so, and may do it when alone. Again, among those who, in daylight, would deny a belief in ghosts when interviewed or when filling in a questionnaire, are some who might experience superstitious half-belief in them if alone in an old house on a stormy night. The ladder superstition, whether belief or half-belief, is certainly widespread. On the day previous to writing this the present writer stood and observed the behaviour of fifty consecutive pedestrians in a busy Aberdeen street. A ladder was placed across the footpath in such a way that not walking under it involved moving on to the street. Despite this inconvenience 44 individuals walked round, and only 6 under, the ladder. No less than 88 per cent conformed to the superstitious social norm.

The superstitious beliefs and half-beliefs that distinguish a group may be respected by others. For example, ships sometimes do not sail on Friday the 13th for the very good reason that captains and owners are aware of the effect of superstitious belief and half-belief on the morale of their crews. During the second world war airmen attributed minor mishaps in flying to gremlins, a kind of

imaginary 'little people'. Needless to say, no normal pilot would have seriously upheld the 'existence' of gremlins, but an interesting mythology of gremlins and half-beliefs about them were characteristics of the pilot's occupational group. The superstitions of sailors and airmen, whether beliefs or half-beliefs, differ, but both groups have distinctive social norms of this kind. More investigation is needed of these socialized imaginative creations.

The material social products of groups have been noted—such things as badges, flags, national anthems and slogans, which are perceived by visual and auditory perception. Also of interest are the uniforms that distinguish officials of such groups and institutions as the Church, the armed forces, the transport systems, the Automobile Association and the nursing profession. The medical practitioner no longer wears the scarlet cloak which once distinguished his calling. Social products like these maintain the prestige of the group, activate the sentiments of members, and in this way strengthen group consciousness and group loyalty.

3. In-Grouping and Out-Grouping

Cantril (1948) has drawn attention to the fact that much can be learned about social conflict from a study of the identifications of an individual with his various groups. The in-group, out-group phenomenon has reference to such identification, and was first named by Sumner (*op. cit.*). At times of social conflict and threats from without an individual tends to be more fully aware of his identification with, and membership of, his in-group. An in-group is defined by Crespi (Boring *et al.*, 1948) as a group with which an individual identifies himself; other persons falling outside the boundaries of such a group belong to out-groups.

If the term is used in a broad generic sense, the factor which determines in- and out-grouping may be said to be 'similarity'. This similarity may be in respect of some wholly fictional quality such as imagined membership of a non-existent 'Aryan' race; on the other hand, it may be in terms of some genuine characteristic such as skin colour. Particularly at times of tension and social change, groups tend to show resistance to the entry of individuals who do not possess the requirement of similarity. The strong opposition to 'mixed marriages', often to be found where the in-group, out-group dichotomy and accompanying racialist mytho-

logy are strong, is understandable (Malan 1948). Such marriages threaten social cleavage in two ways. The member of the in-group who has married an outsider has deviated from the standards of that group; the out-grouper who is the other partner to such a marriage represents the threat of intrusion.

An Englishwoman who married an African has given an account of their subsequent life. This involved almost daily experience of hostile and aggressive behaviour on the part of the white in-group. The couple were turned out of their flat and were unsuccessful despite numerous attempts in obtaining alternative accommodation. Why they were unsuccessful was often stated in terms which explicitly defined the social cleavage. The husband was unable to find work, and was subjected to insults which made the reason for discrimination unmistakable. When other accommodation was finally found the wife and her child were later turned out at less than half an hour's notice and left with their belongings on the damp pavement in the rain. Husband and wife were eventually compelled to live apart in separate institutions. These incidents occurred in England.[1]

The special difficulties encountered in finding accommodation illustrate very clearly both hostility towards a deviant member of the in-group and resistance to the intrusion of an out-grouper. A similarity-dissimilarity criterion of colour contrasts in an important respect with criteria based on beliefs. The person discriminated against on grounds of colour *cannot* enter the in-group. This is not the case with other kinds of criterion such as, for example, religious belief. While the historical accuracy of portions of the work may be questioned, in *Emperor and Galilean* Ibsen gives an account of happenings which very probably occurred during the change from a Christian to a pagan Roman Emperor.

In the first of the two plays the Emperor is Constantine and the in-group is Christian. Ibsen introduces incidents of discriminatory behaviour against those who have not accepted Christianity. On the accession of Julian the Apostate (A.D. 361–3) the court becomes pagan. Julian is portrayed by Ibsen as a person whose sentiment towards Christianity is ambivalent and who finds Christian scapegoats for his various adversities. A change of religion from motives other than conviction enables some of the former members of Constantine's court to remain within the in-group after the acces-

[1] Mrs. G. Samuels in *John Bull*, June, 1950.

sion of Julian. (For the insight which it shows into these and other psychological phenomena the play is recommended to the reader.) Religious in-grouping permits the entry of those who are prepared to change their faith. The anti-Semitism of former times was often of a religious character; the Jew could escape discrimination by accepting the in-group religion. This is not the case with much modern anti-Semitism, which involves a 'racial' rather than a religious criterion. The lot of the victim of the Spanish Inquisition was escapable in ways in which that of the modern 'racial' scapegoat is not.

Similarity in terms of some actual or imaginary quality or qualities seems to be the main factor which defines these social cleavages. The similarity criterion may be escapable or inescapable.

Since folkways represent relatively uniform but socialized solutions to common needs much folkway conformity arises from convenience. Thus on a cold, wet day the majority of people tend to wear overcoats. Those who do not wish to behave in this convenient, socialized way need not do so. Conformity tends to arise from 'within' rather than as a result of outside coercion. *Habit* plays an important part in social conformity, and may develop round a biological need. The habit of going to bed at night represents a socialized solution to the appetitive need for sleep (see fig. 1, p. 29). In tropical countries sleep is often diphasic, rather than monophasic as in Europe. A socialized uniformity which both permits satisfaction of the sleep appetite and allows avoidance of midday heat is found in the siesta. Habits may have arisen as a result of past subjection to coercive conformity-producing influences, but to a large extent obedience to the mores and institutional ways of a group results from habit rather than *contemporary* social enforcement. During his adult life at least, it is improbable that the reader has experienced very strong impulses to rob banks or ill-treat other people's children. Nor does it appear to be correct to say that he does not do, or want to do, these things 'simply because of' fear of punishment. Punishment and fear of punishment may have played a part in the socialization of anti-social tendencies and the development of habits during early life. Such habits, once established, determine what is not done as well as what is done, without any direct reference to punishment. In Allport's (1938) phrase they become 'functionally autonomous'.

On the other hand, human emotions, sentiments, and primary

and secondary appetites may be so intense as to motivate the organism towards anti-social conduct. With specific reference to aggressive behaviour, which can be one such sort of conduct, Doob and Sears (1939) have advanced the view that the extent to which such impulses are translated into overt action is a function of *anticipated punishment*. Provided it is not assumed that this is the only reason why such aggressive impulses are not expressed in action, the contention seems a reasonable one. The principle has reference to forms of anti-social impulse of kinds other than aggression. If punishment is not anticipated, impulses are more likely to be expressed.

There are numerous kinds of 'punishment' other than those of an obvious kind. Temporary or permanent exclusion from the in-group are prominent among these. Humour can fulfil this important social function. Spinoza (1662) distinguished merriment, the laughter of joy, from ridicule, the laughter of hatred. Merriment with its inclusive function may consolidate a group but serve to differentiate its members and their activities from others who are not welcome. Thus Mauldin observed how groups consisting of bomber crews, paratroopers or infantry would, during the second world war, ignore and 'freeze off' a stranger who attempted to join in their laughter.[1] The excluding effect of merriment-laughter is the more pronounced, since groups laugh at what is of emotional importance to them and not to others. Good illustrations of this were found in some experiments carried out by the writer. Radio broadcast programmes given before studio audiences were played to student groups. The students were often particularly insensitive to jokes which had obviously amused the studio audience. On the other hand they were greatly amused by allusions which had any relevance to academic life, though these brought little laughter from the studio audience. It is possible to predict, to some extent, the matters involving a particular group emotionally which can be exploited as a basis for humour. The functions of inclusion and exclusion are performed in a different way by ridicule. Ridicule of an offending member of a group works in two ways, by his temporary exclusion from the in-group and by enabling others to dissociate themselves from his deviant behaviour. Group norms are re-stated in the face of the threat resulting from the actions of the person ridiculed.

[1] Sherif 1949, p. 103.

On the other hand ridicule may be used as a form of attack upon somebody or something *outside* the in-group. Laughter may be a powerful device when used against rivals, scapegoats and other opposing groups. It has great advantages over violence since violence may create martyrs whose injury or death becomes a kind of symbol for an opposing group. Laughter, on the other hand, tends to leave those attacked weakened rather than strengthened in their prestige and power. Anger, like laughter, can be used to strengthen a group's norms and punish nonconformity. It also may result in the temporary exclusion of the nonconformist and a dissociation of oneself from him. A famous historical instance of such anger is Queen Victoria's 'We are not amused'. This illustrates anger and aggression in their function of excluding. There is a stated absence of merriment, or even ridicule.

Language itself has certain obvious and less obvious conformity-inducing functions. Words have not merely an ideational and emotive aspect; they may also function in an *implicitly* persuasive way. To take extreme examples, such terms as 'wrong', 'selfish', 'unjust', and 'evil' do not merely express disapproval; they carry the further implication: 'Do not do these things.' Persuasion implicit in the use of words of this kind is a powerful conformity-producing influence. The words themselves support the mores and traditions of the group against the threats of the nonconformist. They are also used, intentionally or otherwise, to change the standards of taste and judgment of others in the direction of those of the speaker.

The persuasive function of language has been studied by Stevenson (1944) in ways which invite the attention of the social psychologist. He notes that the use of the expression 'good' means not only 'I approve', but also 'do this'. The persuasive force of such a term may be used to plead a cause. Stevenson refers to the first book of the *Republic* in which Socrates discusses the question whether 'justice' is virtue and wisdom or evil and folly. He is, in fact, discussing whether 'justice' is to retain its laudatory meaning. Thus he prepares the way for his own persuasive definition that 'justice' in the state involves each member of each of the three social classes doing the work appropriate to that class. His definition is, in fact, an appeal for a special kind of aristocracy.[1] It will be apparent that attempts to assert the 'true meaning' of a word illus-

[1] Stevenson 1944, pp. 224–5.

trate such implicit persuasion in the guise of definition. Both in childhood and in subsequent adult life an individual is constantly reacting to, and measuring his behaviour against, the implicit as well as explicit persuasions and evaluations of others. Language itself is important among the determinants of social conformity.

4. Mass Media of Communication

The invention and development of the printing press have made all of us subject to the social norms of other ages and of widely distant communities. Sentiments and beliefs remote in terms of history or geography, or both, may exert their influences upon a group and its members. A second important effect results from the reading of books, journals, pamphlets, magazines and newspapers. These enormously increase the possibilities of human perceiving, learning and problem solving. Much trial and error in thought and in action are avoided because of the information and personal experiences read about on the printed page. Again, it has been noted by McDougall that the development of moral sentiments may be greatly influenced by knowledge of some legendary or historical personality. He writes:

> 'The influence of such personalities may, for a time, far outweigh that of all the persons with whom he comes into actual contact.'[1]

These kinds of influence depend largely on the printed word, but may depend also on the radio, the film, television or some other mass medium of communication.

The wireless can produce collective behaviour of quite unintended kinds, as happened on the two occasions of broadcasts of Orson Welles's adaptation of H. G. Wells's *War of the Worlds.* The radio play which told of an invasion from Mars was accepted by many listeners as an account of real events. On both occasions a widespread panic occurred, and in the case of the second broadcast (in Ecuador) a riot followed. This was eventually quelled by troops with tear-gas.[2] It may be noted that the listener is used to hearing reliable news from radio announcers. In the Martian broadcasts fictitious events were reported by 'an announcer' and these were accepted in the way in which radio news is by habit accepted.

Different and less extreme cases showing the influence of radio

[1] McDougall 1923, p. 436. [2] Cantril 1940; Ed. Britt. 1950.

may be noted. One of the broadcasts most widely listened to after the second world war in Britain has been the *Have a Go* series. In these the broadcaster, Wilfred Pickles, visits different parts of the country, interviews members of his audience, and awards prizes for answers to questions involving the knowledge of the participants. The average listening audience for this programme is estimated at about 20,000,000 people (Pickles 1949). On one occasion the programme was broadcast from St. George's Church Crypt in Leeds, a place where food, clothing and shelter are given to poor and homeless people. The events which followed the broadcast surprised and astonished the welfare workers. On the next day 500 letters arrived; for this and subsequent days special arrangements had to be made by the Leeds Post Office to deal with letters and parcels. Donations arrived from countries as distant as Denmark and Spain and amounted to no less than £3,000. Clothing was sent in quantity. Pickles, who records these details, speaks of 'a roomful of garments'. The present writer visited the Crypt a year later and discussed the events with some of the welfare workers. Some of the garments had still to be given out at that date. The room itself was of substantial dimensions.

The effects of a programme like this, widely listened to, regular, and with considerable entertainment appeal, must be considerable. Another *Have a Go* broadcast involved a visit to an institute for the blind, and must have helped many listeners to understand the avoidable difficulties of social adjustment to which the blind are subjected as a result of the attitude of the sighted. As Shimmin (1949, p. 199) has emphasized, 'few sighted people seem able to approach the blind as individuals.' One of the blind persons interviewed during the broadcast pointed out the tendency of many people to assume that persons who are blind are also mentally defective. Again, Shimmin notes that the blind find it extremely difficult to escape from constant and unwelcome expressions of sympathy. Broadcasts of the series were such as to make the radio audience less able to preserve their ignorance and maintain hostility and prejudice against regional or occupational categories of people. The existence of such people as individuals had been made clear in a way not easily 'denied' (Chapter XI).

It is obvious that the 4,827 picture theatres which serve the United Kingdom population of 52,210,472[1] could not house the

[1] Census 1951.

millions who listen to some of the most popular radio programmes. Unesco puts the United States population at 146,571,000 in 1950. It has been estimated that on each of ten occasions President Roosevelt addressed a radio audience of forty million people (Doob 1949). Nor is a radio audience limited to a single geographical area. Moreover, if the citizen wants to he can hear his news from the radio *before* he reads it in the newspaper. Priority is by no means unimportant in the determination of opinion. In a questionnaire study an attempt was made to assess the relative value attributed by children to the radio and the cinema. A group of 1,400 children were asked whether, if given the choice, and they could have only one, they would choose the radio or the cinema. The group covered the ages 8 to 14 years, 100 boys and 100 girls of each age being included in the sample, taken from schools in the Surrey area.[1] The preference was conclusively in favour of radio (see opposite, fig. 14). There was no significant difference between boys and girls. A clear-cut preference for radio was manifested within each of the seven age groups. Other preliminary studies in the 7 and 15 year old groups, and further studies by interview and group discussion methods revealed similar preference. Nevertheless, despite the smaller numbers it can reach, the cinema (and with it television) has the compensating advantage of visual *and* auditory representation. Like the printed word and the radio, the film renders an individual open to the influence of cultures and sub-cultures other than his own. Thus actual or believed norms of Hollywood have influenced millions of people who will never visit that city, and may never leave their own country.

Possibilities of visual and auditory perception are immensely enlarged as a result of mass media of communication. People may learn from others whom they have never met, but have nevertheless seen or heard. The writer has often been told by continentals that they learned their English more from Radio Luxembourg than from actual inter-personal contact. As a result of mass media individuals may be influenced by, and may apparently form quite intense sentiments for, non-existent persons. The comic or more

[1] I am indebted to Mr. Welch, Education Officer for South Surrey, and to head teachers of 52 schools in this area whose co-operation made this investigation possible. The study formed part of a more extensive inquiry into the social effects of radio, and the writer is indebted to his former colleagues, Messrs. J. Coatman and R. Harris, for their kind permission to quote these unpublished results.

serious strip which has become a regular feature of some modern newspapers illustrates this phenomenon. It has been estimated that one such strip, Chester Gould's *Dick Tracy* series, has more than 26 million daily followers in the United States (Hogben 1949). Some readers at least appear to have more than a half-belief in the actual existence of the characters depicted in the comic strip or the

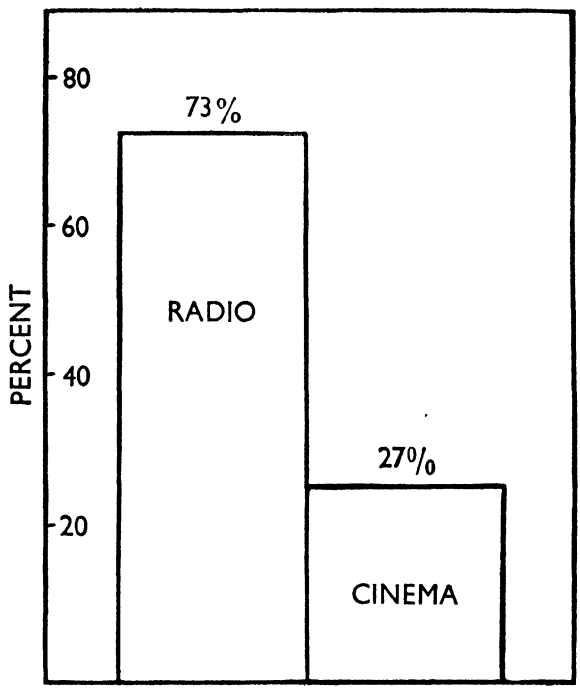

FIG. 14
Radio or Cinema (1,400 children)

novel. The author of the *Dick Tracy* cartoons brought about the death of one of his characters, 'Flattop'. He received a number of telegrams asking for the body to be sent to the writer as Flattop's 'best friend'. Condolence cards arrived in bulk; a crowd met in one place to hold a funeral party. One man, a sailor, told how he had recently been jilted by his girl friend. He had just got over this, 'and then Flattop died'. He added that this 'upset me more than losing my girl'.[1] Again, Conan Doyle received many letters ad-

[1] Hogben, *op. cit.*, pp. 215–6.

dressed to 'Sherlock Holmes' or to 'Dr. Watson', asking the 'doctor' to exert his influence upon Holmes to make him take up a case. Hundreds of letters arrived 'from all parts of the world'.[1]

The evidence of such occurrences as these is suggestive of something more than a mere dependence upon a fictional comic strip or literary character for entertainment. It involves an intrusion of fantasy into everyday behaviour. This kind of intrusion, while it has often been deplored, merits objective study by the social psychologist.

5. Status

An individual's behaviour is greatly influenced by the larger society and smaller social groups of which he is a member, and by the wider possibilities of perceiving and learning which arise from the various mass media of communication. His behaviour also depends upon his status within his various social groups. Influences are such as to lead him to conform to what is appropriate to his rank, class or caste in the social hierarchy. Nadel distinguishes status as such from 'rank', its more formalized, and 'prestige', its more fluid, version.[2] Some investigators have regarded social stratification as an 'objective' matter, others as a 'subjective' matter inherent in the attitude of a person who accepts a certain status for himself and others. It seems desirable to make a distinction between objective status—the actual position assigned by the group to one of its members—and an individual's personal assessment of his own status. Subjective and objective status may fail to coincide. Among the frequent determinants of objective status are age, sex, occupation and wealth. In most societies age tends to increase status. Adler has placed particular emphasis on the fact that many allegedly 'feminine' characteristics are determined by lower status rather than by biological femininity. Secondary and tertiary occupations tend to be associated with high status. In the course of time, though not necessarily immediately, wealth tends to lead to higher status.

The interesting argument was advanced by Veblen (1899) that surplus wealth tends to be used in ways that impress others. What is inexpensive tends, on the whole, to be assigned low value in non-monetary terms. Similar evaluations tend to be made about, for

[1] Pearson 1943, pp. 96–7. [2] Nadel 1951, p. 171.

example, the wearer of inexpensive clothes. It is Veblen's contention that 'ostentatious waste' tends to characterize the behaviour of those high in the social hierarchy. Other evaluative assessments have reference to matters of cost. There is, he contends, no more intrinsic beauty in the gloss of a well polished hat or patent leather shoes than the very similar gloss of threadbare sleeves. The phenomenon of conspicuous display of surplus wealth is particularly evident in matters of dress.

Other investigators have also emphasized the economic determinants of status. This standpoint probably takes too little account of the phenomenon of in-grouping which may cause those of established position in a social hierarchy, whatever their wealth, to seek to maintain that position. Acceptance of status superior to that of another person or group may entail acceptance of inferior status to that of yet other persons or groups. A feature of such acceptance is a tendency for those who believe themselves to be of lower social rank to adopt the ways of behaving that they believe characterize higher status. Adler's 'masculine protest' may be viewed from this aspect as involving a tendency for a woman to rebel against the status assigned to her sex, and to refuse to accept this status. Her reaction nevertheless involves, in this case, an adoption of masculine norms of behaviour. Other kinds of reaction against assigned status may occur. A woman may continue to adopt feminine ways of behaving, but assert the equality of these with masculine ways. Other individuals may manifest nonconformist tendencies by refusing to accept a social hierarchy at all. As a group, the Quakers have manifested a general refusal to accept the prevailing hierarchical conceptions in the societies in which they have lived. Thus George Fox, in his belief that all men are equal before God, remained seated and retained his hat in the presence of the ruler of the land, Oliver Cromwell. Gautama Buddha as early as the fifth century B.C. adopted a similarly antagonistic attitude towards the rigid caste structure of Northern India.

Some representative studies of the effects of status upon individual and group behaviour may be summarized. During the first world war Rivers (1920) found evidence that differences of objective military status had a bearing upon the high incidence of hysteria among private soldiers; position in the military hierarchy appeared to have a bearing on the comparably high incidence of anxiety neurosis among officers and those in authority. Dollard *et*

al. (1944) emphasizes the effects of 'frustration' arising from low status upon the determination of criminality and delinquency. Cantril (1941) has drawn attention to the large proportion of 'poor whites' who participate in negro lynchings of the mob-violence kind. He emphasizes the economic determinants of such acts of violence, and the function which they apparently serve in maintaining the lower status of the negro. The same investigator notes the part which a 'search for social status' played in the development of Father Divine's movement and its widespread acceptance by members of the negro population. Kinsey *et al.* (1948) found marked variations in overt sexual behaviour between groups of different status. Various later investigators have confirmed the finding that puberty tends to occur earlier in children of higher socio-economic status. Numerous studies have showed the effects of low social status in depressing intelligence test scores.[1] Freeman *et al.* (1928) found a relation between increase in test I.Q. and the socio-economic status of the home into which a child was adopted.

It is apparent that status assigned by a group to an individual, and accepted by that individual, may exert considerable influence upon behaviour and personality formation. Position in the social hierarchy may influence even such matters as sexual development and 'intelligence', the hereditary determinants of which may be assumed to be influential.

6. Social Roles

Linton's view (1945) that 'role' refers to the kinds of behaviour associated with a particular status is not entirely satisfactory. Individuals of equal status may adopt differing roles. Again, the same individual may function in numerous varying roles in different situations. He may, in the course of one day, be breadwinner, father, employee, friend-in-need, political partisan and radio listener. A more satisfactory conception of role is adopted by Sargent. A role is:

> 'a pattern or type of social behaviour which seems *situationally* appropriate to the individual in terms of the demands and expectations of those in his group.'[2]

The emphasis which Sargent here and elsewhere places upon the situational aspect of roles seems an important one. Situational roles

[1] Klineberg 1935, pp. 162 ff. [2] Sargent 1949, p. 279; italics mine.

tend to occur in 'unstructured situations' in which some selection is possible.

An invited guest tends to behave not only in accordance with his role as guest but also in accordance with his status. He may be an 'important guest', or a person 'merely invited'. A role may or may not have reference to social stratification and status; there are not necessarily sharp differences of status between 'male' and 'female' in European societies even when there are well defined roles. On the other hand the roles of buyer and seller involve superior status assigned to the buyer. (In times of war and post-war shortages such a situation is to some extent reversed.) Again, a man may graduate as a doctor, a woman as a nurse. Whatever country they live in their behaviour will involve similar occupationally and situationally determined roles. Their social status will vary according to the country they inhabit but, wherever they live, doctor and nurse when confronted with illness or injury will adopt situationally appropriate roles.

As a result of a group's interaction with other groups definite but by no means static roles develop, as Sherif (1949, p. 306) has observed. Each role has characteristics which define behaviour towards other members of the group and those outside. It may be noted that an individual may be assigned a role inappropriate to his personality. Katz and Schanck (1938) make a distinction between a 'leader', a person who possesses leadership qualities, and a 'mere headman'. The latter has assigned to him the role of leader but lacks the personal qualities necessary to this role. Krech and Crutchfield (1948) hold that such a situation is particularly likely to occur in social organisations, as opposed to groups of the kind whose social structure is less formalized.

It is apparent that the roles which an individual adopts in meeting various situations may become habitual aspects of his personality. Sargent distinguishes 'ascribed' from 'achieved' roles; the latter comprise the roles an individual comes to occupy as a result of learning and personal experience, and of the effect of these upon his personality. In one of its important aspects personality may be regarded as itself a system of achieved roles. A personality may come to include such roles as successful husband, 'heavy' father, poor bridge player, television addict, amateur gardener and impatient listener. He may recognize his achievement of some but not all of these roles. He may come to accept without undue

distress such a role as 'poor bridge player', while maintaining self-respect as a result of awareness of being a 'successful gardener'. (The mechanism involved is 'restriction of the ego', discussed in Chapter XI.) As Guthrie has pointed out[1]: 'Our ability to describe a person depends on our ability to name classes of situations to which he has learned such adaptations.'

Guthrie elsewhere (1938) contends that rigid adherence to a role, or conflict of roles, has considerable bearing upon the psychology of maladjustment, for example, failure in marriage, neurosis, psychosis, or suicide. In a study of role conflicts in marital adjustment Ort reaches the general conclusion that 'happiness is a function of playing the role expected for the self, and the mate playing the role expected for the mate'.[2] The emphasis which Sargent, Guthrie, Mead (1935) and others have placed upon contemporary, situational determinants of roles seems, on the whole, one of some importance. Sargent distinguishes three important 'dimensions' of roles: the extent to which they are specific, their permanence, and their breadth or extensiveness. Specificity refers to the extent to which speech or action is rigidly predetermined rather than permitted the latitude of individual interpretation. As an example we may note the extent to which the role of the Emperor of Japan was predetermined in this way. Breadth means the extent to which the role is retained in all social contacts. A personality may become somewhat rigid and unchanging in its roles: Queen Victoria complained that Gladstone addressed her as though she were a public meeting. A teacher may be aware of similar intrusions of his occupational role into his private inter-personal relationships. It is Sargent's contention that individuals are usually unconscious of the roles they play. Nevertheless he agrees that there *may* be an awareness of one's role, particularly in the case of those to which high status and prestige are assigned by others. The question of roles assigned to and accepted by an individual within his social group is a transitional one. It leads to the problems of social functioning discussed in our concluding chapter. 'Social structure' deals with the nature of the society and smaller groups in which an individual develops, and to which he becomes adjusted. 'Social functioning' has reference to that individual in society, his behaviour towards others, and the ways in which groups of individuals interact.

[1] Guthrie 1944, p. 61. [2] Ort 1950, p. 697.

SUMMARY

Two important kinds of regularities occur in human behaviour. One kind result from biological similarity, the other from social influences of the conformity-producing kinds. While the 'group illusion' is rejected, an analysis is attempted of the impression which the group-conscious individual often has that his group has qualities 'other than' those of its mere members. Folkways, mores and institutional ways are discussed as types of social norm. These depend ultimately upon the sentiments of individuals who comprise the group. Different individuals constitute varying degrees of influence upon the activities of the group and the determination of its norms. Beliefs can be social norms; the related phenomenon of 'half-belief' is considered. Social cleavages that result from in-grouping are discussed. Conformity to the norms of a group depends partly upon habit and convenience, partly on social enforcement. Development of mass media of communication has resulted in social influences from outside the individual's face-to-face social relationships. Some investigations of radio are discussed. Objective status and subjective status are distinguished and a number of researches which indicate the influence of social stratification upon human behaviour are summarized. Finally the concept of role, which has important reference to behaviour in specific social situations and to personality psychology, is examined. The concept offers a point of transition from the problems of the social group and its structure to the questions of social functioning.

RELEVANT READING

Cantril, H., 1941, *The Psychology of Social Movements.*

Sargent, S. S., 1949, *Social Psychology: an Integrative Approach.*

Sherif, M., 1936, *The Psychology of Social Norms.*

Sumner, W. G., 1906, *Folkways.*

Whyte, W. F., 1937, *Street Corner Society: the Social Structure of an Italian Slum.*

Note: Good accounts of some of the different types of social norm discussed are given by Ogburn and Nimkoff (1947) and Katz and Schanck (1938).

CHAPTER XV

Social Functioning

An individual becomes adjusted to a social group and functions as a member of such a group. Social functioning may take various forms: an individual may cooperate, assimilate the ways of thinking and behaving of others, or may allow himself to be coerced. He may conform in one or other of these ways, or deviate and come into conflict with his group. Similarly smaller or larger social groups interact, compete, conflict, coerce or otherwise function in relation to one another. We are concerned in this chapter with these and other kinds of social functioning, between individuals, between groups, and between individuals and the groups of which they are members. In conclusion we turn to the science of psychology itself and the ways in which its validated findings may exert an influence upon society. The psychologist has certain responsibilities to the groups of which he is a member. Some of these responsibilities are indicated briefly and are illustrated.

One aspect of social psychology is concerned with ways in which individuals interact and groups function in relation to one another. Of relevance to such problems of individual and group functioning are social structure and the status and roles of individuals within their social groups. It has been noted by Newcomb (1950) that roles tend to depend upon relations to 'sharply limited classes of persons'. The same individual may adopt different forms of social functioning in accordance with his different roles within a single day. As employee he may adopt behaviour of a submissive kind towards his employer; later as husband he may cooperate with his wife, and as father dominate and coerce his children; in the evening he may compete in a game of darts, and conclude the day with an argument with some person of equal status to himself. Sargent (1949) places emphasis upon the situational determinants of roles—upon the extent to which role behaviour is adjusted to the demands of a situation and is in accord

with the expectancies of those in the immediate social environment.

We have noted (Chapter IX) that criteria applicable to differences of intelligence between individuals apply also to variations in the intellectual level of behaviour; the same person may behave intelligently or unintelligently in different circumstances. As Reik (1949) has put it, human beings live psychologically at 'different levels of civilization at different times'. He takes the case of an engineer who may discuss radio or television like a man of the twentieth century. An hour later the same man may attack and argue about 'foreigners' against whom he has prejudices in ways reminiscent of an earlier period of human history. In other situations the same person may give evidence of superstitious beliefs and practices appropriate to a still earlier era. To cite another instance Hoess, who was responsible for organizing Nazi mass executions, carried out this work while apparently maintaining the roles of a normal husband and father (Gilbert 1948). In the variety of his roles a person may manifest different and uneven levels of ability to educe relations and correlates, to judge in accordance with the evidence and to abstract and apply relevant principles. The different kinds of social functioning may occur at different intellectual levels. Two boxers engaged in physical conflict may be of equal intelligence, but one under the influence of uncontrolled anger may behave with less intelligence than the other who keeps his temper. Some of the activities of modern war involve the highest levels of human intelligence, others may be manifestations of mere strength. These situational and individual differences of intelligence level suggest the inadequacy of attempts to explain large-scale social conflict or any other kind of social functioning from a simple, instinctivist standpoint. Finally, as is observed by Sargent, a given social situation does not necessarily give rise to a given type of behaviour. He cites the case of a street fight. Some persons may stop to watch, others cheer the fighters on, others again attempt to separate them or call the police. Social functioning varies in accord with status and role; it occurs at different intellectual levels. Nevertheless it is probable that some social situations and even some individuals *tend* to call forth a particular type of social functioning on the part of others. For example, a minority group or a 'defenceless' kind of personality may call forth either protective tendencies, or alternatively coercive, 'scapegoating'

and aggressive tendencies on the part of others. With these points in mind we may consider the main *kinds* of social functioning.

1. Types of Social Functioning

An illustration may be taken from a teaching-learning situation within a university—one which involves well defined status and roles. A psychology class might be concerned with such a question as whether 'instinct' is a profitable basis for motivation theory in psychology. The lecturer might impose his own opinion by coercion—emphatic assertion or denial. Such coercion might not be acceptable to the class. The students might react in an outwardly conforming way, write essays and examination answers which they think will accord with the lecturer's wish, but lack the conviction that he was right. On the other hand, they might accept the opinion stated without evidence. Cantril (1940) has presented evidence that such authoritarian methods are on the whole conducive to suggestibility. Coercion is usually unsatisfactory in the teaching-learning situation. Either the proposition is accepted without evidence or the student is aware of emotional tension arising from unexpressed disagreement. Such a 'solution' does not solve the problem; the lecturer merely withdraws from the task of finding a solution. Alternatively cooperation may take place. The group may decide to investigate the question; some may survey the evidence of animal psychology, others the writings of instinctivist and anti-instinctivist psychologists, others again the clinical or linguistic data. Alternatively competition may occur—an essay may be set and marked, or a prize given for the best contribution. Again, conflict may be involved, a debate organized, the one side upholding, the other denying, the proposition. Even at the level of verbal argument it is apparent that conflict has its disadvantages. A debate tends to over-simplify a problem, which is made 'two-sided' while the less extreme possibilities are rejected, since to mention these would weaken one's argument. This need not necessarily happen in the case of competition. In the instance taken the best essay might be one which upheld such an intermediate possibility. Compromise is another possible solution. The opposing parties may agree to differ, to proceed to other matters despite their disagreement. Compromise, particularly if it involves any public expression of opinion or action, is likely to have after-effects re-

sembling those of coercion; it tends to leave an aftermath of emotional tension since none of the parties to a compromise is wholly satisfied, even though this solution may be preferred to, or may result from, conflict. Again, assimilation may occur. As a result of witting or unwitting propaganda on the part of their teacher the students may come to accept his opinion, valid or otherwise. Alternatively it may be accepted and assimilated on the basis of satisfying evidence. All that is assimilated in the teacher-learner situation is not necessarily well-authenticated, since teaching depends partly on factors which are beyond the voluntary control even of those who attempt to maintain objectivity. For example, evaluative opinions have been expressed in this book. Reference has been made to occasions on which investigators (like Pavlov and Brigham) showed intellectual integrity of a kind desirable for the development of scientific psychology. If these assessments are correct, as the writer believes them to be, then imparting them is a legitimate part of a teacher's role. On the other hand, the propagating of values irrelevant to scientific method, its development and intelligent application to human affairs would not be legitimate. Nevertheless it is questionable whether the teacher, or for that matter the ordinary citizen, can in fact avoid imparting what Doob (1949) has called 'unintentional propaganda'. The best safeguard against this is the kind of education which develops powers of critical thought of the type which Cantril found unfavourable to suggestibility. Another type of social functioning can be illustrated from the teaching-learning situation. It has been called 'social integration' by such psychologists as Holt, Anderson and Harding. This involves allowing each party to state his case fully. Disagreements are heard and an attempt made to find the highest common factor of agreement. Should any member of the group remain dissatisfied, further expressions of opinion are sought, the facts viewed from every aspect, and eventually unanimous agreement attained. The task of a teacher in this case is to encourage those reluctant to speak, and to avoid the possibility that his own status produces outward conformity not in accord with the real opinions of the group.

Some of the types of social functioning which have been illustrated may now be considered in greater detail.

2. Coercion

Coercion occurs in a dominant-submissive relationship in which one person or party is induced to accept what the other wishes. The peace treaty which a victorious nation inflicts upon its vanquished enemy is usually an example of coercion. A compromise peace is usually the result of an indecisive social conflict. Investigation of life in the Nazi concentration camps has shown that prolonged coercion may result in eventual assimilation of the standards of the dominant group, but that prisoners who had only been in the camps for a short period were strongly motivated to resist such a tendency.[1] The coerced party may accept, first with resentment but later with enthusiasm, the actions and standards of the dominant group. In the case of child upbringing Mead (1948) has noted that coercion involving punishment (and rewards) represents only one kind of social sanction. Other cultures manifest different kinds of coercive or other features. In Bali any unusual type of behaviour is discouraged, and concern to be like others replaces preoccupation with the 'rightness' or 'wrongness' of acts. The Japanese child is punished for involving the family group in disgrace rather than for the nature of his act. Polynesian culture is based on the sanction of pride; children are taught to behave in accordance with their rank and status, and to affirm their place in the social hierarchy.

Considerable attention has been paid to coercive behaviour among the lower animals. Some interesting observations are contributed by Schjelderup-Ebbe (Ed. Murchison 1935). He distinguishes between mild and severe despotism in the pecking-order hierarchy which frequently develops among birds. Species differed in their average severity. Thus some orders of parrot pecked with a ferocity not readily observable in other birds; older and female birds tended to be more severe in their pecking than younger and male birds. It was noted that subjection of other birds was not always achieved by actual pecking, but sometimes by a sign, a threat-sound uttered without pecking. Birds low in a pecking hierarchy tend to peck with more ferocity than those near the top. In connection with this Schjelderup-Ebbe noted the influence of the total social situation upon such pecking intensity. If all birds

[1] Bettelheim 1947: see also Chapter XIII above.

which out-peck a bird low in the scale are removed, this bird will then peck with less intensity. Such increased tolerance diffuses down the new pecking hierarchy. The second, third and other birds in their turn become less severe. It was noted that something which might almost be called a rudimentary sentiment tended to appear and to complicate the pecking order. Birds would form friendships or antipathies. Friendly birds did not peck one another. Birds which developed antipathies pecked with increased frequency and intensity.

3. Cooperation

In cooperation the activities of each individual assist others to attain their goals. Ogburn and Nimkoff (1947) point out that distinctions between different kinds of cooperation utilized by economists merit wider application. One form of cooperation is 'labour in common'. The individuals perform identical functions and the pleasure achieved is simply that of working together. Apart from this the activity and effort of each one is irrelevant to the achievement of the other. Another kind is 'supplementary labour' in which combined but not identical efforts are *necessary* if the aim sought is to be achieved. A third kind involves a division of labour, in which each individual performs specialized functions. A psychological investigation of the type which involves statistical analysis might be of this third kind; the division of labour assists the task. Two people can usually prepare a statistical scattergram of results, the one reading, the other writing, more rapidly and with more accuracy than one person working alone.

4. Competition

If the same goal is sought in cooperation, such a goal is likely to be of a divisible kind. Sargent emphasizes that in the case of competition the kind of goal involved is of a non-divisible character. The goals sought in competition may be material or immaterial. Ogburn and Nimkoff (*op. cit.*) hold competition to be the 'most fundamental' form of human struggle. They maintain that it occurs wherever there is less of something than human beings desire. Thus in any society there is competition for food, social position and other things 'not available for the asking'.

5. Accommodation

Compromise and social integration are two of the forms which accommodation may take. Accommodation involves adjustment between individuals or groups of the kind which reduces tension between them. Another kind of accommodation is distinguished by Sargent as 'stratification', which *may* serve a similar function. He takes as examples of these somewhat more unstable accommodations the racialist caste systems to be found in South Africa and the Southern United States.[1] Dr. Malan's 'Apartheid' (1948) policy of complete segregation illustrates stratification of this unstable kind. The most satisfactory kind of accommodation for the parties concerned is social integration. Its application to teaching and to social organization may involve more time, but is more likely to lead to full consideration of the relevant facts and to stability of social structure. The decision or conclusion reached is likely to be based on the maximum amount of available evidence. Emotional factors of the kind that handicap judgment and cause inadequate appreciation of relevant relations will be minimized. Disagreements which exist are worked through, and not decided by prestige or status as in coercion, or left unsettled as in compromise. The advantage of the integrative method over the ordinary lecture when instructing a group was demonstrated in a series of experiments by Klisurich. Check-ups made after two and four weeks showed that the discussion-and-group-decision method was considerably more effective than the lecture in obtaining increased milk consumption on the part of two comparable groups (Lewin 1947).

An example of socially integrative methods applied to school teaching may be taken from the observations of Anderson.[2] In class a child asked whether a capital letter should be used for 'day' in the phrase 'Thanksgiving Day'. The teacher asked for the help of the class, and as no satisfactory answer was forthcoming suggested that 'Thanksgiving Day' is one particular day of the year. He then went on to say that when he spoke the name of any member of the class he used a capital letter as he meant one particular child. He then asked the questioner what he thought about 'Thanksgiving Day'. The child replied that he thought a capital should be used. The teacher did not confirm this but asked

[1] Sargent, *op. cit.*, p. 258. [2] In Barker *et al.*, 1943, pp. 466–7.

whether the child felt satisfied with his own answer, and on receiving the reply 'yes', the teacher turned to another task.

The teacher helped the child to define the problem, to re-define it, relate it to his other knowledge, and provide his own answer. What has been learned in this way has the advantage of having more numerous associations with other information, and is thus better remembered. Again, it may be noted that an attempt was made to ensure that the child was himself satisfied, and did not merely accept the authority of the teacher. Social integration involves 'responses characterised by flexibility, behaviour which attempts to bring out differences in others and to find common purposes among differences'.[1] The concept of social integration has reference in fields other than that of education. Harding (1941) notes the difference between what follows a dominant-submissive relation on the one hand and a socially integrative one on the other. With coercion there is dissatisfaction; in the case of social integration this after-effect is absent. The reaction in the coercive relationship might be expressed in the words: 'Yes, I don't quite see it that way, but you must be right.' Spoken thoughts tend to express considerably less disagreement than the coerced person really feels. With social integration words of a different type tend to be thought or spoken: 'Yes, I fully agree. Now we can both understand what we were trying to say at the beginning.'

In a consideration of methods of psychotherapy Suttie (1935) contrasts modern analytic methods with earlier methods of an intellectualist and coercive type. Analytic methods reveal more sympathy and interest in the patient together with more curiosity about what is actually wrong with him. It is Suttie's view that the analyst becomes the 'starting point of a broadening circle of anxiety-free relationships'.[2] The development has been towards therapeutic methods of a more socially integrative kind involving working through the problems of the patient with him in all their complexity. Social integrative behaviour, of course, preceded the relatively recent naming and analysis of this kind of behaviour. In the case of juvenile delinquency it is apparent that the social influence of the contributions of such psychologists as Healy and Burt have helped to encourage more integrative theory and practice in this field. Similar emphasis is apparent in the methods of such ventures as Homer Lane's 'Little Commonwealth' after the first world war

[1] Anderson, in Barker *et al.*, *op. cit.*, p. 461. [2] *Op. cit.* pp. 210–13.

and the contemporary 'Boys' Town' of Father Flanagan. Both reveal methods which are the extreme antithesis of authoritarian procedures. Lane believed that an important factor in delinquency was rebellion against authority. In the light of this view he decided to found a self-governing reformatory in which authority rested with the children themselves and could not be rebelled against. At first there was anarchy and chaos, but eventually the children formed a committee and took the necessary steps to enforce law and order of their own design. The role played by Lane himself in this is one which is easily misunderstood; it was not a matter of simple *laissez faire*. He knew what he wanted to bring about and planned and acted accordingly. The methods employed were in certain ways highly unusual for the governor of a reformatory. On one occasion a boy declared himself thoroughly dissatisfied with the 'Little Commonwealth' and announced his wish to 'break it up'. Lane handed him the poker and indicated a tea set. Rather reluctantly the boy broke one cup, still more reluctantly others. Lane encouraged him to go on. At this point the other children objected and insisted that the breaking must stop as the cups were their collective property. Lane accepted this judgment but took his watch out of his pocket and suggested that the boy should go on and break it. After an attempt to bring himself to do this the boy refused. After this incident he became a contented 'citizen' of the 'Little Commonwealth' (Bazeley 1928).

McDougall (1939) was concerned with the problem of the ways in which the most effective results of group thinking could be achieved without the regressive behaviour, lowered level of mental functioning, and intensity of emotion which often occur in the social group. Socially integrative functioning seems to meet these requirements. The mental sets of the individuals who participate resemble those of discussion as opposed to debate. Conditions likely to induce emotional upset and emotional distortion of thought and judgment are minimal. As a result of the very nature of the organization individuals are not likely to lose status. An example may be taken in the socially integrative situation which characterizes a business meeting of Quakers.[1] The opinions of all present are fully expressed. From time to time an attempt is made to summarize the 'sense' of the meeting, that is the consensus of agreement. This is done by the 'clerk', a person whose role re-

[1] Pollard *et al.*, 1949.

sembles that of secretary rather than chairman. If this summary is not acceptable to all, the deviant opinions are expressed and a new consensus embracing this additional material is suggested by the clerk. No vote is taken, but eventually unanimous agreement is attained. The decision or policy is one to which each member of the group who wants to contribute has contributed. An account is given (*ibid.*) of occasions on which this method has been used effectively by other than Quaker groups, and further extensions and applications in the field of politics and elsewhere are suggested.

6. Social Conflict

It has sometimes been maintained that the use of weapons distinguishes man from the lower animals. This view is certainly incorrect. Darwin (1871) presents evidence that here as elsewhere continuity between man and the lower animals is to be found. He repeatedly observed that a chimpanzee would throw any object to hand at a person who offended it. Organized warfare between anthropoid apes and between such apes and man has occurred. Shrimper reports that a species of Abyssinian baboon will engage in such warfare with another species; one group will roll great stones down upon an opposing party. He tells of an incident in which a troop of baboons held the Pass of Mensa in Abyssinia against the Duke of Saxe-Coburg-Gotha's expedition. The animals responded to rifle fire by rolling stones down the mountain side, and the pass remained closed for a time against the expedition.[1] In the case of human warfare weapons of extreme complexity are employed, and it seems safe to assume that nothing so complex as this can have a simple causation. In a symposium on aggression Hanson stressed that aggression between human groups demands 'a high degree of social cooperation and organization'.[2] In the same symposium Harding pointed out that the parts of a factory in which the most sensitive explosives are handled have an 'atmosphere' far from suggestive of violence. It is more like that of a solemn religious service. In wartime Government departments the only signs of ferocity are the notes sounded by the 'mutual antagonisms of rival careerists'.[3] In view of the immense variety of motives which find expression in war there are few grounds for

[1] Darwin, *op. cit.*, pp. 124 ff.

[2] Hanson, Turquet and Harding, 1949. [3] *Loc. cit.*, p. 163.

accepting any simple 'instinct' explanation of the kind advanced by Freud.[1] Nor are the motives expressed in modern war of a purely aggressive kind; fear and insecurity probably play an important part in group tensions and their outcome.

We shall turn briefly to a specific investigation, carried out by Richardson in 1948, which serves to illuminate some aspects of the problem of war. It concerns 'war moods' as factors which predispose groups to large-scale social conflicts. Richardson's method is statistical, but we shall limit ourselves to psychological aspects of the analysis. The investigator finds sufficient resemblance between war fever and disease to make it profitable to apply the mathematical formulae of relevance to the spread of disease to the spread of the 'psychological epidemic'. War fever arises from the interaction of numbers of people within a population and resembles an epidemic in that such interaction is of susceptible, immune and other categories of people. With war fever this interaction concerns not merely those friendly and those unfriendly to the other nation; the disposition to be friendly and to be unfriendly may *coexist* in the one person at the same time. One disposition is dominant, the other latent. Thus the period of an arms race may be conceptualized as a change of moods of a large number of the population from friendly/friendly to friendly/hostile. The outbreak of war comprises the change friendly/hostile to hostile/friendly. At any one moment of time a nation comprises five categories of people, besides those who have died as a result of the war. These five moods are illustrated in the predominant mood of the group as a whole during the transition from a friendly peace to a war-weary peace through war. These events and this general tendency may be summarized:

friendly	friendly	hostile	hostile	war-weary
⟶	⟶	⟶	⟶	—
friendly	hostile	friendly	war-weary	hostile

The very phrase 'war fever' suggests infection, in this case 'mental infection' by sights and sounds, a rise of excitement (analogous to a rise of temperature), immunity on the part of some persons, acquired immunity ('war-weariness') and a final fading away of war-weariness after a period of time. While admitting that there are large individual differences, Richardson suggests that the

[1] Freud and Einstein, 1933.

period of transition from the mood war-weary/hostile to the mood friendly/hostile after a war takes about five years. It tends to take about thirty years for a return to the mood friendly/friendly from this mood of friendly/hostile. Apart from differences between individuals he emphasizes that 'much depends on how history is taught to children'.

Richardson is fully aware of the fact that it is not strictly correct to speak of nations as 'hostile' or 'friendly' towards each other. The behaviour of nations as such depends upon factors of kinds we have discussed in the previous chapter. What is implied is that substantial groups or influential groups within nations manifest these dispositions. The likelihood of overt conflict is related to the numbers and influence of those with such moods as friendly/friendly (immune), friendly/hostile (susceptible), war-weary/hostile (acquired immunity), hostile/hostile, etc. The dual-moods theory advanced offers an explanation of such public statements as: 'Our nation has no hostile intentions towards country B . . .' The fact that such a statement *is* made suggests some transition, a transition from mood friendly/friendly to friendly/hostile on the part of at least a section of the population of country A. Two nations whose inhabitants are overwhelmingly friendly/friendly towards one another do not have to make such statements; they are taken for granted. Richardson suggests in his analysis what has been our contention (Chapter XIV) that limitations on the power of the more highly influential members of a group arise from the group. To take one of six specific illustrations he gives, Lenin was unable to bring about his desired policies in Russia during the first world war. He had to wait until the time was ripe—that is until the mood hostile/war-weary had become widespread. Transition from hostile/war-weary to war-weary/hostile coincided with the turning aside of the Russian people towards organized revolutionary activities. Richardson's contention is that some measure of scientific objectivity can be achieved towards wars of the more remote past. It may be added that a similar measure of objectivity towards current scapegoats may be obtained from consideration of the role which the Christian occupied in ancient Rome. Augustine tells us that in those times a familiar saying was 'There is no rain—the Christians are the cause'. The demand 'the Christians to the lions' would frequently follow.[1]

[1] Lecky 1869, p. 434.

We turn in conclusion to the not unrelated question of the responsibilities of the psychologist and of the reader himself as a student of this subject.

7. The Social Responsibilities of the Psychologist

As a scientist having specialized knowledge of one field of biological phenomena the psychologist may be a teacher, an applied worker or a research investigator. Whatever his occupational task he has certain wider responsibilities to his own and other social groups. One of these is the responsibility to make known findings of research and the consensus of informed opinions that have a bearing upon major social problems. This responsibility is a heavy one when the conclusions of scientific psychology differ markedly from what is generally believed by those without specialized knowledge. It is inescapable when widespread misconceptions are socially undesirable in their effects. This task of education of the general public may involve summarizing the findings of specific investigations. At other times all that may be available is a body of informed opinion. Some specific examples may be taken to show the psychologist behaving in a socially responsible way, and to illustrate the influence he may exert upon social structure and social functioning.

Numerous lawsuits have arisen as a result of anti-negro discrimination in the United States. Kendler (1950) reports a legal dispute arising from a railway company's refusal to serve a negro in one of its dining cars. The company concerned subsequently made special provision by setting up a table, separated from the rest of the dining compartment by a five-foot partition, for the service of coloured people. They argued that this special provision satisfied the requirements of the law; though discrimination is illegal, segregation does not constitute discrimination 'provided facilities are equal'. A District Court upheld this view that the change *did* satisfy the legal requirements. Appeal was made to the Supreme Court. Kendler, together with Deutscher and Chein (1948), assisted in the preparation of the evidence supporting the appeal. The latter two psychologists obtained a consensus of informed opinion as to whether segregation is harmful to the persons segregated. A questionnaire and covering letter were sent to 849 social scientists.

This group consisted of all members of the American Ethnological Society, members of the Social and Personality Psychology branches of the American Psychological Association, and sociologists who had major or dominant interests in race relations or social psychology or who had published research on race relations in two of the principal sociological journals during the period 1937–1947. Kendler reports that, of the 517 social scientists who replied, 90 per cent indicated their belief that segregation had detrimental effects on the segregated group even if equal facilities were provided. Only two per cent replied negatively (the remainder had no opinion or did not answer this question); 83 per cent also believed that segregation had harmful effects on the group enforcing the segregation. Many of the respondents gave reasons in writing for their opinions. At the Supreme Court case passages from reputable scientific studies were presented as additional evidence in favour of the plaintiff's claim. The decision of the Supreme Court was in favour of the negro and of the psychological evidence and consensus of opinion cited on his behalf. In his article referring to this case Kendler concludes that this and other such cases suggest 'a new direction of influence which the social sciences are beginning to exert on our social structure' (*op. cit.*, p. 510).

Science is a collective enterprise. It arises from the cooperation and enlightened criticism of many individuals who may differ in age, sex, nationality, 'race', politics, religion and other human variables. The scientific method requires the examination and attempted falsification of alternative hypotheses, also an adequate testing of hypotheses which the investigator himself favours. Thought and behaviour involved are essentially of the 'social integration' kind. The antithesis of science is the kind of thinking and acting which arises from prejudice. Opposed to such rigidity is the practice of entertaining the possibility of alternative viewpoints; Darwin kept a notebook of evidence incompatible with his own favoured theories. Prejudice involves bias, rigidity and a tendency to make adverse moral judgments about the objects of such prejudice; these judgments are among the important determinants of modern war and other sources of human suffering. The psychologist must correct his own possible bias; some such determinants might better be described as 'political' and 'economic' rather than 'psychological'. Today it is more than possible that another world conflict will arise and destroy our civilization just as social conflict

destroyed the civilizations of earlier times, those of Babylon, of Greece and of Rome. Should such a conflict occur it is probable that the *majority* who will fight would have chosen peace rather than war. As Hermann Goering remarked, with some insight: 'Why, of course, the people don't want war . . . neither in Russia nor in England nor in America, nor, for that matter, in Germany. That is understood.'[1] The gains of modern war, as opposed to those of wars of earlier times, are infinitesimal. As Goering put it, all a person can 'get out of it' is 'to come back to his farm in one piece'.

In a book review published in *Occupational Psychology*, Harding (1950) notes that many books on (social) psychology express, in their later chapters, views which 'claim authority from the scientific status of the early chapters', but that such views are 'hardly more than reflections of current opinions'.[2] Like others, the present writer has the wish to write about such social problems as persecution, racial discrimination, war and related topics in his concluding paragraphs. Nevertheless this can be done in a way which avoids the error to which Harding draws attention.

Encouragement can be found in the amount of research many scientists are carrying out into these problems, yet the present writer would question the view that the most substantial contribution which psychology can make towards the solution of great social problems is original research. More important still is the making public of established conclusions on which most psychologists are in complete agreement. For example, it has been shown by Deutscher and Chein (1948) that, whatever the layman may choose to believe, 90 per cent of a group of those qualified to judge agreed that racial segregation has detrimental effects on the group segregated. A further 83 per cent agreed that there were also harmful effects on the group enforcing the segregation. It is thus obvious that the published writings of, for example, Dr. Malan (1948) cannot be defended on scientific grounds, and are not so defended by the serious investigator in this field. In stating this conclusion the present writer is expressing an opinion of more importance and greater weight than his own. It is the opinion of the collective human enterprise we call 'science'. A similar consensus of opinion of both biological and psychological scientists undoubtedly exists against the racialist doctrines of Hitler, Rosenberg and others about

[1] Gilbert 1948 (*a*), p. 227. [2] *Op. cit.*, p. 183.

the 'inferiority' of the Jews. Köhler defended the standpoint of biological science publicly, and with considerable courage, within the confines of Hitler's Germany against Nazi pseudo-science. More than to any other individual modern psychology owes a debt to a Jewish thinker and scientist, Sigmund Freud. And as Reik wrote when Hitler and Mussolini appeared to be victorious: 'The lamp that burns in the night over the scientist's desk gives more powerful light than artillery fire. Freud shall live long after Hitler and Mussolini are dust.'

The scientific world has forgotten, if it ever knew, the racialist pseudo-science of Hitler. While there must inevitably be rejection of points of detail, neither psychology nor psychiatry, nor indeed subsequent human thought, can ignore the contributions which Freud has made. Pre-Freudian psychology may be compared to pre-Darwinian biology; Darwin's importance remains despite rejection of errors of detail.

In recent years Flugel (1945) has suggested a number of psychological criteria in terms of which social and moral progress may be assessed. These criteria comprise: progress from egocentricity to concern with others, from unconscious to conscious, from autism to realism, from moral inhibition to spontaneous 'goodness', from aggression to tolerance and love, from heteronomy to autonomy[1] and from orectic (moral) judgment to cognitive (psychological) judgment.[2] It is obvious that the past achievements and future developments of psychological science have considerable relevance to such progression. Again, it is apparent that the psychologist as a responsible inhabitant of the modern world has certain obligations to keep the general public informed of the relevant findings of research. He may do this as an individual, or alternatively with the added influence which he and his colleagues as a group can exercise. From William James, with whose contributions we began, to Flugel himself and the possibilities of future progress for which he has formulated criteria, individual psychologists have had much to contribute to the understanding and control of the destructive and self-destructive activities of human beings. From such individual contributions we turn, in conclusion, to the consensus of scientific opinion.

[1] Ginsberg regards 'the most satisfactory criterion' of social advance as the degree of independence of a particular environment (Ginsberg 1947, p. 29).

[2] *Op. cit.*, Ch. XVI.

Perhaps more important than actual research, however valuable this may be, is the kind of event which occurred in 1944. In that year thirteen leading psychologists prepared, and some two thousand psychologists signed, a statement about 'Human Nature and the Peace'.[1] Ten points of agreement, each of them developed in some detail, were stated. Among those who prepared the document there must have been points of disagreement in matters of detail. Valuable individual contributions obviously could not be included. Yet the fact of the substantial agreement of 2025 scientific psychologists (99 per cent of those who replied) is an event of some importance in the history of our subject. This wide agreement makes the document more relevant to public education than to actual research investigations into problems in this field. Among the points agreed upon were these: War can be avoided; it is a learned way of behaving and is not inborn in men; in planning for peace the primary focus of attention should be the young people; condescension towards 'inferior' groups destroys the chances of lasting peace; the dark-skinned peoples of Asia and Africa 'hold the ultimate key' to lasting peace; history shows a progression towards larger and larger units of human social organization—for example, the United States of America are not 48 threats to the safety of one another—they are able to work together. Finally, it is observed that a regression to 'provincialism' will give rise to conditions favourable to another war.

Perhaps it is understandable that the conclusions of science about issues such as this accord with what men in the course of time have come to regard as 'enlightenment' and 'humanity'. Nor is it strange that the religions which have survived, and deserved to survive, reflect similar values. The issues about which psychologists and other social scientists could make such collective public statements are many; racial, religious and colour prejudice are prominent and obvious examples. Science accepts or rejects hypotheses and conclusions on their merits; the nationality, race or colour of the theorist or investigator are treated as irrelevant. Again, it is an essential part of the scientific method to consider alternatives to one's own hypotheses. In both these respects there is a fundamental incompatibility between the spirit of science and that of prejudice: of their general agreement on this, social

[1] Murphy, G., 1945; Newcomb and Hartley 1947; letter from Professor T. H. Pear, *Manchester Guardian*, 26th April, 1945.

scientists as a group can and should speak more often. Nor is the psychologist, statistician or other investigator himself unhampered by prejudices against, and misunderstandings of, his own disciplines. The socially conscious psychologists of the future, among whom we hope we can number the reader, will have to contend with many such misconceptions, but can do a great deal to correct them.

We end with a final reference to the scientist, clinician and thinker whose contribution to psychology is unequalled. Sigmund Freud (1933) declared his belief that those who were working for science worked for civilization and against war. This conviction was expressed in an open letter to Einstein, an investigator whose contributions to physical science matched those of Freud to psychology. It was the reassurance of one of the leading thinkers of our time to a scientist of similar stature. As such it provides food for thought and may prove an encouragement to our labours.

SUMMARY

Social functioning is taken to refer to the forms of interaction between individuals and between groups. Coercion, cooperation, compromise, competition, assimilation and social integration, as types of social functioning, are illustrated with particular reference to the teaching-learning situation. Some forms of accommodation —the kind of social functioning which serves to adjust individuals to one another and reduce tension between them—are considered. Of recent years attention has been paid to the analysis of social integration, a form of accommodation. Socially integrative ways of behaving are contrasted with those of a coercive, authoritarian kind. Group conflict is discussed more fully, with particular reference to Richardson's studies of war moods. It is maintained that the psychological causes of war are complex, and cannot be analysed in terms of any simple formula. An instinctivist explanation seems to be particularly unsatisfactory. In conclusion, attention is drawn to the fact that workers in psychology and related social sciences can themselves exert at least some influence upon social structure and ways of social functioning; in connection with this actual or potential influence certain responsibilities arise. While these responsibilities are met by individual social scientists it is suggested that the way lies open for assumption of some collective responsibility by professional bodies. There is some evidence of a basic opposition between values appropriate to scientific investiga-

tion and others of a socially undesirable kind. A consensus of informed opinion can be obtained and publicly stated with some authority in many matters related to human well-being and to unnecessary human suffering.

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Appendix

STANDARDIZATION OF AN INTELLIGENCE TEST

The task of standardizing an intelligence test will illustrate some of the statistical procedures of relevance to psychological research.

When the test has been designed, pre-testing should precede presentation to the group on which standardization is to be carried out. On the basis of these preliminary trials the items will be modified and questions which are badly worded, too easy, too difficult, ambiguous, or otherwise unsatisfactory, will be excluded. If the test is intended for normal adults, the group on which it is standardized must be as representative of the general population as possible. The larger the group the better, since with large samples the effect of variables which remain uncontrolled tends to be diminished. It is usual to 'control'—i.e. select in terms of age, sex, 'normality' (psychiatric), and educational level. Objective conditions must be standardized and attention paid to time limit, size of groups tested, avoidance of noise and other distractions, elimination of possibilities of copying, and avoidance of temperature extremes. Those tested may not do themselves justice if unduly apprehensive, fatigued, or otherwise upset. It is more difficult to control such 'subjective conditions'. Moreover, an intelligence test is as much a test of the intelligence of the tester as of those tested. The investigator must use both intelligence and imagination in the control and elimination of extraneous factors, whether these be objective and obvious—like temperature extremes—or subjective and more subtle.

When testing is completed the investigator is left with, let us say, 2,000 sheets to be marked. Marking should be checked, particularly if the investigation is of the large-scale kind which often involves unskilled assistants. Statistical tables which attach a greater statistical significance to large than to small numbers assume complete accuracy in these matters. The value of large numbers may be more than offset by the mistakes of marking and addition which can occur as a result of the use of unreliable assistants. In this connection it is to be stressed that the standardization of a test based on 500 accurately marked results is to be preferred to that of a study based on 5,000 or 10,000 incorrectly marked and wrongly added sheets.

The next stage is construction of a norm. It is necessary to summarize

two important aspects of the data collected: central tendency and scatter. Alternative *measures of central tendency* are the mean (average), median and mode. The median is the central value, the mode the most frequently recurring value, of a series. A mean is usually employed, and is calculated by the familiar procedure of adding results and dividing by the number of cases:

$$\text{Formula for a Mean: } M = \frac{\Sigma f}{\text{N}}$$

In this formula Σ indicates the operation of addition, f the figures added and 'N' the number of cases. The median is often used as an 'assumed mean' when the shorter method of calculating a mean with a large number of cases is employed. The formula is:

$$M = A.M. + c.i.\left(\frac{\Sigma fd}{\text{N}}\right)$$

The letters *c.i.* stand for class interval, f for frequency of the number of cases falling in each class, and d for deviation of the class from the assumed mean.

The second statistic required is a *measure of variability* (about the mean). The simplest of the alternative measures of variability is the 'mean deviation' (M.D.). To obtain this the variation of each score from the mean is obtained, and an average calculated by division by the number of cases. The procedure parallels that adopted in finding a mean, though concern is with average deviations from the mean rather than the average of scores.

$$\text{Formula for mean deviation: } M.D. = \frac{\Sigma d}{\text{N}}$$

In this formula d represents each individual score's deviation from the mean, and Σ, as before, the operation of addition. It is a lengthy and tiresome procedure to calculate the deviations of each of 2,000 cases from a mean, and the measure of variability is usually calculated in some alternative way. The most useful measure of variability, and one of the most important of all statistical concepts, is the standard deviation (σ). When the standard deviation is used it is assumed that the variable investigated is normally distributed. When this cannot be assumed the M.D. rather than the standard deviation should be used.

$$\text{Formula for Standard Deviation: } \sigma = \sqrt{\frac{\Sigma d^2}{\text{N}}}$$

There is also a shorter class interval method which is valuable when there are large numbers of cases to be handled. The formula is:

$$\sigma = \sqrt{\frac{\Sigma fd^2}{\text{N}} - \left(\frac{\Sigma fd}{\text{N}}\right)^2}$$

In place of his 2,000 marked sheets the investigator now has two figures, a mean and a standard deviation. Let us say for simplicity that the mean is 50 and the standard deviation is 10. Simple addition and subtraction yield the following norms:

TEST NORMS

Score	*Category*	*Percentage of Cases*
70 plus	superior	2
60–70	above average	14
40–60	average	68
30–40	below average	14
30 minus	poor	2

These norms are calculated for a five-point ranking scale from a mean of 50 and a standard deviation of 10. The average category comprises the mean plus or minus one standard deviation. Above and below average categories are obtained by addition or subtraction of one standard deviation from the limits of this class. The mean category is twice the range of each of these categories. If our assumption that the trait is normally distributed has been correct, then the percentage of results falling into each of the categories will approximate to the theoretical percentages given above. Alternative norms can be calculated for seven- or ten-point ranking scales.

The investigator will also be concerned with questions of *reliability* and *validity*. Validity of a test is the extent to which it measures what it is designed to measure. The usual measure of reliability (and of validity) used is the 'coefficient of correlation'. A most lucid account of this important statistical concept is given by Knight (1933, pp. 8 ff.). It is usual to validate a new intelligence test by obtaining satisfactory correlations with other established tests known to be reliable and valid. The questionable character of subjective assessments of intelligence against which tests were originally validated has been noted in an earlier section (Chapter XII). Reliability of a test is its consistency—the extent to which it agrees with itself. Two main methods are used: test-retest reliability—a correlation of the results of two testings of the same subjects—and the split-half reliability method. Split-half reliability is obtained by dividing the test into two comparable halves, e.g. odd and even numbers, and correlating the totals for each of these parts. In the case of split-half reliability, a correction must be made by the Spearman-Brown prophecy formula.[1] Of the numerous kinds of coefficient of correlation the most important is the Pearson 'product moment' correlation (symbol 'r'). There are a number of alternative formulae which may be used to

[1] See Vernon 1940, p. 147.

calculate this; all yield the same figure. Vernon (*op. cit.*, p. 116) gives this formula:

$$r = \frac{\sigma^2_1 + \sigma^2_2 - \sigma^2_3}{2\,\sigma_1 \times \sigma_2}$$

In this formula 'σ_1' and 'σ_2' are the standard deviations on the horizontal and vertical dimensions of the scattergram; 'σ_3' is the standard deviation calculated for the diagonal distributions. This formula has advantages when a series of correlations each involving the same standard deviations has to be calculated. It is discussed by Vernon, to whom reference should be made. Numerous alternative formulae will be found in different statistical books since such reformulations are made possible by algebraic transposition. All such formulae yield the same figure; some formulae are less time-consuming than others with different kinds of data.

The actual magnitude of any statistic is of less importance than its significance. *Statistical significance* is inversely related to the probability that the result is due to chance. 'Chance' is usually defined as an indefinite number of unrelated small causes. There are tests of the statistical significance of a mean, of a difference between means, of a standard deviation, and of other statistical concepts. By applying these tests the investigator seeks to falsify the hypothesis that the result obtained is due to chance. In doing this he does not necessarily prove his own hypothesis, but supports it by falsifying one alternative—the 'chance hypothesis'. Results are said to be 'statistically significant' if the chances of a chance result are 1 in 20 (significance at the 'five per cent level'), and better if they are 1 in 100 (significance at the 'one per cent level'). The significance of coefficient of correlation may be taken as illustration. The usual method is to obtain the 'probable error' of such a correlation:

$$P.E.r = \frac{1 - r^2}{\sqrt{N}} \times \cdot 6745$$

Correlations are regarded as statistically significant if they are more than five times their probable errors. Low probable errors result from large numbers of cases and small standard deviations. The usual procedure with a non-significant correlation (or other statistic) is to 'test more cases'.

There are forms of correlation other than the product moment. These include the biserial and tetrachoric correlations (symbols: 'r_{bis}' and 'r_{tet}'). These are useful for different kinds of data to which the product moment method is inapplicable. The tetrachoric correlation is particularly useful in preliminary stages of research. The reader's attention is drawn to various graphs from which tetrachoric correlations may be read without application of a lengthy formula.[1] It is not within the scope of

[1] Chesire, Saffir and Thurstone 1933; Hamilton 1949.

this book to attempt an exhaustive treatment of statistical methods. Some excellent books are available and should be consulted by the research student.

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