EDUCATIONAL PSYCHOLOGY
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AN OUTLINE OF THE MAJOR TRENDS IN ITS DEVELOPMENT

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A characteristic peculiar to the 20th century has been the emphasis placed upon psychology.

Significant recent advances in the physical sciences have been mainly applications of past experience and methods of research in the particular field. The psychological implications of the recent advances in physical sciences for human welfare, human nature and human experience that have manifested themselves in our time, are new. Interest in these implications pervades all institutions, industrial, educational, medical, economical, among them, and introduces an increasing accuracy into our insights of human behaviour. So new is the psychological development that complete ordering of the boundaries of the branches and aspects of psychological data has yet to be achieved. A variety of areas is being developed, with constant readjustment of relations between developed areas, and as it continues, the scientifically verifiable background knowledge of education accumulates.

In education, the most striking development in the 20th century has been the coming into existence of a science of education. Other modern developments in education are based on ideas and practices which have many historical precedents. But the measurement movement in education - excluding examinations - is new. It would be false to imagine, however, that the time has been reached when fundamental principles have been determined and that elements of procedure are by now definable for application to specific behaviour difficulties confronting individual teachers. This level of application has not been attained. That would be expecting too much. Creative minds are needed to give birth to scientific progress and such minds, like all minds have at least two limitations. The first is ignorance of what lies beyond the latest discovery the second is the Zeitgeist. "Habits and thoughts that pertain to the culture of any region and period," allow or prevent the introduction and utilization of creative thought. If the Zeitgeist is ready then thought is creative.

What we have seen, with the spread of psychological knowledge, much of which is necessarily and valuably couched in every-day language, is a wider public familiarity with the more spectacular, the more concisely tabulated, the older established, views. A cursory knowledge lacking the restraining force of guiding principles tends initially to encourage unwarranted enthusiasm and eventually pessimistic suspicion of psychology. Educational psychology sounds laudable and desirable - but what, ask the Teachers, is there to psychologize and research into? It is not unknown for practical psychologists to discuss such questions as
mental tests, deriding this technique because "It does not ask the sorts of questions my children are used to"; "not enough time was allowed for the test, so I gave them longer"; or, for teachers to speak in fractions of intelligence quotient; to rely upon one test and speak openly, sometimes, of the score of that test to parents and children; even seriously to suggest that the norms could be altered to suit a specific case.

The, at times naive, and at all times undesirable, lack of a scientific approach to education and much of its psychological matter, has helped to create in the minds of many experienced practising teachers an attitude of antagonism against educational psychology and a science of education, too. The advice of these experienced teachers to new teachers is very often - to get down to teaching and forget all the psychology learned in training college. It is partly unfamiliarity with the scientific approach, partly science's alleged suggestion of interference in the realm of personality, a realm which many people consider should remain untouched by the cold materialism of science, and partly the fact that tradition and precedent play so large a part in present educational practice, that have led sometimes to passive, at other times to active opposition to psychology in education. After all it can be argued, procedures that have led to satisfactory consequences are more convincing than argument based on general psychological principles. The key word is, of course, "satisfactory." Are the consequences of our teaching always as satisfactory as we would wish? But the doubt is a valid one. There is need for caution over a new movement.

Provided, however, a truly scientific attitude is maintained, no retrenchment in psychological thinking in education need be contemplated. The great task is to determine and apply principles. The problem of training teachers is to demonstrate principles in action. What is learnt in the lecture room may not be easy to take over into the classroom or if it is taken there, applied to all classroom practices. Individual differences, for example, may be recognized in intelligence but overlooked in motives. The principle of effect may receive consideration in athletics but be slighted or unrecognized in English or Science teaching. A major task of the teacher of educational psychology in training persons unlikely to be psychologists seems to be that of establishing a minimum of fairly obvious generalizations about human beings which the teacher will be able to use to quiet a boisterous class, calm irate parents, adjust confused children, guarantee that what is taught is absorbed. If the learning of a general principle carried with it mastery over all situations..!

Believing that there is no delusion in hoping for a psychology help-
ful to education, for, indeed, a psychological foundation of scientific education; believing that the "age of psychology" will assist to clear a path towards a maturing philosophy of education, this study of the status of educational psychology has been commenced. It became clear after some thought, however, that there are many vagaries prevailing in educational psychology. Are these vagaries due to the comparative neglect of the nature of any of the phases in its development? And so the question arose, how did Educational Psychology develop? The answer was not easy to find.

The Roots of the present lie deep in the past. The past may throw as strongly projected a light upon the present of educational psychology as it does on other natural sciences and human institutions. We cannot afford to ignore what was said and done in the past.

The first step in presenting a reasoned argument for an educational psychology is therefore, an historical survey of the field. Once the roots, the main influences in the development of educational psychology, have been traced and related the way is open to a critical examination of the present status of this discipline, to perhaps the formation of a policy for the future development of educational psychology; and, maybe, the formation of a training scheme for educational psychologists. This survey attempts to examine some of the major roots of educational psychology.

There appear to be several sources from which educational psychology derived its vitality. The trends of events in the 20th, 19th and earlier centuries; the developments in philosophical thinking; the break away and establishment of psychology as a distinct science; the influence of other sciences, natural, physical and social; developments, related to the above trends, in the thought of the educators; the training college and normal school movement.

The history of any branch of education is a story of a total effort, a totality arrived at by an interaction of creative and conserving forces transmitting a culture consonant with the essential doctrines and dogmas of the period. Those living in that period find it difficult objectively to assess the doctrine and especially the dogmas. As science matures self-analysis may become feasible but for the 19th and earlier centuries attempts at objective self-analysis were often unreliable.

Looking back it seems justifiable to divine these aspects working in and to a totality of educational ideas and institutions; economic conditions, wherein industrial developments of the 18th and 19th centuries were significant; social conditions; contributions from art, religion, science and philosophy. It
is intended to set out a brief account of how these principal factors assisted towards a psychology of education. Until more work is done in this field, however, the amount of emphasis to be devoted to these aspects depends mainly upon personal judgment.

Philosophy before Kant embraced under its aegis the specific fields, related yet growingly unrelated, of logic, aesthetics, ethics, politics and metaphysics. It was not until later in the 19th century that psychology severed itself by name and undertakings away from the broader realms of the parent field, philosophy. True, the subject matter accepted without challenge today as appertaining to psychology's realm, has long been discoursed. Philosophers since Heraclitus have been known to be interested in the nature of man. Scientists by empirical and inductive methods have observed, experimented and reasoned about man as a natural object. Philosophers and scientists both, that is, annexed the province now considered as belonging to psychology. Psychology, then, has had long and close affiliations with both philosophy and science and, however wide the gap may grow between psychology and philosophy, there will always be a link.

Nor will that link be one of the past, alone. Psychology has philosophical problems. The study of the ultimate reality of the mind is properly the province of philosophical psychology. The close relations among educational psychology, philosophy and science therefore need analysis. Education, as an art and as a science in its own right, interacts with philosophy; psychology derives from philosophy. Educational psychology therefore will draw conviction for its tenets to the extent that its specific activities are related to the broader fields of education, psychology and philosophy.

Since the growth of psychology as a recognized science separate from philosophy, many processes of differentiation and demarcation have resulted in both fields. Philosophy developed until the late 19th century under the reign of authoritarianism. But late in the century and in the 20th century, streams of thought and practice drawing vitality from the writings and teachings of Rousseau, Pestalozzi, and Herbart converged into a changed attitude toward authority. Pragmatism, as this convergence has come to be generally known, tested everything, ideas, hypotheses, faith, religion, by the way it worked, by consequences. Philosophically, pragmatism opposed the custom of testing beliefs by their degree of accordance with certain general notions or principles accepted all too often on the authority of others and with little or no other criterion employed for coming to a decision. The changed attitude was centred by Dewey and others on the task
of developing a better generation and the effect has manifested itself in the changed approaches to education.

Independence has proved healthy for the development of psychology as a science. Major discoveries have emanated and presented the world with insight into the value of such concepts as psychological age; conditioned responses; fixations; aptitude uniqueness. Today it is becoming appreciated that the science which emphasizes the need for individual and hence social maturing is itself maturing in several directions. The process of maturing has been advanced by drawing upon the findings of related sciences, including biology, physiology, chemistry; by the application of behaviourist, depth, Gestalt, and other approaches to the variety of psychological problems; by being drawn upon by the scientific fields of other studies, including psychiatry, education, sociology; and, by occupying itself in examination, elucidation, suggested prevention and cure of problems experienced in other studies, education, sociology, anthropology, economics. The interaction between psychology and other studies impinging upon its frontiers, of which education is one, needs to be investigated if an appreciation of developments in educational psychology is to be established.

As early as 1912 Sir John Adams considered that education had captured psychology. It is to those men who endeavoured to supersede the attitude of education as a mechanical implanting of information by an attitude of eliciting natural responses from children, that a more empirical and psychological attitude towards education must be attributed.

Their initial attempts to develop psychologies of education gradually became bases for later hypotheses by educational thinkers. Their investigations, earlier and later, were in two directions. On the one hand, early they drew from the findings of psychology information of importance to the further development of education, and this procedure must ever be prolonged. Of greater significance to the development of education, however, has been the later establishment of education as an independent study. From the position where the results of theoretical psychology were, in the words of Munsterberg "simply transplanted into the pedagogical field", the developments of psychology of education can be traced to the stage where pedagogical problems determine experimental investigation, a healthy stage for education, if handled with wisdom; and, a stimulating situation for pure psychology.

Even prior to the days when outlines of psychologies of education were laid down, an awareness was evident of the need for establishments where teachers could be brought in touch with the views of earlier and contemporary educators.
This movement, the genesis of teacher training colleges and normal schools, has both reflected the philosophical and psychological thought of the period and also gradually clarified the problems belonging properly to education, which problems have been posed to the philosophers and psychologists working in all branches of that science.
The arguments around the question of how education is to be defined, not yet having been decided, it might seem presumptuous to attempt definition of the field of educational psychology, its relation to the other sciences, its scope. The intention, however, is not so much to define the limits of educational psychology, as to ascertain in broad outline some significant fields discoverable within its boundary. Education may be viewed as recognizing processes in and by which, knowledge, character, behaviour of the developing organism, the child, are shaped and moulded in part by factors in the environment of which the child is not aware, in order to adjust him to these factors, and in part by influences devised by adults in such a way as to result in a mature organism exhibiting certain individual and social traits, wittingly or unwittingly regarded (by the community sponsoring the education) as 'normal'. Since, that is, characteristics of another personality manifest themselves to us mainly through interacting behaviour, the educational process may be described as being concerned with modifying youthful behaviour to conform to socially acceptable adult behaviour. The chief instrument used is the school. Now in so far as psychology may be described as a positive science predominantly concerned with studying the behaviour of living organisms so far as that behaviour is mentally or psychically conditioned and so far as behaviour can be mentally or psychically interpreted, there must in certain aspects of the educational field be a very close relationship between any theory, practice, or science of education and the science of psychology.

Psychologically then, the aim of education is to change the individual in certain (predetermined) directions. Child or adult, we always are thinking of affecting some change in his reactions - whatever be the instruments we may employ - school, church, newspaper, library, club. The starting point for this education is the individual. If our teachers are to be effective craftsmen they must realize it is the individual we want to change. The first big division of the subject of educational psychology is, then, an intensive study of the individual.

The second division is the study of how to modify this individual. We may, therefore, suggest the direction that educational psychological thought may take, namely, to study individual behaviour in educational situations. Educational psychology must concentrate on those life situations considered specifically educational.

It is here that we branch off from general psychology. Although the field of general psychology may be considered as embracing the studies of the behaviour of individuals in response to life situations, it is bound to consider
any and every kind of life situation, rather than specifically educational situations.

But, it will be asked, what life situations are there that are not educational, specifically or generally, wittingly or unwittingly? And it can be agreed that there are probably none. Is not everyone in every community being educated with the passing of every moment? Is not each new experience part of education? And, again, it must be agreed that when education is conceived as an "induction into the learner's culture" it is as old as social life and a most vital, indispensable concept which despite all differences of parties, religions, economics, philosophies, is the one great panacea upon which all social leaders and reformers agree. Educational psychology is, however, more concerned, I think, with one highly specialized aspect of education, the school. The social psychologist, sociologist, sociological educationalist, concerned with totality of all culture must take cognizance of the transient and inchoate assemblages of persons particularly as these tend to become lasting, but the educational psychologist is primarily concerned with the more significant groupings of individuals and in particular the school. Not the school thought of in terms of tables, teachers and texts only, but also in the much wider view of a highly specialized aspect of education; as a "sort of hothouse of young fellow-learners with socially sanctioned instructors." (Allport)

The school considered as a specific educational association, intense at an age and lying within the all embracing association that corresponds to education of a society, is the particular field of educational psychology. No attempt should be made arbitrarily to confine it within this field, but in its present "natural history" stage of development the school, it would seem, is its special province.

The implication of this viewpoint must be noted. Educational and general psychology have a close association. An examination of the contents of any text on educational psychology demonstrates this link. From Munsterberg (1909) to Beaumont and Macomber (1949) we find references to attitudes, curriculum, discipline, individual differences, will. There are notable differences of emphasis, terminology, contents to be sure, but early or late the link between general and educational psychology is established. And yet educational psychology, that branch of the systematic study of the thought and behaviour of human beings that is concerned with learning and teaching has had its unique history.

The practising teacher is confronted with a multiplicity of special matters that arise within his classroom daily. Every problem has to be met and every decision impinges upon human behaviour and relationships. To this extent all school problems are in some sense psychological problems. It is the immediate field of educational psychology to be concerned with those contributions of a
psychological sort which can be of service to educators. But we must go further. Most solutions to problems will involve changes. It is the further duty of the educational psychologists to attempt to understand these changes and interpret them. The educational psychologist therefore faces a most complex field. With methods that are still shallow and ambiguous where they exist, he has to examine and interpret ready for practical application experimentally observed or non-experimentally reported data.

Another implication of our attitude towards educational psychology is a sociological one. True as it may be that from a psychological standpoint the aim of education is to change an individual in a certain direction, to change his reactions, also true is it that many instruments are effectively employed in achieving that change, home, press, church, radio as well as school. The aim of education then, is at any given time determined by the interplay of social forces, the social philosophy or zeitgeist of the day. There are those in the western world who would undertake a campaign for the purpose of changing this state of affairs to one where educationalists determined the kind of society we would have. They point out that in the main teachers are devoted to the general welfare of the community and not to some special cause; that the power of suggestion that the teacher can wield is considerable. Hopeful as this approach may appear, it contains inherent weaknesses and dangers. Can we assume teachers would always be devoted to general welfare? If educationalists determined the kind of society that we were to have would they not become subject to, whereas now they are relatively free from pressure groups? And how can the educator, who is a specialist, advise for a broader general field? Is the school not playing its strongest role as a force in the community prepared fearlessly to discuss alternative systems of social philosophies? Then, too, it must be remembered that the school is the instrument of society, the agency society devised as means of self-perpetuation. Can such a specialized instrument expect to derive its nourishment from society if its role is inverted? The school is not as fundamental an association as the family. The school had to be created. Its health lies in its objectivity. If it remains impartial as a unit, it can then fight strongly against political infiltration. The school then should remain under the influences of sociological forces. Sociological forces and objectives in communities vary according to the wishes, wants, imagined and actual needs of the members of the community. Psychology can assist - vaguely at times, specifically at other times - to analyse and comprehend objectives and forces in society and when applied to education can help the educator attain them. Thus it is justifiable to claim that a special task of the educational psychologist is
to assist the educator realise the potential and latent forces within the particular society, community or nation. To do this, educational psychologists must be aware of, in touch and conversant with sociological forces.

Sociology is devoted to the general study of patterns, mechanisms, institutions of societies, particularly human societies. The other social science whose field is of significance to the educationalist is Anthropology, concerned as it is with peoples, their languages, cultures, mores, as they have been found in different localities through the ages. Psychology as it concerns the years of adolescence, for example, draws upon the conduct of primitive, tribal ceremonies of initiation for puberal youths, to show that our society chooses to avoid clear recognition of these years — although groups within our society may not.

By establishing a link between Educational Psychology and General Psychology we are placing Educational Psychology among the constellation of sciences. In this constellation, however, the educational psychologist finds his position to be unique. Along with psychology, educational psychology is concerned with developments in social sciences, as just noted. With psychology, it is further concerned with the organic sciences, Physiology and Genetics, particularly, perhaps. The physiologist studies the functioning of living organisms; functions of eye, ear, digestion. The psychologist, interested in the same data, studies the phenomena of vision, hearing, hunger, appetites. The educational psychologist, interested in exactly the same data, studies myopia, astigmatism, aural defects, digestion rhythms as they concern the learner and teacher and have bearing upon reading, position in the classroom, timetable organisation.

The geneticist studies the mechanics of heredity. The psychologist is concerned to ascertain the relative significance of heredity in the behaviour of individuals and groups. The educational psychologist is particularly concerned to learn how much he can teach, or any individual can learn; how to test, measure and anticipate innate factors.

The anthropologist considers the broad culture of nations, peoples, their art, religion, mores, customs. The psychologist examines their significance as indices of behaviour, their cathartic, sublimation value. The educational psychologist uses knowledge of art therapeutically, knowledge of other cultures as guides to understanding problems in his own society.

The sociologist deals with the family, state, institutions and associations. The psychologist is concerned with how the peoples in the family, state, institutions and associations think, what are their habits, their drives, the forces moulding them and being moulded by them.
The educational psychologist has the same concern particularly within the one association, the school. Educational psychology is not so much a clearly defined and well-bounded section of the general field of science as a concentration and application of the whole of science upon a special, practical problem - the problem of school education.

The educational psychologist, by selecting his material and techniques to suit his practice and excluding those that appear to lie outside his particular problems, thereby, in part, avoids the controversies that arise within general psychology and other sciences, controversies that often appear irreconcilable and which if carried over into educational psychology could and would rend it severely. Furthermore, if he passes back his findings and hypotheses to other sciences for continued experimentation, the educational psychologist can perform his peculiarly practical task of assisting the teacher and the pupil in the midst of surrounding controversies. This is not to deny that educational psychology itself may erupt divergent views within its own field. Nor is it to deny that educational psychology may benefit from the results of controversies in other fields. It is rather to suggest that the cross stresses of other sciences need not disrupt the educational psychologist. Indeed, when Pressey writes in his preface, "This volume might be called an experiment in subject matter. It is an attempt at a sweeping reorganization of the usual treatment of educational psychology...", it is apparent that the views of some educational psychologists do diverge. And it is obvious that, opposed as Behaviourism is to Psycho-analysis; as Physiological Psychology can be to Gestalt Psychology, and all four and others are to one another, educational psychology has nevertheless benefited from them all - the conditioned response, the import of the unconscious, the function of sense organs, the apprehension of whole patterns, to name the obvious. Educational psychology can progress despite external storms, internal disruptions, and even benefit from them.

The uniqueness of educational psychology is more broad based still. Psychology is a positive science concerned with behaviour as it manifests itself. It is not concerned to indicate what behaviour ought to be. The "ought" of behaviour is an ethical rather than a psychological problem. Admittedly no psychologist works in a vacuum that excludes the "ought", but as psychology is constituted it is the positive aspects that the science is concerned with. Education, however, is concerned with the "ought" and with values, and belongs to the group of normative sciences to this extent. Education, deriving its force from social forces will suggest how children ought to behave, conduct themselves, change and react. Educational psychology, or more pointedly, the psychology of education, must endeavour to apply scientifically established criteria conscious always of the values set for
it by the social forces that generated it. If either of these aspects is subordinated to education will lose contact with reality, vitality in education will dwindle. It is the essential task of educational psychology that it should be aware of these responsibilities and assist the school inculcate educational values; and, too, that it should apply scientific findings. Where a dichotomy develops between these two standpoints the issue must be reconciled within educational psychology.

This is the complexity of the field embraced by educational psychology. Positive and normative approaches must both be acknowledged. In its own right, then, educational psychology is concerned with changes and developments in philosophical doctrines.

General psychology had to grow to independence from within philosophy. This process lengthy though it was, was nearing acknowledgement when educational psychology came to be recognized. The two movements, general and educational psychology have become sufficiently distinct for us to trace a relationship between general psychology and philosophy on the one hand and educational psychology and philosophy on the other. General Psychology, speaking broadly is concerned with philosophy when it attempts to establish the nature and scope of mental activity. Educational psychology draws upon philosophical opinion in its attempts to decide a universal background for education, its meaning and purpose.

It matters whether education is thought of as the process of man's reciprocal adjustment to nature, to his fellows, to the ultimate nature of the cosmos; as a process in which the individual both adjusts himself to his world, and in another sense, his world to himself. An idealist philosophy of education would account for man finding himself as an integral part of a universe of mind, whereby man lives his way into a system of thinking rather than thinks himself into a pattern of living. Historically the union of education and philosophy dates back at least to the Republic of Plato, the first significant treatise of a philosophy of education. There, in the Republic, education is represented as both an individual and a social affair. To paraphrase Plato, the great object of all education is to temper and blend together the spirited element that gymnastic develops in a man's nature and the philosophic element that, for example, music develops, in just and harmonious proportion. Man, isolated from his fellow men, is not self-sufficient. Hence the origin of society, and of the state. The individual contains within himself all of the characteristics that are writ large in the state. Whether the 20th century A.D. or the 5th century B.C. form of idealism be adopted, the perspective of the educator is similar. Educational values are part of an antecedent reality, not subject to the ravages of time. The educator is not dominated by the present
or anxious for the future, he is secure in the past. Such an educational philosophy inspires great confidence. Based on past experience levels of attainment, standards of conduct, curricula contents, are measured against a background of experience of specific results. These are the results arrived at when the idealist point of view is followed. That is why it matters how education is thought of philosophically.

It also matters whether education is considered to be all one with growing, and the school, being a reflection of the larger society, should allow life to be learned by living that life. This view would object to all authoritarianism in the school and to a body of authoritative knowledge which is to be taught by the school. The school, like the world, would be experimental, testing its results one by one as they are obtained and retaining or ruthlessly rejecting according to the result. The level of understanding necessary for creative social adjustment could not be arrived at until education ceased to be a phase of institutional behaviour and became a process superior to the institutional habits of any one society at any one time. The school would have to cease its formal approach and endeavour through trial and error to achieve a broadening, emancipating, liberalizing of the masses, achieve that is, personal experience for all. Where education in the school is abstract and is made a means of transmitting accumulated knowledge and racial culture only, then the social inheritance comes to be more important than the individual. The individual, that is, has to be adapted to society. School practice which provides full penetrating direct, purposeful experiences of whole individuals realised in the education process while it is going on may best meet the needs of society. What is required is intimate and penetrating contact between the individual and the environment to which he is attending. By face to face, point for point study, experience is appreciated as more than a means to an end. It is an end in itself, vital and absorbing. Contacts as broad as these rather than evoking common and uniform reactions, give play to the various interests, talents, characteristics latent within society and appeal to the many traits, capacities, sentiments, desires, preferences of all within society.

Another approach to the question is the view - and this also matters - that education should be a training for life. It is overlooked by the adherents of this view that life is diverse and changing and that by definition education cannot be individualised; that, therefore, what the school provides under this thought is training in aspects of life, in a form of living rather than in living itself. Abstract and formal education in the school run the danger of being out of touch with living. Thus the philosophy of education advanced has direct relation with educational psychology.
Having suggested where educational psychology has made for itself a unique place among the sciences, it remains now to outline the field of educational psychology as determined by its practice and antecedents.

When philosophy is regarded as a central co-ordinating discipline, many sciences, pseudo-sciences and activities can be said to derive from, influence and interact with it. The interaction might be shown:

Not all disciplines are mentioned. Metaphysics, logic, aesthetics, religion, are to be understood as belonging somewhere along the broken horizontal. These unmentioned fields have relation to educational psychology as have those included. The two way arrow suggests the inter-play of influences.

Philosophy has a direct effect on educational psychology; Educational psychology has a direct influence on philosophy. Philosophy has an indirect effect on educational psychology mainly through education and psychology but also to a lesser extent (generally) through the other sciences such as physiology and sociology. The influence of educational psychology upon these other sciences is slighter and is, therefore, not indicated.

The field of educational psychology can be appreciated through a more detailed study of the relationship between psychology and education, as portrayed in a table from Sandiford. Sandiford considered educational psychology as an important field of applied psychology.

"Each term in the upper line is contrasted with the one immediately below it. The lines and cross lines indicate the various combinations which are to be found. Normal young humans can be studied as individuals or in groups so as to develop the principles of pure or applied science."
"Applied psychology applies the findings of pure psychology to the practical situations of life. Applied psychology is dependent upon the research of the pure scientist whose only desire is to know and to understand. Some branches of psychology, such as experimental psychology and physiological or neurological psychology are methods of psychological study rather than true divisions of the subject matter of psychology. Others, such as the psychology of arithmetic, or reading, are special sub-topics of the major fields of applied psychology." (1928, P. 7).

In its origin educational psychology was perhaps to be considered as a derivative from general psychology, as one branch of applied psychology. With the development of educational psychology, however, its role has changed from that of a derivative off-shoot to an activity in its own right. Sandiford's table needs, therefore to be considered in conjunction with Table one if we are to appreciate the true goal of educational psychology. What began as an off shoot has matured.

Just as philosophy and, Psychology, have branches so educational psychology itself has come to have two main and three subsidiary divisions. We may split the field of educational psychology into two arbitrary divisions for the convenience of study. That the split is arbitrary and a convenience must be born continually in mind. If each division was to be studied separately without reference to the other the research field would be guilty of the same error that most 19th and many 20th century educators can be affronted with, that of analysing man into constituent parts in the vain hope that thus his nature would be understood. Man, changing, never static man, who is undergoing modifying stimuli from his environment must be studied as man in the final issue. The findings from one branch of educational psychology can supply only part of the answer. The other parts of the riddle must come from allied branches.

The two main divisions of educational psychology may be considered under the headings.

A. Man's original nature.
B. Man's adjustments on account of his environment.

This main subdivision, the original nature of man, aims to discover the traits, powers, capacities, instincts or needs, indeed the fundamentals, a human possesses. Once ascertained and delineated and laws having been formulated, these fundamentals and the concomitants of intra-uterine living, will require to be marshalled as bases for educational procedure. This subdivision needs to unveil all facets of human endowment especially as these are concerned with behaviour of the human organism, how his endowment is inherited, how varied, how mutated. And working through and with other sciences this subdivision of educational psychology
needs also to unveil how the body structure limits and enables co-ordinated behavioural patterns to establish themselves; whether human reflexes are irrevocably fixed or whether reflexes may be conditioned into non-existence, and whatever the answer, how reflexes impinge upon behaviour; whether humans inherit unlearned modes of responding to situations or un-variable response patterns, or 'instincts'. And whatever the answer, how innate motivating forces, of absence of them, affect behaviour. It is vitally concerned to determine also, whether there are primary group factors of intelligence or whether there is a hierarchy of 'g' and a (probably limited) number of broad group factors, arranged perhaps by levels into narrower group factors, and whatever the answer, whether factors of intelligence may be regarded as the result of learning or the predominating reason for an educational system.

Man's original nature, has been considerably clarified by the attention accorded to Child Study. Detailed individual case studies by parents as their children grow and develop within the family supplementing individual and group observations of children outside the family have enabled us to arrive at a closer and finer awareness of the degree and kind of instinctual and emotional components of humans. Children's behaviour alone and in groups at various ages, their responses to controlled and 'natural' situations, the development of language facility, qualitative and quantitative differences among children at and of different phases of physical, intellectual, emotional, social and other development, not to mention effects of handicaps in all such phases of development, all these aspect of behaviour and behaviour influences specifically applied to education, have derived generating force from child study. Such knowledge background must become the perquisite of all teachers as well as all educational psychologists.

The second subdivision of educational psychology, man's ability to adjust, is concerned to arrange educational situations which will bring about the responses considered desirable. Not only will it need to be in touch with the other subdivisions to ascertain the full nature of these responses but also to pass back information to other subdivisions on the effects of educational practice upon man's nature. Laws of learning, probably different with varying subjects, progress rates and limitations, will be formulated within this subdivision. Knowledge of the appropriate conditions is necessary to ensure that learning be carried out economically. When it is appreciated that many passive repetitions will be less effective than a much smaller number of active attempts at recall, that an intention to learn is valuable, that successful attempts facilitate subsequent attempts, when these factors are assimilated effective educational situations eliciting desired responses may be accomplished with economy.
Curricular studies, founded on advances in knowledge of man's adjustment to his environment, knowledge that is of the psychology of learning, have been a natural development. Research into the laws of learning applied to the subjects of the curriculum has benefited, inter alia, reading, arithmetic, spelling, language teaching, drawing and art to such an extent that curricular studies may justifiably be listed as a fourth subdivision of educational psychology. The objective evidence from educational research of the wide range of reading ability in primary school age groups has encouraged teachers to adopt group and individual methods of teaching reading in place of the class reading technique prevalent earlier in the 20th century. Or, again, the case studies mentioned above, together with tables of correlation between different school subjects have confirmed the variability of pupils from subject to subject. And it has been shown that tests in English and Arithmetic not only ensure certain basic standards, but also appear as useful indicators of temperamental stability. Properly constructed examinations in English and Arithmetic are coming to be used to an appreciable extent, as guides to behaviour, to persistence, power of application. When more is known of the exact interests at various ages and how to harness emotional energy from interests, the relation between effort and interest may be intensified through altered teaching methods and curricular contents.

In an attempt to come to grips with variable human nature, and laws of learning statistics were introduced into educational practice, not, however without considerable controversy. Satisfactory application in the educational sphere since 1930 has resulted in a rapid increase, in Britain and the U.S.A. in educational statistics. From being a "peculiar and somewhat isolated branch of psychology," a specialist field, a "dubious hobby of an esoteric school," educational statistics are today discussed in almost every text on educational psychology and all students in training as teachers are expected to learn something of educational statistics and their application to teaching. Burt, in championing the cause, particularly of Factorial Analysis, encourages this attitude. "The logic of psychology needs studying as a special discipline." Burt touches on an important point when he says, "Since the (educational) field is highly complex, a direct advance by non-statistical methods is bound to be slow. Meanwhile, scientific curiosity demands at least a provisional solution; and the immediate needs of applied (educational) psychology call for working hypotheses and some practical device for determining the key characteristics of different individuals." It is these urgent demands that educational statistics endeavours to meet. The crux of the matter is that in educational statistics we see an attempt to examine logically, although disguised in a mathematical cloak, the application of the complex science of psychology to education. Teachers and educators generally can, through educational statistics
relate their assumptions, opinions, hypotheses, reasoning, more appropriately to psychology. And it is far more important "that the student of a particular science should appreciate the logical method of his science than that he should memorize a mass of details about facts or the latest fashionable theories." (Burt, Chpts. 1,2).

Educational Psychology's main locale is the school where findings from allied sciences can be applied to educational practice, and whence practical experience of the application of scientific methods can be built up. The role of independent arbiter, is preferable in the task of interpreting data relayed to and by educational psychology. Methods and scope of educational Psychology are yet to be determined but whatever the philosophical influences, man's original nature and his ability to adjust are the prime fields for immediate consideration. The psychology of learning begins to yield to the study of human development. The positive, preventive, supportive, dynamic, genetic orientation towards individuals as individuals and as members of a group, rather than an academic, curative, static approach could be suggested as the role for educational psychology. Its main concern will be with learning processes, but for some time to come more knowledge will have to be forthcoming from Child Psychology before learning processes can be furthered. Both learning and child nature then can play complementary roles in educational psychology data, the educational Psychologist employing the knowledge in the school.

Diagramatically the divisions of educational psychology might be represented thus:

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EDUCATIONAL PSYCHOLOGY

ORIGINAL NATURE

CHILD STUDY

PSYCHOLOGY OF LEARNING

EDUCATIONAL STATISTICS

CURRICULAR STUDIES
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Once again, even more pronounced than in the previous diagrams, the joining lines must be considered as linking interacting processes.


McDougall.  *An Outline of Psychology.*

Martin and Stendler.  *Readings in Educational Psychology.*


Mursell, J.L.  *Educational Psychology* 1939.

Pintner.  *Educational Psychology* 1929.


Sandiford.  *Educational Psychology* 1928.

"  *Foundations of Educational Psychology.*

Stern.  *General Psychology.*

Watson and Spence.  *Educational Problems for Psychological Study* 1930.
THE ZEITGEIST.

"No novelty is wholly novel," Whitehead reminds us, and continues, "factors which were present sporadically and as the dreams of individuals, or as a faint tinge upon other modes of mentality, receive a new importance later."

When we say, therefore, that the concepts of activity, growth, interest and integration are central to the thinking of 20th century educational psychology the problem is not so much to recognise new concepts as to understand how a shift of emphasis has happened to older concepts. The idea of activity stimulating experience has been referred to periodically by philosophical and educational writers of earlier centuries. Plato, in the Laws (65 30F; 53 a - c; 69 b,c) says, "From the age of three to six, children play with the neighbourhood children. Playgrounds are provided by the State. Matrons function as playground supervisors. Their games are treated as part of the State Education System. The games have two sources, one spontaneous and the other a certain measure of direction and control, to avoid spontaneity, which left to itself entirely, may easily run wild." The idea was invested with further significance by Rousseau. In Emile, Page 31, he propounds, "In the dawn of life, when memory and imagination have not begun to function, the child only attends to what affects its senses. His sense experiences are the raw material of thought...It is only by movement that we learn the difference between self and not self..."

And it was the world of scientific documentation and deliberation of the 19th century that rediscovered and clarified the activity approach to learning as never before in recorded history. Activity, a central concept in 20th century educational psychology is, then, not new. Rather, the 19th century re-emphasised it and developed a fresh recognition of its implications.

The recognition was made by a world busy tabulating and recataloguing another central concept, growth. That organisms grow is obvious. That individuals and societies are growing organisms was the insight that late 19th century thought clarified for us. Individuals are not created whole by some other-worldly force, said the new approach. All life must be regarded as growing and the growth is probably continuous from before birth till at least death. Growing, as Dewey put it, is a leading into the future. And, since growth is characteristic of all life, education is all one with growing.

Through countless varied activities the growing organism accumulates a background of experiences. Experiences fuse and meanings are built up enabling the organism to respond to further new experiences. Response with new meaning is an integrated as well as an active process. This third central idea, that the whole organism enters into a response, became clear around 1920. Since then the educational implications have gradually been unravelled. Not only is active response
necessary as Rousseau and Plato argued, but also the various aspects of the response (these responses are different at or during the different phases and stages that the growing organism undergoes) the various aspects of the response must be appropriate - and thus obvious - to one another. Emotional responses associate themselves with corresponding intellectual, physical, social and other attitudes. When we are afraid, for example, there are invariably mental, physical and other concomitants.

The fourth concept, established in the 1930's was that of Integration. Previously growth had been recognized as Cellular multiplication and proliferation. The Educationist and Psychologist insisted that growth proceeded as the organism integrated itself. In the full sense of the term growth, integration is fundamental. Growth is more than a physical or biological factor, it is the activity of the physical, social, intellectual, emotional, spiritual qualities in the individual and the interrelations of all of these. Education is conceived now as recognizing the integration of the growing child. Educational Psychology is concerned with seeking out ways by which this integration can both be implemented and restored.

Concepts central to 20th century educational psychology had their genesis in earlier times. The efforts of the last 25 years have been biased towards clarifying the implications of these concepts for educational psychology. Life and education are growth; meaning derives from active response; the responses of organisms are integrated. The bias has been towards advancing our knowledge of already known concepts rather than a development of new ones.

These concepts have, naturally when we consider their potency, engendered by-products. One by-product vitally concerns the world of educational thought. When growth is considered as a continuous reconstruction of experience and when organisms are conceived as growing, the authority of a creative otherworldly force is less dominant. The overthrow, in extreme cases, and tentative questioning in milder cases, of authoritarian doctrines has been a feature of 20th century as of later 19th century thought. With no alternative satisfying to the masses substituted for the erstwhile grip of authority, confusion of purpose and direction have followed in general and educational thought. To-day educational systems in the world seem to reflect the resulting confusion. Some adhere to the security of authority. Others, 'progressives,' adopt an approach that rejects submission to authority. Others, their doubts aroused now that authoritarian doctrines have been questioned, yet unable to fall in with the advance movement, are uncertain what attitude to adopt. Confusion is the result. When confusion is traceable in the whole field, parts that exist in the whole must be inspected.
for confusion. Educational psychology is the part in the whole, we are proceeding to inspect. So far Educational Psychology has not been materially successful either to determine or to reconcile the confusion in educational thought. To what extent then and in what ways, if any, must it be suspected of entertaining confusion.

By what criteria shall we judge the presence or absence of confusion in a science? New sciences, as educational psychology, will flourish if they can co-ordinate notions derived from diverse primary fields into a logically coherent system. In working towards the goal of co-ordination many paths will be travelled, many conflicts will arise. Are these conflicts to be labelled confusion? When we compare text-books of the natural sciences we invariably find the contents identical. Is this due to absence of confusion in the science? Before we open text-books on Educational Psychology we can rarely forecast the subject matter they are likely to contain. Is this variety due to early divergences in a growing science, or is it due to fundamental confusion? Observers like Schönell point out the uneven growth during the 20th century of the Science of Educational Psychology. It is "uneven in respect to the various fields of research, uneven in respect to the areas or centres providing for research and decidedly uneven in respect to the use, interpretation and application of research findings for practical school purposes." Obviously, criteria of confusion are difficult to determine. But, if the end result to a student of a science, and in our case the student of educational psychology, is confusion, or failure to disperse confusion, there is cause for concern, suspicion and questions. (Schönell, E.J.E.P., June 1948).

The suggestion implicit in this argument is that although conscious of central concepts, educational psychology - and education as a whole - is not sufficiently familiar with their by-products. Perhaps by searching into the past for the roots of our present knowledge, by examining the by-products of central educational concepts, we shall gain a clearer idea of the change of emphasis that has happened to the older concepts.

No sooner do we start with our search than we raise a number of questions. Were there other trends and concepts of importance in the 19th and earlier centuries that we must concern ourselves with? If there were did they differ from the trends in force this century? What was their significance? Should we make any alterations to educational practice in the light of our findings? All but the last of these questions lie within the scope of this particular investigation. We shall proceed to examine the main forces in the 19th century that influenced educational development, especially any that resulted in the formation
of a science of education and educational psychology.

In 1600, except among a very few, Bertrand Russell considers that the mental outlook of educated men was still largely medieval; by 1700 the same author considers that the keynote of the educated outlook was its complete modernity. Extending this parallel to later centuries we could claim that whereas the keynote of the 1800's was simplicity, that of the 1900's was complexity; complexity of areas; of movements; of knowledge; of structures. First let us consider complexity of areas.

It was in the 1900's that the world saw such a surge emigrate to the new world that America introduced quota restrictions to limit the number of immigrants; British, and later German, diplomacy was concerned over Russian aggrandisement; South Africa, overlooked until India and China had been established as outposts of Western and European trade and commerce, was "grabbed." There had been, of course, trade and intercourse among European and Asiatic nations over centuries but its volume, and direction had been limited by relatively primitive transport; to personal whims; to easily accessible goods; to luxury articles, often. In the 1900's the tenor of the bargaining changed and a more national, official, imperial note entered the negotiations. Mercantilism became Imperialism. Again, lands, countries and nations which had been vague concepts previously, gradually became realities as travel improved and trade increased. Travel, intercommunication of ideas which had for centuries (for ever before!) been the prerogative of the peripatetic scholar, the adventurous, the self-styled persecuted ones, a few wealthy, now came much closer than ever before to the autochthonous masses. In these and like ways the growth of the concept 'world' became rapid in the 19th century. It also became complex. The impact of the ancient ideologies of Japan, China and India; the growing independence of America; the artistic, religious and philosophical influences of Russia, all contributed to make Europe an increasingly complex area.

The growth of complexity in area had a broadening effect upon the development of social institutions, including education. Broad examination of other ways of life had previously been difficult. A philosophy from one country taken over into a country of second adoption, tended to be introduced without modifications even though the philosophical climates of the two countries might differ essentially. One thinker - often a translation of a thinker - became in this way the champion of another country's way of life, thoughts, and system of education. Locke, for example, one of the first critics of supernaturalism undermined such a kingly and aristocratic concept as Divine Right. His teachings were adopted by the merchant class; the class that established representative
Government; the class that tilted at the Catholic Church in England. An era of religious rationalism unfolded denying the power of authority. Helvetius, a French philosopher, absorbed Locke's materialistic views, and rationalised political philosophy under the fiction of "Original Contract."

Locke's concept, the overthrow of irrationality, proved itself formidable. It helped the 1688 English, 1776 American, and 1789 French, revolutions. These limited opportunities that nations had to interchange views among themselves and the previously little opportunity for a wide basis of comparison of systems meant that education tended, even in the 19th century, to be an affair of (1) nations; (2) more narrowly, the nations' leaders; or, (3) a popular, favoured or acceptable thinker who in turn was influenced by his (necessarily limited) contacts and knowledge of a particular foreign system. This education was imposed upon - or denied to - the nation by a hierarchy. Philosophical views, always given time, became international (within the 18th century meaning of the term) to be sure, but examinations of the philosophy by others than the nations' hierarchies, was not feasible.

The infiltration of information from, the consequent spread of interest in, other nations, the breakdown of hierarchical authority that grew out of the 19th century's development of Europe's acres brought to the masses a growing consciousness of their conditions in relation to other peoples. The influence of 1776 in America upon 1789 in France; 1830 Belgium; 1860 Italy; 1870 Germany, to mention only a few, can hardly be attributed solely to coincidence. The extra-ordinarily increased interchange of ideas in the 19th century assisted the germination of the concept of universal education in many European countries, a most significant concept in educational practice.

Extension of known world areas was not a determined act carried on without any relation to man's general development. It was, rather, a result and confirmation of movements that were abroad in men's minds by the 19th century. One such movement, gifted to us by the 18th century, was the concept of enlightenment. At first an optimistic struggle against bigotry, the movement gained energy with the prosperity that came to the Western world, until it became a force that encouraged its own type of structure under the name, Liberalism. With that name have been associated the highest hopes for the increased respect of the individual and his private possessions, especially property; hereditary principles which till then had favoured kings and aristocracy were gradually brought into discredit. All men, the new spirit taught, were equal and inequalities among men were due to the different circumstances and fortunes men experienced. The dignity of human nature as expounded by Christ, was taught to men by the Church. Liberalism invited man himself to grapple with the "physical-spiritual" workings of the universe. As men saw the problems involved in this undertaking, fresh emphasis
was accorded the Platonic belief in man's essential rationality. This near-marriage in man of religious and philosophical strains was perhaps the main feature of Liberalism, of importance to posterity. It was not the worthlessness and wickedness of man that mattered, it was rather his sociability. If the breakdown in hereditary, the divine right, principles is developed logically, it follows that every man is free to, and has the right to, choose the institutions in his community. Man may choose to be educated, and in the way he believes right. Liberalism also taught that exercise of this freedom and right was essentially a duty because education could alter the circumstances which had resulted in the middle and lower classes being under-privileged. To raise all men to the dignity their birth entitled them to, it was the duty of men to insist upon a system of education of their own choice in their community.

The significant feature of Liberalism was the perceptible trend from the 17th to the 19th century of the importance accorded to the individual. But individualism was also a feature of Stoicism and Christianity, so that the term as applied to the 17th and 19th centuries needs closer definition. By "The importance of the individual in Liberalism" as used here two things are meant. Firstly, that the medieval ages subordinated the life of the individual to the rule of the institution, to tradition, to dogma. It was in opposition to this domination that Liberalism advanced, re-emphasising the importance of the individual. Secondly, the influence of the Catholic Church was first attacked by Philosophers. It was with Descartes' "Je pense, donc je suis", that the essential value of the individual penetrated into philosophy. The growth of Liberalism then was paralleled by the establishment of intellectual opposition to institutional control of the people. Later in the 18th century, however, the movement broadened its basis and individualism, when we look back on it now, became not only an intellectual pursuit, but also a movement towards emotional, aesthetic, self-assertion.

To what extent was this broadening due to the influences of Liberalism itself upon men's activities and to what extent was it due to other influences acting upon intellectual approaches to intellectualism; and to what extent was it due to man's general readiness to absorb new forces? Suffice it to say that, the interaction of Liberalism upon other forces; other forces upon Liberalism; an increasing general awareness of and ability to absorb change, profoundly affected the structure of modern society. It was not merely the intellectual individualism of early Liberalism; it was not merely the broadening basis of later Liberalism; it was not merely the disgust of early industrialism; it was not merely the rise of the concept of nationalism; it was not merely a nostalgia.
for the middle ages. The distinctive mark of late-18th and 19th century thought is to be found not in any single change or group of changes, but rather in the contemporary occurrence of many of the types of change; the rapidity with which some of these types developed; the mutual interaction of them all. This is the complexity of the 19th century, that when a movement is discussed per se, many movements are involved.

The broadening of Liberalism advanced and altered its character. Originally it was an intellectual movement. The broadening added an emotional development, under a new name, Romanticism.

The Romantic movement, given some concreteness by one of its main progenitors, Rousseau, was the admiration and worship of nature studied and observed as it really is. Revolted by the cruelties and ugliness of industrialism, the Romantics preached a return to Nature. This hearkening back to earlier times, a nostalgia, revived interest in ideas and formulae of the Middle Ages. The movement spread because it responded to a felt intellectual need for something new and personal in the realm of art, behaviour, chivalry, fashion, literature, morals. It corresponded with the growth of Humanitarianism, "La Sensibilite", and a desire for excitement. It preached revolt against accepted ideas and prejudices and asserted the right of rebellion in the name of Nationalism; the splendour of war in defence of liberty. It made explicit the importance of passion, and human personality. It was, in truth, a revival under a new name of old ideas of church and aristocratic privileges and a conflict of new ideas about the defence of wage earners against the exploitation of employers. In this way it was both an extension of and a different movement from Liberalism. It was an extension in that it promoted individualism from the intellectual to the intellectual and emotional levels; it was a new movement in its aristocratic vehement contempt for commerce and finance.

A movement so important, widespread, vast, came by the very multiplicity and vagueness of the principles which it enforced, and of the rights which it claimed, to have incalculable consequences. Here it is pertinent to say that the need for individual education for all, introduced by Liberalism was in effect broadened. The Romantics aimed at vigorous and passionate individual life; at aesthetic rather than utilitarian standards. Man's nature was encouraged to revolt against social bonds. Self-development, verging on lawlessness, was fundamental. "Education now had to arouse and defend the susceptibility of the child... the emotions, being all carried to their extreme, were more certain of being brought to the sharper test." (Rousseau.)
Their eagerness to attain such an education made Romantics contemptuous of past dependence upon instruction and prohibitions, and anxious to recognise "the deeper language of example and the more living instruction of visible circumstance." (Russell).

Romanticism, stressing imagination and feeling, developed individualism. But its development was to excess, and gradually reaction set in, Romanticism being transformed eventually into Realism. Realism embraced a reaction in the direction away from the extraordinary and the improbable. Acting under the influence of the Scientific Spirit, of that love of clearness and precision, that quest for the definite fact and document, realism preferring calculation to passion helped to show the 19th and 20th centuries that self-realization cannot be the supreme principle. Investigation of this reaction away from the Romantic Movement leads us from the mainly literary, political and traditional inspirations of 19th-century movements, to two additional sources that influenced philosophical, ethical, and of greatest importance to us, educational opinion. These sources are Science and Mechanisation. They will be considered now, prior to an examination of the final political influences of importance.

The modern outlook in science dates from the 17th century developments in astronomy; physiology; chemistry; mathematics and instrument making. From then on, more exact work resulted, more exact in measurement, more exact in logical analysis. Magic and animism were supplanted from their dominance and the reign of law established in their place. Concepts of space and time were altered. Man's place in the universe took on a different perspective. The outlook of educated men underwent a transformation. Philosophical beliefs were influenced. Theorists came to have a distinct effect upon the future. These broadly were the features and legacies of modern developments in scientific thought. 19th century science again made new conquests, these being perhaps threefold. Once again the whole conception of the universe has been changed by the belief that man is subject to all physical laws and processes and hence cannot be considered separately from the world around him. From this follows the second factor that scientific methods, observation and experiment apply to the growing number of varied fields of human thought, activity and study. And, thirdly, we realise now that all knowledge is one, that scientific experiment has a cumulative effect. There has been, too, an expansion in the number of new sciences, reluctantly at times, admitted to status alongside the long established fields of investigation. It is on the implications of older, pure and natural sciences rather than newer applied and social sciences that we shall dwell immediately.

Out of the vast, impressive mass of scientific data available, these features are amongst those having most bearing on our arguments.
When Dalton determined that elements in compounds followed fixed laws of combination, he cleared the way for an advance from the Greek metaphysical speculations which were based upon an atomic hypothesis, towards a living, working hypothesis not only explaining known facts, but also suggesting future lines of enquiry. From the 18th century on, compounds were examined by analysis into their elements. A parallel seemed to follow. To comprehend the compound, man, analyse him into his elements. Attention was turned towards man's senses, reflexes, faculties, the hope, perhaps even belief being that such analysis would explain the organism, man. Physical and chemical differences of elements and hence of man seemed unequivocally to be due to differences in complexity of structure and arrangement of parts rather than to differences of basic structure. Some thinkers even considered that they were not far from a final explanation of the world by physical and mental principles. Laplace conceived "a mind competent to foretell the progress of nature for all eternity, if but the masses, their positions and initial velocities were given". It has only been in recent years with the application of the theory of energy that the atomic hypothesis of John Dalton has been laid aside in chemistry. It cannot yet be said with any definiteness that the same atomic approach has been laid aside in social sciences, including education.

The deposition of the supernatural from geology was a slower process than its deposition in chemistry and philosophy. As late as 1785 James Hutton was to make a plea for "no action to be admitted of except those of which we know the principle." And it was not until 1863, after the discovery of the Abbeville flint implements, that Lyell and Huxley felt warranted in "assigning to man a place in the natural series of organic types". Their and others' arguments raised afresh the Greek conception of organic evolution.

The opening created by geology led naturally to a field of research that was met by violent criticism. Darwin, revising the age-old material that individuals of a species diverge from one another in minute structure; that all creatures have powers of adaptation to their environments; that life's bounty is followed by struggles for existence in which the weakest die, threw emphasis on and popularised the selective action of the struggle for existence with survival belonging to the fittest. Here, 55 years after the postulation of the Atomic Theory in a completed form, was an hypothesis damaging to traditional religious, educational, political, philosophical and scientific thought. It opposed the accepted dogma of the special creation of each distinct species. It opposed the final and separate creation of the human race as a culminating point in the universe. It appeared again to dethrone man from his proper place in the scheme
of things. The re-emphasis of the congenital differences between structures of individuals of the same species was incompatible with the Liberal and Romantic doctrines that all men, born equal, were different because of their education, their environment. The idea of all living things originating from a few ancestral types, the idea, that is, of organic evolution, wherein the character of each organism is determined by its relation to the rest of the system was a death-dealing blow to the previous atomic hypothesis.

The evolutionary hypothesis established, profound changes followed. Evolution demonstrated to education and other institutions of social theory that any thought of obtaining a perfect system was invalid. The object must be to provide the best for the existing conditions at any given time in man's history, man's stage of educational development. Such education must be one factor in a perpetual system of change.

Instead of an ideal education absolutely best for all time the object must be that system which is best for conditions existing at any given period and at a given stage of intellectual, moral and political development. No fixed condition should be aimed at, no finality sought. The existing educational, and other social systems, in a healthy nation must be but one feature in a perennial development.

The radical and conservative thinkers were both appeased by this contention, as every man is free, in essence at least, to state his opinions how far the existing system lags behind, or departs from conditions he considers best for the time.

If it is recognised that those educational reforms are best worthy to survive which best fit the particular environment, and which are most capable of adaptation as the environment changes; that different institutions are needed for different peoples, this provides a strident argument in favour of national systems of education. It also points a warning against nations adopting unmodified the views of foreign educators and theorists. Sociologically it appears evident that each age is influenced by the acquired characteristics of its predecessor. The task of the educator is to search out from the old the values useful to each new generation.

Darwin's hypothesis was the 19th century re-emphasis of old knowledge. 20th century investigations on the problems of human inheritance are in effect re-discoveries of the work of Mendel. His experiments showed us how to produce new varieties of plants and animals on scientific principles. They demonstrated, too, that we may possess qualities of some of our ancestors; may transmit
characteristics we do not manifest and they give proof of the power of inheritance in transmitting physical and mental characters. Galton and others pointed out that any tendency for people of lower intellectual levels to breed faster than the higher intellectual levels would militate against any amount of expensive education of every child. This view following the evolutionary hypothesis helped to swing emphasis towards the importance of society at the cost of individual importance. Educational systems grew from the 19th century lines of thought that regimented children to fit them into a pre-conceived pattern. Not until the two contentions (a) perennial change and (b) transmission of inherited characters are both apparent and understood in an educational system and not until the nature of human nature is better understood will the significance of the individual be fully restored. By encouraging the increase of healthy stock growing in the most favourable environment we shall best effect improvements in the whole of the human race. There are indications that this may be no longer a dream but a practical possibility. We are building a body of knowledge about mass behaviour, death, birth, marriage rates, from which within narrowing limits we can predict the behaviour of, influences on, constraints of individuals. Is it too much to expect that coming to know more nearly the purposes, wishes, hopes, needs of individuals we may "modify the properties of the whole mass by working upon the individual?"

A re-awakened scientific attitude of growing complexity in the 19th century then, may be pointed to as unfolding a series of major trends of significance to educational development. In the first place the concept of a science of education was hastened by the application of scientific methods to a growing number of varied fields of human thoughts. The close link between educational psychology and a science of education means that influences in one field spread to the other, and return modified or matured. Again, we have noted the atomic approach in science. Darwinism struck a blow at the atomic approach and made possible a science of education. If change is fundamental in education then measurement and assessment along scientific lines is essential to ensure that change is related to new circumstances and not removed from existing conditions. And, finally, the concept of the whole organism was established scientifically. It is this concept that is central to the activity, growth, integration concepts of 20th century educational psychology.

Science however was not the sole motivator and sole instigator of changes leading to a scientific approach of education. The term science should be applied narrowly to include scientists and their findings and for a very good reason. It is a common fallacy to consider the 19th century a scientific age.
A scientific age submits its actions to scientific scrutiny. It disciplines itself by scientific methods. An age which suffered the confusions of Liberalism, Romanticism and Realism is unlikely to appear to posterity as scientific. The 19th century can claim great scientists; Fabian socialists; great movements; great achievements, but they were isolated rather than interwoven with or antecedent to the social, political, educational, psychological life of the times. Scientific developments were a main, not a sole, instigator of 19th century changes. Just how interrelated the forces in 19th century progress are is aptly demonstrated when we look at the results of interaction between 18th-19th century industrialism and science.

Scientific and philosophical doctrines have ever mutually interacted. But it was not until about the end of the 18th century that scientific operations or techniques had any marked effect upon opinion. As industrialism became established, as knowledge from the sciences was applied to industry; as men saw holes drilled in mountains, rivers diverted and created, the forces of lightning usefully harnessed; as they experienced all these and other awakenings, the narrow perspective of their imagined picture of the universe altered. With alteration came a new feeling of power, of security. A new belief in man's power over the elements; in change, established itself. This concept of power, explicit in politics and in economics, was probably the most characteristic development in the 19th century. The 19th century was power conscious. Nationalism, Imperialism, cartels, all indicate a power 'climate'. And this climate of power produced conflicts. Nor is this surprising when we consider how rapidly the century became complex. Old outlooks are often ill-applied. Is it to be wondered that newer, less familiar, rapidly changing, complex outlooks were also ill-applied?

The conflict that concerns us directly is that of the contradictions between major 19th century philosophies and social opinions. Individualism, liberalism and romanticism emphasised the dignity of man and the importance of self-development. Much philosophical and an increasing degree of scientific thought in the 19th century saw man, on the contrary, as largely the creation of mechanical and subrational forces. Only gradually was the conflict reconciled and the grip of authority supplanted by a pragmatic approach.

The reconciliation was a proud attempt. But it suffered two weaknesses. For a time the development of a variety of social institutions promised to reconcile the conflicts and save the progress of mankind. Social philosophy, however, not understanding the full importance of the new development, did not grasp the central principle, namely, that social responsibility must be emphasised. Institutions were deliberately formed which embodied the aims and objects of the particular group, but rarely did they embody the purposes, motives and driving forces of the
larger society within which the group was formed. To the extent of the incompatibility, these institutions were incapable of germinating awareness of social responsibility in the minds of their participants.

Further, the feeling and willing forces in man have continued to preclude autonomy of rational functions. Routine, propaganda, education, have continued to confirm peoples in the ways of emotional reaction. Only here and there does spontaneity of thought attenuate the otherwise co-ordinated, socially inherited habit of acting on whim or emotion. In its inability to encourage and insist upon clear headed broad-visioned, intellectual activity, 19th and 20th century pragmatic doctrines have perpetuated rather than reconciled conflict. Social institutions, like human beings, reflect these conflicts.

No institution, education included, has decided which side to take and in all institutions, home, school, church, state included, "we see a war of philosophies, or a truce among philosophies". The confusion has had the grave consequence of insidiously entrenching mankind in his acceptance of the dominion of authority, has encouraged him to be obedient, to sympathize with power tactics rather than question the validity of the actions of those in power. Social institutions have at best patched up gaps in the confusions. They have remained idealists at heart, and become realists in practice.

The results of the conflict, and hence of continued power dominance, have not however all been unfortunate. "Now the authorities can decree what the children of peasants shall learn in school, and can transform the mentality of agriculturalists in a generation." Compulsory minimum education has been the focal point long enough now that it may be possible eventually to enlarge the concept of education in the minds of the masses until it takes in the present-time fringe interests of pre-school education and adult education. (Russell).

Power domination, within which the compulsory nature of education may be discerned, has then administered a valuable boost to education and educational psychology. If there were no compulsory education, a science of education would have been necessarily much slower developing. Once compulsory education has been accepted, an educational psychology can be developed too. It would be easy to exaggerate the ramifications of the 19th-20th century power climate and the confusion and conflicts the climate has generated, to the extent of underestimating the significance of the agencies and their power to perpetuate themselves. Confusion and conflict there are, but the very fact of the existence of agencies for education encourages positive approaches towards the deposition of conflict and reconciliation of aims. The 19th century taught that change is inherent in all things. Scientific method applied to understand change in education promises to displace
confusion. Whitehead makes this hopeful, forward-looking approach, clear. He suggested that compulsion and violence, though of different types, have been characteristic of each age, yet articulated beliefs like Christianity and democracy have issued from the confusion of their times. Christianity and democracy were consciously formulated persuasive ideas that refashioned existing social institutions. Senseless agencies, confusion and compulsion, and formulated aspirations cooperate and, providing the feelings expressed are those of civilization, the period of transition can be regarded as an age of hope.

When it was said above that different institutions were needed for different peoples, the point was made that this statement provided a strident argument in favour of nationalism; in favour of systems of social, and hence education, institutions. The argument was developed as being a natural outcome of the Darwinian hypothesis. And above it was further suggested that nationalism was one evidence of the 19th century climate of power. Nationalism is so evidently a heritage of the 19th century that it needs no introduction. It has become recognized as another characteristic of the 19th century. As a result of nationalism most of mankind has come to "the point where he spontaneously associates the satisfaction of his own needs with the strength and permanence of his own nation. The experience of belonging to that nation is in fact of such importance to him that he will seek to preserve it even at the risk of his life..... Racism and intense nationalism not only took obvious command of many 19th century minds but effected a subtle invasion of uncounted others,...so that if a country yielded on a point it was proving themselves stubborn." (Russell)

Outstanding in the growth of nations is the rise to importance and unity of 19th century Germany. The western states of the Holy Roman Empire were influenced by Rome in antiquity, and France from the 17th century. The Eastern states laboured under severe ignorance, squalor, poverty. These crudely outlined differences resulted in extraordinarily diverse standards of culture in 19th century Germany, too diverse even for Frederick the Great to overcome. It is, therefore, possible to comprehend why Bismarck's stimulation of the old Holy Roman Empire under the political Leadership of the Eastern state, Prussia, although to the uplifted in Germany a resurrection of the heroic past, was not so to the more cultured in the Western states of Germany. To the more cultured this unifying process threatened to overthrow cultural development by political resurgence.

During the 19th century intellectual thought had been re-establishing itself in Germany. The lead came from Kant, late in the 18th century, whose idealism appealed to a virile nation deprived of historical power. The spur was added by Nietzsche who rejected subservience and argued the need for individual man
to affirm himself; for Germany to affirm herself. Fichte developed the theme by attributing to Germans all that was "original and not deadened by arbitrary regulations". And then Hegel designated the Prussian state as "the point of cosmic fulfilment".

The influence of these philosophers upon German minds, upon minds of foreign students in Germany, upon the outside world, was compelling.

Germany is, then, a clear case in point of the growth of nationalism.

Nationalism became, however, Europe-wide and gradually world-wide. Its effect upon philosophy, natural sciences, education, psychology, and upon educational psychology has been significant. To understand the effects we must here distinguish between those systems of thought that have always existed - philosophy; natural sciences - and those systems that are of more recent outgrowth; social sciences.

Let us look at the older systems first. Up until the 20th century and the rise of totalitarian states, philosophical, scientific and religious thought has been world thought. The views of a philosopher, whatever his nationality, came to be the views of the world, either directly through his teachings and writings or less directly through foreign students and translations. A way of life in one country engendered a philosophy. That philosophy if adopted by another nation engendered practice.

Despite national conflicts of the 18th century, throughout the changing face of the 19th century world, this spread of knowledge from a thinker to a wider field of influence continued. It was only with the growth of the totalitarian state that philosophical and natural science thought became compartmental, i.e., national.

It would seem that centuries of tradition favouring internationalism of higher thought rendered it resistant of disruptive forces until the 1930's. The one possible exception to this claim is the development of the philosophical "school" if that term will be allowed, or "system", if it will not, of pragmatism, which virtually developed in the United States of America and has in the main been confined to that continent. The reason for such an exception could be considerably in the distinctive development of the U.S.A., isolationist, independent and self-sufficient in outlook, thousands of miles from the centres of European thought.

The situation with the social sciences was somewhat different. Social sciences in the main gathered their impetus from the American War of Independence and French Revolutionary periods. Growth and specialization meant that new disciplines grew in new areas. Growing and establishing themselves in a century when nationalism was spreading among European states, these newer branches of science possessed no tradition enabling them to withstand disruptive forces. And psychology, traceable as a separate science scarcely earlier than the second half of the 19th century, presents intrinsic evidence of the influence of nationalism. There is no difference in this respect between general psychology and educational psychology.
19th century nationalism prevented any tendency there might have been towards an international outlook in psychology. It is not suggested of course that an international outlook in psychology at this early stage in the development of that science would necessarily have resulted in there being one and only one psychological view. What is suggested is that the physiological and configurational approaches in Germany; the emotional basis of behaviour as experimented with and developed in France; the behaviourist and pragmatic trends of the U.S.A. and the Behaviourist trends of the U.S.S.R.; the academic developments from biology to factorial analysis in Britain, have the appearance of exhibiting national frontiers. Now in the 20th century is it, in the words of R.L. Archer, "fanciful to see both in Spearman's analysis of human intellect or in MacDougall's analysis of human conation, an approach to psychology which Locke, were he alive today, might have pursued? Would it be too sweeping to say that the characteristic German psychology tends to think of mental activity as the result of impressions acting on nerves? The French as the result of emotion? The American as the result of biological adaptations to environment? And the British as the result of innate forces which call for the same kind of analysis as dynamics applies to physical forces?"

Educational psychology has, too, it seems, shown marked national boundaries, German, French, British, Swiss being differentiated. At the turn of the century, Germany frankly Herbartian; France the social environment investigated by shafts sunk into mental exercises; Britain empirical, sceptical, tracing innate tendencies; Switzerland Pestalozzian; American following questionnaire methods to study children's behaviour. And each nation still retains this tendency towards independence. Over the last 20 years (1935 on) greater cognizance has, however, been taken of the works of other nations. Tendencies towards internationalism of academic approaches are not, it seems, utterly destroyed, merely deterred.

The development of 19th century nationalism has had, then, a peculiar effect, not only upon politics, but also upon the growth of psychological opinions and development. Its main effect has been to delay international co-operation, and enforce national investigations along virtually independent lines of thought. When the findings from these various lines are pooled, as the science of psychology matures, the benefit of co-ordinated research is likely to be profound.

In a 1937 address, "the School and the Home", the late Dr. Susan Isaacs had these pertinent comments to make. "In the history of our own civilization, there have been many historical gaps in the existence of the school, many periods when society as a whole was indifferent to and neglectful of the welfare of its children... The early philanthropists of the 19th century had a great struggle to save the precious heritage of childhood from terrible industrial slavery, and redeem our civilization."
Slowly, through many struggles, many fights, the school was reborn, and in the last quarter of the nineteenth century became again an established and universal instrument of civilization.

"In the first outcome of that struggle, the school became one-sided and artificial. It was concerned entirely with bookish learning, the laborious mastering of the three R's unrelated to life. We had a new slavery for children... We made them read and write and do little meaningless sums. As thus conceived, the school had naturally very little relation to the home.... The home was a place to feed and clothe the child, to send him to school, to give him some moral training, and above all to see that he did his homework. It was in the school that the child learned and became civilized.

"Nowadays, owing to an immense variety of influences, our notion of the relation between the home and the school has been profoundly modified, as our view of the function of the school itself has changed..... The gradual realization of this truth during the last 25-30 years has led to two main lines of action; (1) the development of child guidance clinics.....; (2) the growth of closer everyday relation between parent and teacher...." Staffed by a doctor with psychological training, a psychologist, and a social worker, the clinics are now an important part of the services which the community renders to children and to families. "The social worker is highly trained, with a special knowledge, not only of social institutions, but also of child psychology...... The social worker makes a link between the clinic, the home and the school."

The purpose of this chapter has been to ascertain the forces in the 19th century that can legitimately be considered as antecedents of this series of changes that Susan Isaacs recorded; changes in social and scientific that can be associated with developing psychological tendencies. Indeterminate as social and psychological tendencies assuredly may be, the evolving character of social and psychological structures is manifest in the swing of emphasis from the old formal discipline, pietistic, effort education to the 19th century-20th century naturalistic emphasis education. Education, we now realize, should not aim to instruct, so much as to allow natural tendencies to work out their natural results. Education should not aim to repress or to mould but to shield from artificial influences. Natural interests should dominate in education processes; close contact with nature should furnish the occasion and means of education.

The naturalistic, liberal, romantic, individualistic movement based on interest gave direct impetus to - and hence was the antecedent of - a psychological approach to education, and a sociological and scientific concept of education.
The principles of the naturalistic movement pointed to in the text as significant were the emphasis placed upon the inalienable rights of every man. Man had, that is, a right and a duty to insist upon an education of his own choice. Natural rights thus emphasised, the ethical and social worth of the individual was a necessary corollary. Suppression of ideas in abeyance, mankind was free to develop and integrate his personality through self-expression. The implied suggestion was that a function of education was the betterment of society. To better society education must be free to select subject matter, and select methods of approach proper to preparing the individual for social life. Education must also be universal. The basic educational principle of 19th century thought was, then, that education, far from being an artificial procedure of acquiring knowledge, was to be considered as an unfolding of innate capacities and, this principle established, the dynamics of behaviour, especially of social behaviour, have been increasingly emphasised, clarified and developed.

Clearer understanding of educational principles has been assisted by the support educational theory and practice have derived from developments in other fields. Developments in philosophy and the encyclopaedic expansion of knowledge in science spread the concept of nature, or, put otherwise, the concept of the mind of man. Knowledge of mental activities, how they originated, developed, functioned, was then sought. The information was important to education and after 1880, as we shall see, was grappled with scientifically by psychology through observation and experimentation, the findings of educational psychology themselves gradually being applied, adapted, altered, re-emphasised from 1910 onwards. The application of scientific method, or at least, the influence of scientific procedure, brought a more ordered discipline to the development of educational principles, and being found consonant with the development of educational principles, a scientific basis of education gradually came to be considered important, indeed, essential. General educational principles came now to be worked out by scientifically, working hand in hand with psychological experimentation.

This is a gargantuan step from a stage where psychology was embryonically embedded in a philosophy that separated man from nature, to a stage where psychology in its own right explained man and his institutions as the product of evolutionary forces. Science had replaced myth. Science was being applied. The birth of educational psychology existed in the effort to state educational principles in a scientific manner, to understand them.

Herein lies something of the answer to our original question, 'Does educational psychology evince confusion?' Through scientific examination of educational principles, educational psychology sought to reconcile the conflicts
existing between old education and the new education of "interest", of nature. The forces abroad in the 19th century were so trenchant, however, that reconciliation as a positive method of repair was ineffective. These same trenchant forces would not admit of a return to past procedure. With the years, therefore, educational psychology destroyed the old education by conflict. Interest came to be emphasised exclusively. Doubts about the wisdom of such exclusive emphasis have always been heard from conservative educational forces. The present varieties of educational psychological methods, created in part by national boundaries, have retarded better comprehension of the 'interest' concept of education. This is unfortunate, as at the turn of the first half of the 20th century we can hint that the doctrine of needs may supplant that of interest.

Education, in the 20th century had become the process of developing the individual often with a view to improving society. The organism as a whole, rather than the reflex arc or some other subunit of the organism, was regarded increasingly as the fundamental unit for the study of behaviour. Sharp distinction between growth and learning, heredity and acquired reactions gradually broke down.

Such reconciliations; changing social concepts; biological knowledge of adjustment as central to the understanding of personality and character; the evolutionary doctrine of the essential nature of perpetual change; the physical belief that knowledge is relative and instrumental; new philosophies wherein the ideas of Kant, Fichte, and Hegel, aiming at a logic of education, inspired the practical men, Pestalozzi, Herbart, Froebel, have been seminal to the growth of educational psychology.

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FROM PHILOSOPHY TO PSYCHOLOGY.

The connection between psychology and philosophy is primordial. In philosophy lie the origins of all scientific thought. From philosophy many sciences have detached themselves, gradually to assume independent lines of thought. Specifically today, the term philosophy covers the studies of aesthetics, ethics and metaphysics and the discourses logic and politics. It has lost appendages that attached to it between the 16th - 19th centuries, physics, astronomy, medicine, education, physiology, psychology. The "loss" of these branches must not, however, be interpreted as complete severance of all links between the parent and the offspring. Links exist today as firm as ever before. Nowhere is this more true than between philosophy and psychology. Questions and discussion on the final, real nature of 'mind' are strictly the province of philosophical psychology. What we have seen is the disappearance of the complete attachment of long duration between psychology and philosophy. The separation was forecast perhaps as early as 1590 when Rudolf Goeckel's (Goelenius) book was published bearing the title, Psychologia. The word was built up from Psyche (soul) and Logos. and fitted the subject well enough to be retained ever since. Something approaching the present sense of the word Psychology was arrived at by the German philosopher of the enlightenment, Christian Wolff, in his book, Rational Psychology, published in 1734. What Goelenius forecast, Wolff announced, namely a distinction between rational and empirical psychology. Psychology, once inseparable from philosophy is still inseparably connected with philosophy. The separation of psychology from philosophy after the second half of the 19th century was never complete and in more recent years (since 1925) the connection has been strengthened.

For those philosophers who waive a relieved farewell to psychology, and for those other philosophers who deny psychology a place in the sciences on the grounds that psychology lacks facts on which to spin its theories, the simple answer might be that because of an acute sense of need for observed facts, psychologists themselves regard speculation with suspicion, distaste, resentment, dread. Perhaps for this reason as morale builders systems abound in psychology as ways and means of arriving at knowledge, as temporary but necessary stages in the development of a science, as creations of workers who, in a confusing enterprise, must keep, not only their poise but also their verve. For it can hardly be repeated too often that science does not proceed in the light of reason alone, but like other human enterprises is a muddled adventure working itself out "as on a darkling plain Swept with confused alarms of struggle and flight Where ignorant armies clash by night."

The development of science cannot be regarded as the work of one man or of one group
of men; science is a vast social enterprise in which an individual's most valuable contributions may be his brilliant mistakes." (Heidbreder)

And whether the philosopher relishes or regrets the establishment of psychology as a separate discipline, psychologists are continually discovering the effects of affinities and alliances with other sciences due to the late and incidental development of its systems. The young science of psychology is continually discovering "that its very terms have implications which connect them with pre-existing points of view, and that its conclusions are often determined by custom and association... Often the turns of its thought and the very content of its concepts are determined by historical accidents that occurred hundreds of years ago... they are products of long and sometimes obscure lines of historical development; for psychology, like any other enterprise of the human intellect - perhaps more than most - has been subject to confusions, entanglements, and misunderstandings, many of which have their roots in the remote past." (Heidbreder).

Acting on the assumption that there is a mind, we may attempt to comprehend the concept by (1) an analysis of experiences and situations of life; and, (2) metaphysically examining an hypothesis of a concept that underlies and gives meaning to, life situations. These two approaches, the empirical and the metaphysical are never separable; they interact reciprocally. Depending upon the emphasis accorded them psychology is predominantly but not exclusively either empirical or metaphysical, and both emphases are inherent in educational psychology.

It is important for educational psychologists assuming that the concept 'mind' is valuable, that they be aware of the basic philosophical problems of psychology. Fundamental is the attempt to decide what 'mind' really is, and as a consequence what may be ascribed to the adjective - "mental." To some common sense adherents mental activities are distinct and separable from bodily activities. Body and mind to them are distinct independent, self-sufficient or at least self-existing unities. Others would argue mental growth in terms of the expansion of processes body and mental or solely mental; as an increase of the aggregate of mental elements; as changing manifestations or attributes of the individual. Although the distinctions between all these four 'schools' tend to blur, essential differences between those who separate body from mind - that suggest for further consideration, a soul - and those who reconcile bodily and mental (and soul) processes, do affect educational, psychological procedure.

Then, too, there follows closely the question of the seat of these mental processes, or mind. In man is mind situate. Fewer would now seek a mind in animals and plants. Yet the problem is not closed, indeed when the question of
super-human minds is raised, it is very much open. To those who define mind as organised mental forces, organised society may possess a collective mind. And if so, why not a collective will, a peoples' spirit, perhaps even a metaphysical human soul. Eventually we arrive at planetary minds, universal souls. There is, then a scale of philosophical-psychological hypotheses ranging from hypothetical metaphysical speculations of extra-experiential minds to the extension of human mind among sub-human orders. And along this scale range cautious investigations as to the scope of the concept 'mind'. Fuel was added to the controversy when, after a full century's establishment, the belief that mental processes were conscious processes, was undermined by the psychology of the unconscious. The psychology of the unconscious engendered a philosophy of the unconscious which accepted as mental that which remains hidden to the very persons in whom the mental events, processes, developments, occur. And conscious or unconscious, there remains a further enigma. Is the mind an aggregate of elements, limited in number, separate, autonomous, powerful in their own rights, observable by introspection; or is mind a unity within which a greater or less number of factors may eventually be demonstrated? The faculty versus factors attitude; the extent to which mind is dominated by will; the influence of senses upon mental acts, all have claims for recognition and provided they are not separately pointed as the source of mental processes, but considered jointly as important aspects of mental functioning, it seems thus that greatest service (in the immediate present) will be given educational psychology. That some of these views have been overstressed in the past can be suspected as a reason for some imbalance in the development of psychology and hence of educational psychology.

Antithetical views on the constitution of "mind" are paralleled by a deep seated antithesis in another fundament of philosophical psychology hinted at above, the body-mind relationship. So rooted did this problem become that inevitably it appears as an indispensable and highly specialized philosophical hypothesis. At the extreme, body and mind are considered as two entirely unlike entities having no inter-relations whatsoever; a less intense view allowed external interaction. Even some recent developments fail to reconcile the antithesis, for body and mind are featured as (sharply) contrasted attributes although they are admittedly attributes of a unified being. Such hypotheses have promoted and prolonged a separation between the materialistic view that mind is a function of the body in which it is housed and the spiritualistic that only minds and their conscious contents exist. The necessary reference to conscious contents reminds us of the dichotomy already noted in controversies over the constitution of 'mind.' The antithesis can truly be claimed as deep seated - and broad bottomed.
Out of these older discrepancies has arisen an awareness that perhaps the body mind relationship is not a fundamental; that perhaps it is the person as a whole being in his relationships and interactions with other whole beings that might be more fundamental. The result will be referred in the chapter "Related Contemporary Fields." It is, that in practice, personality and adjustment are now the subjects for investigation rather than attempted explanations of man by atomizing him into reflexes or senses or faculties, analysing these and thereby hoping to comprehend man.

This "whole" or "personalistic" approach promises well as a framework for the elucidation of perhaps the basic question philosophical psychology has to contend with, the significance of the concept 'mind.' What mission has 'mind' in the cosmos? It is true, one cannot be sure, today, that the question is admissible. It is, however, still a real question to many and hence, I believe, justifiable. In the attempt to answer it philosophical psychology is involved in classical disputes of the relative roles of heredity and environment; of character and conduct; of purpose and freedom from determinism, in the moulding of 'mind.' Such incompatibilities - they are, all three, still incompatibles although not to the extent that they were for earlier centuries - have been intellectually systematized as psychology, biology and kindred sciences. And educational psychology concerned as it is with questions of character, behaviour, environment, creativity and attitudes among other questions, exists in its own right if it is vital enough to elude the clinical evidence needed by philosophical psychology to test, substantiate, redeem or rescind its hypotheses.

The link between philosophy and psychology is then not entirely traditional but remains because of a two-way relationship between them. Part of a philosopher's duties is to investigate the validity of scientific, i.e. psychological, data, in order to discover the relation of science to science; to scrutinize a specialist's ideas against a broader background and determine the significance of the ideas for living. Part of a psychologist's duties is to understand more clearly human behaviour and to illuminate the possible directions to be followed in developing human potentialities. Part of the educational psychologist's duties is to test the views of the philosopher and the psychologist. Part again is to state the problems that call for experiments and investigations on a broader plane.

Philosophy, then, was, when viewed from one aspect, originally a culture within which psychological concepts disseminated. Philosophy began with people interested in the world they lived in, as distinct from them themselves as the centre of all thought, when they took themselves for granted and engaged in unself-conscious, cosmological questioning. Epistemological questioning of ethical, social and
political theories led easily to the desire to know how we can know man. And as there has always been a philosophical system, however intangible, one can therefore assume and trace a philosophy of education. It is the developments within philosophy during the 'Modern' period and the influences of these developments upon educational methods that we must now outline if we are to come to terms with the roots of educational psychology.

One stream of philosophical thought, predominantly British and German, may be traced to Francis Bacon's inductively reasoned mechanistic view which appears to have inspired Locke's concept of an empirically observed, metaphysically and theologically free, psychology. Between Bacon and Locke lies Descartes, chronologically speaking. Descartes arrived at the concept of a "Soul" whose function was to communicate an awareness of the body to mind. Philosophers who could not accept a God, or a Soul, battled to discover other possible explanations. If mind and body are not radically different body may be in some sense a product or part of the mind or a mode of perception of the mind. This view leads to a philosophical idealism. If mind and body are not radically different mind may be the same as and part of the body. This view leads to another stream of thought, predominantly French and British.

Philosophical idealism is a theory that what we know is not the external world but only our ideas of it. Apart from the self there can be no world of objects. Objects, to have an existence, must be objects to someone's consciousness or else they are unrealizable, self-negating. The qualities of the world which we perceive by means of our senses are dependent on the mind of the perceiver. All that we perceive reveals itself to be combinations of ideas in our own minds.

Locke took up this theory, subjective idealism, and tried to bridge the gap between mind and matter by positing Nature as the CAUSE of sensations; sensations are in the mind, and the mind then builds up a world out of these sensations by its own activity. An effect, he pointed out need not resemble its cause, so why need a sensation resemble the object causing it? The real cause of sensations of a material world need not be material at all. What we know in our own minds are representations of external things. These representations of external things are his Simple Ideas. The external world consists of things which possess only primary qualities such as size or motion. Images of these qualities are what the mind knows and these representations are enriched by the mind with secondary qualities, colour, temperature, etc. Objects are featureless "substances" serving as a substratum for the primary qualities inherent in the mind. The external world is independent of perception, it contains substance and primary qualities are inherent
in substance. For Locke there were Mind, Ideas, and Objects. He was particularly critical of innate ideas, of any truth, that is, supposed to be known by intuition. And yet elsewhere his comments appear to be inconsistent with this view for he says: "We have three kinds of knowledge of real existence: intuitive of our own; demonstrative of God's; and sensitive, of things present to sense.

Epistemologically he unravelled the view that knowledge is derived from the single source, experience. "It is an established opinion amongst some men that there are in the understanding certain innate principles, some primary notions, characters as it were stamped upon the mind of man, which the soul receives in its very first being and brings into the world with it." Against Descartes' innate ideas he placed the opinion that mind was "a white paper, void of characters, without any ideas." If any idea was traceable to its original source - experience - it was an acceptable idea, if not, it was specious, a symbol of faulty reasoning. This argument of Locke's was, as it turned out, the hypothesis adopted by a line of empirical thinkers including Berkeley, Hume and Kant. In claiming that knowledge could be demonstrated as absolutely valid these Philosophers hastened the breakdowns of the academic claim that rational psychology existed upon, namely that intuition, innate ideas, deduction led to knowledge, that knowledge being knowledge of the soul.

Condillac, abbe of Mureaux, carried Locke's theory of knowledge to the extreme, claiming "that sensation alone is sufficient to account for the most complex operations of the human mind."

Without any supernatural assumptions, Locke constructed a philosophical system, interpolating masterpieces of psychological analysis. He proposed this approach: to apply inductive methods, to turn reason, that is, in upon philosophy, in upon itself, and scrutinize the very instrument philosophy had up until then trusted. Introspection which was to last so long as a psychological procedure and play so important a part in psychological observation and thought was established.

Two other empiricists, Berkeley and Hume respectively extended Locke's interpretation of mind to develop, unwittingly it would seem, further psychological procedures. Berkeley refuted the materialism implicit in Locke's argument by claiming that matter cannot exist except as a form of mind. He believed we could never find anything but the knower and his ideas. What exists is not nature, causing ideas but rather ideas in themselves. There is no material substance. To exist is to be an idea in a mind and that mind may be God's. Ideas then exist independently of our knowledge. Further, perception is to be distinguished from imagination. Ideas summoned at will are labelled imagination. Things perceived (ideas in our minds) are also ideas in God's mind which He passes into ours.
Things imagined are only ideas in our minds not God's. Ideas in our minds are ideas of simple qualities. Hence sensory knowledge is always of our own ideas and our ideas are of qualities and not of things. That which is seen is one thing, that felt is another and it is due to unconscious inference that we assume visible and tangible ideas to be ideas of the same object. Thus Berkeley eliminates substance and leaves Minds and Ideas. There is no need, he says, for objects. As far as experience goes we never discover more than Minds and Ideas. What appear to be objects are in reality perceptions in the mind of God.

Hume accepted and denied both Locke and Berkeley. He accepted their opinions that all objects of sensory knowledge are our own ideas; and that all knowledge stems from ideas. He supported Berkeley's denial of Locke's substance. He, however, denied both Locke's and Berkeley's God. And he denied God thus: simple ideas are obtained through sense experience; there is no sense experience of God; so there can be no perception; and thus no reason to believe in the existence of anything other than what we are perceiving. He takes for granted that we perceive our own mental states. Mental states are divided into two classes; A. Impressions (we call them sensations) which are derived from sense experience and which include emotions.
B. Ideas (we call them images) which are faint images of sensations, passions, emotions, conjured up in thinking and reasoning. The distinction between Impressions and Ideas is a distinction between feeling and thinking. It is an intrinsic difference - a quality possessed by each in its own right independently of its relations to any other thing or to all other things. Impressions have a cause that is traceable to the external world, but ideas are not caused in the first place by such contact. Ideas and impressions are usually unconnected but habitually some do go together. This is not an active associating by the mind. Hence, he sees no argument in favour of cause and effect. This attitude led him to doubt induction as a procedure, to decry science. There is, however, a stream of consciousness and that is all. There is no one unifying self. Berkeley eliminated objects and now Hume eliminates Mind, leaving Ideas alone. Ideas are known, are conscious, but there is no self to know the Ideas. The Self is other than and additional to the ideas which are known. The world is a succession of known ideas which are not ideas of anything and only by courtesy are called ours. Minds are a procession of associated ideas. This brings us to the point we hinted at above, namely that we derive from the philosophical empiricists the further psychological concept of the association of ideas, the stream of consciousness; concepts of optimistic philosophers in a hopeful age.

Association of ideas with Locke, although recognized was considered as
subsidiary to, that is to say, less important than, environmental factors for he says to teachers, "Take heed that (children) often examine those (ideas) that they find linked together in their minds, whether this association of ideas be from the visible agreement that is in the ideas themselves, or from the habitual and prevailing custom of the mind joining them thus together in thinking," (P253 - Adams).

It was left to Hartley to build a psychology on the basis of association of ideas.

When Hartley formulated his principles he outlined the fundamentals of Associationism. Hartley, physician rather than philosopher, suggested that body functions initiated mental functions. Sensations, he argued, drew response in the form of vibrations, in the nervous system. These vibrations stimulated the brain into motion. Thus ideas arose from a remote sensation. The physical vibrations in the nervous system and the brain (vibrateuncules) were translated as sensations of the body and ideas of the mind. Sensations that were repeated tended to cause repetition of ideas that had occurred following the initial sensation. To the brain was attributed the function of localising ideas.

Associationists generally, varied in the emphasis they accorded particular aspects of the theory. Some emphasised successive and simultaneous associations; others accepted association by similarity; most claimed to explain all experience as a succession of ideas.

Following Hartley, J. Bentham, J. and J. S. Mill and Bain analysed the stream of consciousness to discover the laws by which it operated and formed its patterns and sequences. The stream was considered an everchanging complex of atoms, which associated with patterns of experience to form or create fresh pleasant or unpleasant patterns and sequences.

The matter was otherwise in Scotland. Reid at Edinburgh, like Daniel Hartley was a contemporary of, and perhaps somewhat influenced by, Hume. Reid accepted the external "real" "common sense" world, of which our senses make us aware, as indisputable, and, unable to find another explanation stipulated "an original instinctive tendency implanted in the human constitution" as adequate proof that the belief was valid. His acceptance of the world as we perceive it raised to favour an enthusiasm for empirical fact. Contrary to the associationists he stressed the unity and cohesion of the soul.

Two generations later Brown, also at Edinburgh proceeding on the basis of Reid's views, moved gradually away from Scotch Psychology and, attempted to formulate the laws of Association. He proved to be the precursor of the leading exponents of Associationism, Bentham, J. and J. S. Mill, and to a lesser extent Hamilton, Spencer and Bain. Hamilton, too, extended the Scotch line with his
emphasis on the activity of the Soul. Hamilton, Philosopher and Logician introduced the concept of "complete reintegration" into psychology, the tendency of an idea to "reinstate in the mind all its concomitants in the original experience." On the question of the range of attention, canvassed since St. Thomas of Aquinas, Hamilton appears to have made the first appeal to experiment. The link with Utilitarian ethics is not unnatural.

"There can be no difficulty in admitting that association does form the ideas of an indefinite number of individuals into one complex idea," says James Mill, "because it is an acknowledged fact." John Stuart Mill was so thoroughly brought up by James Mill and Jeremy Bentham to carry on this tradition that when he found he had sympathies which they did not share, he did his best to minimise the differences. J.S. Mill had also a reverence for Comte, but this attraction rarely weighted his judgment of Comte's ideas as the influences of his associationist father did. So the younger Mill remained an associationist by making the principles to which he was loyal as elastic as possible, stretching them it is now realised beyond what they could bear. He found it difficult to explain how "association does form the ideas of an indefinite number of individuals into one complex idea" so he borrowed the chemists' suggestion that compounds exhibit characteristic differences from the characteristics of their elements."Complex ideas" then, result from or are generated by simple ideas. The association of J.S. Mill is carried over to his account of a creed which "holds that actions are right in proportion as they tend to promote happiness, wrong as they tend to produce the reverse of happiness. By happiness is intended pleasure, and the absence of pain; by unhappiness, pain, and the privation of pleasure... pleasure, and freedom from pain, are the only things desirable as ends; and that all desirable things are desirable either for the pleasure inherent in themselves, or as means to the promotion of pleasure and the prevention of pain." (Mill P6.)

Herbert Spencer refers to simple and complex ideas as do the Mills but explains the formation of complex from simple as due to evolutionary traits in the race, within which acquired characteristics are inherited. "The genesis of knowledge in the individual, must follow the same course as the genesis of knowledge in the race. In strictness, this principle may be considered as already expressed by implication; since both being processes of evolution, must conform to those same general laws of evolution above insisted on, and must therefore agree with each other."

In Bain we find the culmination of the associationist doctrine, not through the addition of any specific contribution so much as a systematic exposition
of the associationist view. We glimpse the field where we read, "the proper stimulus of the will, namely some variety of pleasure or pain, is always needed to give the impetus; that primary constitution, under which our activity is put in motion by our feelings remains unchanged through the whole history of mind." (A. Bain; the Emotions and the Will). "All the great names in British psychology, from Hobbes down to Bain, are connected with this doctrine of the association of ideas. Let the roll be called! Thomas Hobbes, John Locke (who introduced the phrase 'association of ideas'), George Berkeley, David Hume, David Hartley (the founder of modern associationism), Thomas Brown, James Mill (the typical representative of the school), John Stuart Mill, Alexander Bain, Herbert Spencer (these three no longer pure associationists)." (Boring).

Indeed so extensive is the list, so related the points of view of these men that it is perhaps justifiable if we permit ourselves the indulgence of suggesting associationism as a "school," the first school, of psychology. For, although the writers were philosophers and logicians, metaphysicians and ethikos, their matter-of-fact empirical searching for natural laws of the observable world, meant that they were writing psychology.

It is not a far call from such an analytical, atomistic, obviously deterministic association psychology even although it is association of mental ideas, to the conditioned reflex psychology as developed in Russia and adapted by American Behaviourists.*

The inductive method adopted by British philosophers had many side-issues that only became clearly noted in the first quarter of this century. There was the British characteristic of examining each major concept of a philosophy en-bloc and applying it. This is a down-to-earth policy noticeable in the Anglo-Saxon countries. Even the men who delivered the theories could scarcely be dubbed academic iconoclasts. Locke, Berkeley, Hume, Bentham were all concerned about developing a philosophy that could be applied to life, that would work, rather than some theoretical ideal plausible system. There was further an intense love of freedom of speech, not remarked on within the land, but patently obvious to

* This is not to say that association psychology became or led to Behaviourism. Indeed it did not, but remained separate to pursue a course virtually independent of the physiological findings. The parallel deterministic attributes of the mental and physiological psychologies are both valid and will, I think, prove eventually mutually valuable.
continental visitors to England. Voltaire's amazement at English freedom of speech is well known. And this freedom, this inductive questioning, has led to a stability in British philosophy that continental philosophy has failed to achieve. On major issues this stability has had one valuable and one near-disastrous result. The valuable aspect was that out of the search for knowledge came a desire to improve man's estate. The idea is conveyed by Locke, "We shall not have much reason to complain of the narrowness of our minds, if we will employ them about what may be of use to us...our business is not to know all things, but those which concern our conduct." From this germ, this utilitarian concept, grew the Pragmatic spirit, introduced into philosophy about 1878. The less valuable aspect was the rigidity with which British philosophy in its stability refused to adapt itself to the spread of psychological science. And yet even here, as we shall see, the delay in admitting psychology has not been wholly unfortunate.

To the British empiricists therefore we trace these features of the outgrowth of psychology from philosophy: the "anything whatsoever of which a man thinks" of Locke established a "new way of ideas" in opposition to the earlier attempts to separate the soul's functions and assigning each function a place in the body. The theory of ideas did not replace the so called faculty psychology so much as outmode it. Both are still to be found today, but especially the theory of ideas. Ideas have undergone - as we have noted - considerable speculation and one strong line of argument influenced by a 19th century anxiety to reify all thoughts and concepts has developed a psychology of experience. The way experiences have been described by these thinkers reminds of the atomistic approach to chemistry. By contemplating each experience and its assimilation into the mosaic of past experiences within an organism, they have set out to analyse the "stuff" of consciousness. What is not in the conscious is either in the subconscious or below the threshold in the unconscious. The compartmentalized psychology - not accepted by all, let it be realized - brings us back to the Lockean position that "ideas" are the things we think about; ideas are "the invisible power that governs men." It is no surprise to find that English psychology as it separated itself from Philosophy became engrossed with intellectual functions. Not so much because it separated from Philosophy, but rather because the dichotomy since Descartes, of the soul and the body meant that, as it was the soul that was studied, and as ideas predominated, psychology was restricted more and more to elucidating intellectual aspects. Conation and cognition but not the affective side of man's nature became the tenets of psychology under the influence of the idealistic philosophers.

When we turn to these conclusions to see what there has been of influence to educational psychology, we find that the surpassing of the faculty psychology;
the association of ideas; the psychology of the conscious, all have their implications. And in addition the emphasis upon intellectual psychology, cognitive and conative, carried over into the school systems. We illustrate these matters shortly. One additional factor employs us immediately. These philosophers discussed the old question of the innateness of ideas. Descartes supported their innateness; so did Galton later. Locke attacked the concept. He considered "that, of all the men we meet with, nine parts of ten are what they are, good or evil, useful or not, by their education. 'Tis that which makes the great difference in mankind." He suggested the mind of the child to be a Tabula Rasa, a smooth waxen tablet, a structureless substance that may be moulded equally readily into this form or that by the impressions received through the senses.

Empirical psychologists for the most part accepted something approaching this view. The division between Descartes and Locke, as hinted, still exists. That education is essential few would now deny (although not all seem to be sure that much should be allowed too many). The argument does not lie therein. The quintessence for educational psychology is the relative importance of education and the innate ideas in moulding life. The empirical view of the Tabula Rasa dovetails naturally with the theory of ideas, because all mental activity is the interplay of ideas derived through sensations; sensations impinge on the mind; the individual reflects and perhaps alters the impression the sensations make on the original Tabula Rasa. One is constrained to wonder, when the continued retention of this theory is noticed how much it is intrinsically believed and how much it serves as a pungent argument favouring the retention of compulsory education.

And the theory can be built on. Simple ideas derive from compounded sensations; what then is there to prevent complex ideas deriving from compounded simple ideas; or, shifting the emphasis, conditioned reflexes from simple sensory-motor reflexes? According to the theory of association of ideas this compound-complexing amounts to natural individual development. And the better the education it follows the better the individual will be!

On the Continent philosophy ran a related yet a different course. Related in that it was the empiricist Hume with his solipsistic denial of law, science, philosophy, his doubts of the immortality of the soul that roused Kant from a "dogmatic slumber" in which he had assumed till then the essentials, moral action by establishing moral freedom and scientific necessity. If Hume's scepticism roused Kant, Rousseau's "innate capacity for morality in man" inspired him. Kant generously acknowledged his gratitude to the idealist Rousseau.

Kant's starting point was experience. The two sources of experience
mind and things as they exist were intrinsically related; experience was a unity, a product, a creation of these two sources. Experience resulted from "things as they exist" acting upon sense organs. As soon as this action took place interaction occurred so that it was impossible to know things as they were and as separate from our mind's ability to know. The mind thus became more than a sequence of independent impressions and ideas and a passive recipient of sensation-caused impressions, it was an active organ which transformed the complexities of experience. With training experience and effort are transformed into clear thought. Experience, from being the only field creative of understanding, became merely the field of what is; which is very different from what must necessarily be. Laws of nature, such as causality, space, time, apperception make experience possible. We see these things of experience as they appear and as they are determined by our forms of thought. They can never be known for what they actually may be. Reality we can never know. Nature can never be fathomed. Metaphysical knowledge is unattainable. Empirical knowledge is the only obtainable knowledge. Experience stimulates reason; it does not supply the general truths. Truth occurs whether we experience it or not - it is a priori. Truths (like the setting of the sun) are absolute to our knowing minds.

What a knowing mind is incapable of is direct experience of itself. Rational Psychology had claimed just this, that it was possible to experience direct knowledge of the soul. Kant fervently denied to the soul ability to know itself. To Kant all that was left was an empirical psychology not capable of attempting ultimate questions. Even as an Empirical science Kant considered Psychology's material so incapable of reduction to quantitative exactness that the value of Psychology as a science was to him questionable.

Sufficient is indicated in this reference to a difficult philosophy to allow us an insight into the essential developments of continental philosophy as they affect educational psychology. Psychology, which developed using Locke's procedure, was forced to abandon the concept of mind as a passive recipient of impressions from the outside world. Implicit in the statements of Kant is the essential creativity and activity of mind. This concept, as already stated above, is central to educational thought today. Kant reverted to the Cartesian doctrine and maintained the view that much is innately given and further that the innate basis is rich in potentialities. Kant's emphasis upon a priori general truths struck a severe blow at the Baconian faith of English empiricists (and Scottish) in inductive methods. Knowledge, for Kant, exists, it transcends experience rather than having to be inferred from experience, inductively as the empiricists suggest. Then, too, Kant recognized that the activity of the mind was a "synthetic"
(glib word) rather than the analytic process the empiricists made it out to be; that "synthetic" activity of mind was involved in judgments characteristic of the scientific world and even in all knowledge and experience. The synthesis he applied to practical matters of achievement of both virtue and happiness. Virtue so Kant depended upon the principle of an action of which it itself was a result. It did not depend on the intended result, although Happiness did. But, if the synthesis were satisfactory, happiness would be the result of virtue. We sense in this, the view, which Kant expounded elsewhere, that every man is an end in himself; and the validity of the concept of freedom. Kant's view is "I will that there be a God, that my existence in this world be also outside the chain of physical causes, and in a pure world of understanding, and lastly that my duration is endless."

The execrated Spinoza whose "hideous hypotheses" denied final causes, purposes, immortality of the soul, free-will, and moral responsibility, listed among his propositions arguments that fortified those who would dispose of the mind-body problem in psychology. In Proposition XIX, he says, "The human mind has no knowledge of the human body, nor does it know it to exist save through ideas of modifications by which the body is affected." Again in XXI, he says, "This idea of the mind is united to the mind in the same manner as the mind is united to the body." In XXIII, "The mind has no knowledge of itself save in so far as it perceives the ideas of the modifications of the body." This parallelism "enables an investigator to take into account both physical and mental happenings and to note their relationship empirically without becoming involved in the metaphysics of their ultimate relation." (Heidbreder P59). So, the dualism of mind and matter is preserved; the difficulties of Cartesian interaction avoided.

The 'dogmatic' rationalism of Spinoza was further promoted by Leibniz from whose philosophy of substance as real unities, unaffected by anything outside themselves, psychology perhaps derived one further advancement. In the Monadology, section 23, he says, "and since, on awakening from our stupor, we are conscious of our perceptions, it must be the case that we received the perceptions the moment before, though we were not conscious of them; for a perception cannot arise in the course of nature except from another perception, as one motion can only arise in the course of nature from another motion." And, again in his New Essays on the Human Understanding, he adds, "It may even be said that as a result of these minute perceptions the present is big with the future and laden with the past, that everything is in league together and that in the smallest substance eyes as piercing as those of God could read the whole sequence of things in the universe: Quae sint, quae fuerint, quae mox futura trahantur: These insensible perceptions are also the signs and constituents of personal identity; the individual is characterized by the traces or
expressions of his previous states which these perceptions preserve by connecting them with his present state, and which can be known by a superior spirit, even though the individual himself may not be conscious of them, that is to say though he may no longer expressly recollect them." These references demonstrate an awareness of unconscious mental processes, a realm of increasing psychological discussion today. In the same outline, New Essays on the Human Understanding, he disagrees with Locke's Tabula Rasa account of Innate Ideas, but nevertheless contends for the principle of innate ideas and for the concept of loosely organised instincts. There are some, Leibniz says, who understand by the term innate truths only those that would be approved "as if by instinct and without apprehending them except confusedly. There are some of this nature." "I call innate those truths which have no need of consideration for their verification...thus actual knowledge of science for example is not innate, but rather what may be called virtual knowledge; just as the figure traced by the veins of marble is in the marble, before they uncovered by the workman."(P.147)

Christian Wolff, as Bain in Associationism, added no fresh approach. He did, however, clearly announce the views of the Rational (Psychological) thinkers, that the soul is a host of specific faculties; and, that knowledge of the soul will be achieved through the exercise of pure reason. Both of these ideas so detrimental to the development of psychology as a science were blatantly clarified by the man who materially assisted in the birth of the name for this new science, Psychologia. It was probably Leibniz's philosophy systematized by Wolff that Kant imbibed.

The position we have arrived at is this. The developments within philosophical thinking during the 17th to the 19th centuries showed a broad dichotomy that has not yet been reconciled. Out of the Locke, Berkeley, Hume, Bentham-Mill, empirical and idealistic team in Britain, we derive certain psychological procedures; the disestablishment of faculties; the substitution of a theory of ideas; association of ideas; consciousness psychology or atomistic psychology; inductive processes. Out of the Descartes, Leibniz, Rousseau, Kant - idealism, there grows support for innate ideas; active minds rather than passive recipients of these impressions. The two trends represent, rather aridly in the short space given them, the general lines of thought behind the outgrowth of Psychology.

We have yet to add to the philosophies, the name of Hegel, not so much for his novelty or any marked advances in his ideas as they relate to and influence educational psychology, as for the influence he came to have upon British philosophical and psychological thought.

Kant and Locke were both in agreement on the essential value of education.
We have already quoted Locke. Now hear Kant, "Man can only become man by education. He is merely what education makes of him." And even more broadly, "It is, however, difficult for us accurately to estimate man's natural capabilities, since some things are imparted to man by education, while other things are only developed by education." Hegel, a follower of Kant, repeats the sentiment, "A man attains what he should, not by instinct. He must win his true place. On this is based the child's right to be educated." Education for the two who influenced educated opinion generally, Locke and Kant, and for Hegel who made philosophy an academic speciality, was supremely significant. Hegel, however, advanced certain aspects of Kant's educational writings. Kant felt that the whole was necessarily more real than all the parts. He arrived at this opinion with his decision that all finite things, minds, are constituted by their relations with other things, minds. The application of this aspect of the doctrine by Hegel led to the belief that the individual "is an expression of the society in which he occurs." His acts are determined by innate ideas, past experiences and present experiences. All in man is social and racial and through man society wills and thinks. Every act "depends wholly on man's social, historical and biological location." There are some individuals, however, gifted with special powers of insight into the needs and potential needs of society. There is, then, in Hegel's theory, a concept of development, arrived at through education. The development takes place through the operation of a teleological life force which is said to be a logical consequence of the character of a changing situation at a given time. The situation is not piecemeal, it is 'man-in-environment.' It is to be thought of in terms of mind rather than matter.

Hegel called his philosophy, Absolute Idealism. It might also be called Objective Idealism. With Subjective Idealism everything known is in the mind of the subject that knows. With objective idealism everything that exists is mental (or of the same nature as thought) but abolishes individual mind or transcends the individual mind in the act of knowledge which is itself but an aspect of the whole of knowledge. Hegel's doctrine is ideal in the Berkelean (and Platonic) sense; the world is known through revealing itself to patient, persistent understanding. The world's innermost nature is one with that of the mind. In the mind's knowledge of the world, the world knows itself, just as in knowledge of the world the mind knows itself. It is as Shelley said of Apollo, "I am the eye with which the universe Beholds itself and knows itself divine."

An act of knowledge for Hegel has subjective and objective aspects. Knowledge is the ultimate reality of Hegel's universe and is, therefore, objective, that is, it does not depend on a particular mind for existence. Mind is a partial aspect of objective knowledge. Similarly the object is not dependent upon being
known for its existence. It is an integral part of knowledge and so of reality. The distinction between the knowing individual mind and other individual minds is transcended. When we reason certain concepts are used - Being, quality, quantity, relation. Of them all relation is the most pervasive. Being, devoid of relation does not exist. Contrast is most universal of all relations. Every idea or situation leads to its opposite and unites with it to form a higher, more complex whole. This dialectical movement is in all Hegel wrote. The movement of thought is the same as the movement of things - a dialectical progression from unity through diversity to diversity in unity. Mind is the organ for the perception of this dialectical process. God is the system of relationships in which all things move and have their being. In man the absolute rises to self-consciousness and becomes the absolute idea. Reason is the substance of the universe. Change although cardinal to life is not real change so that what is at present is right - is rational; is what will be. This development and apparent change are working towards unity. Order is the first requisite of liberty.

Although Hegel was pre-Darwin, focal tenets in Hegel's absolute theory have a kinship with evolutionary doctrine. Inherited propensities for behaviour themselves derived from the past through biological selection; the determining influence of social behaviour in the nature of the individual, are features both Hegel and the Biologists embrace in their doctrines. To Kant man was an end in himself. Hegel's extension of Kant was to make man, man through culture. Culture is to be conceived as a liberation from the struggle against subjectivity, desire, vanity. The task of education is to assist the liberation. But it is a task for many generations, not one. It is vital that in educating each generation, the course to be guided by is to imitate the course followed by the education of the human race through its successive generations. Kant's words these, nevertheless they are strengthened by Hegel's lucid passage, "The past is traversed by the individual, in the same way as one who begins to study a more advanced science repeats the preliminary lessons with which he had long been acquainted, in order to bring their information once more before his mind. He recalls them: but his interest and study are devoted to other things. In the same way the individual must go through all that is contained in the growth of the universal mind; but all the while he feels that they are forms of which the mind has divested itself - that they are steps on a road which has been long ago completed and levelled. Thus, points of learning, which in former times tasked the mature intellects of men, are now reduced to the level of exercises, lessons, and even the games of boyhood; and in the progress of the schoolroom we may recognise the course of the education of the world, drawn, as it were, in shadowy outline."
The philosophical Idealism of Kant and Hegel, supported the psychological doctrine of Recapitulation. It did more in that both Kant and Hegel recognized that stages in individual development existed. "Children should only be taught those things which are suited to their age," says Kant, and later, "Here we shall add a few remarks (on Sex) which should especially be observed by the youth as he approaches the years of early manhood." Kant was impressed by Rousseau's stage of nurture; negative culture; positive culture. Hegel's occupation with the years of adolescence extends Rousseau's commentary.

And, finally, although one must guard against reading too much into the statements of these philosophers, there appears in their writings the germ of the modern play-way of education. "A child," says Kant, "must form friendships with other children, and not be always by himself. Some teachers are opposed to these friendships in schools but this is a great mistake. Children ought to be open-hearted and cheerful in their looks as the sun. A joyful heart alone is able to find its happiness in the good. Children should sometimes be released from the narrow constraint of school, otherwise their natural joyousness will soon be quenched. When the child is set free he soon recovers his natural elasticity. Those games in which children, enjoying perfect freedom, are ever trying to outdo one another, will serve this purpose best, and they will soon make their minds bright and cheerful again." (Kant, 'On Education')

These then, are the features from within the philosophies that influenced continental life of the 19th century that depict tendencies that established themselves in the thought of educational psychology. We have touched on the recapitulatory theory; the (evolutionary) theory of development; stages in development; innate ideas; even, perhaps, play-way concepts.

Our comprehension of national characteristics is, as yet, too ephemeral perhaps to base an argument upon, but it would seem justifiable to claim that from the 19th century British thinkers have evinced a reluctance towards theory; that they were confirmed empiricists. Why then was psychology and hence educational psychology, so long in being adopted in England? Just before 1900, R.L. Archer says, "We had never heard of such a thing as educational psychology." His philosophy tutor had "suggested that there was such a subject as psychology, and that in the future it might affect philosophical thought more than it had done hitherto, and at any rate it could do no harm to read James's text-book." Archer's reading of the book made him realize that psychology not only existed but had a bearing on education. Why, again, this delay in adopting psychology?

The empiricist lineage in Britain; the faculty doctrine from Scotland,
together with their common-sense tradition; the support from Spencer's experiments; Darwin's biological investigations, support and re-emphasis of evolutionary principles, all provided a seemingly most favourable climate for psychological development. And yet development came much slower than the climate seemed to justify. The answer would appear to lie in the hostility of the academicians. The universities actively opposed psychology. Procedures which resulted from the philosophical thoughts of down to earth practical investigators, needed to establish themselves on a broader, sounder basis before academic acceptance could be gained in Britain. The entrenchment was against a too positive, narrow-based movement and was at the hands of men who could not "easily resign to science this last of all fields of knowledge in which they have claimed a voice..." (McDougall - Frontiers of Psychology P11).

Although the academicians can be criticized for their tardy acceptance of psychology as a separate science, they must also enjoy some praise for saving British psychology from becoming one sided. We can be charitable and refrain from questioning whether the results of their inaction were anticipated or fortuitous. Indeed it has been poignantly argued that their motives consciously pervaded. "Socially the Greek view that the cause of a thing is to be found in what it becomes in its perfected form rather than in its origin is most important. The fact that man's mind is now more angelic than simian and is capable of becoming even more so was to them more important than that in origin it was simian. The academic attitude was not mere traditional clinging to the traditional; it looked to the future. A psychology which took shape under the first influence of Darwinism would certainly have been one-sided, and the side emphasized would not have been that which produced social idealism." (Archer).

It would seem that it was this preoccupation with social idealism that explains why transcendental Hegelian doctrines becoming obsolete in Germany were introduced to Britain. Hegel had dominated German philosophy during the 19th century while the empiricists dominated in England. Then came the swing towards Kant in France and Hegel in England among academic teachers of philosophy. A new philosophy alien to British social trends was incorporated. Had the academic philosophy teachers been in touch with the general educated public, or had they had a following among scientists as they had among many Protestant theologians, Hegelian philosophy would conceivably have profoundly influenced psychological development in Britain. As it is, another field of thought was opened in psychology, alien to this Hegelian trend. The net attitude to general psychology in Britain was to continue to dally with it rather than develop it. For educational psychology this attitude retarded its inception in Britain till a still later date.

In an historical survey it is possibly unwise to leave any chance of
the British and the continental philosophies being thought of as separate entities. This separation has nowhere been intended. On the contrary the outgrowth of one philosophical train of thought from the one to the other has been suggested. Nevertheless by writing in terms of British and continental a division may be suspected. If this is so let us restore harmony immediately, for the various systems outlined are only fragments, important fragments, but still fragments of a larger variety of systems. Their uniting bond is that they are idealistic philosophies. They are philosophies, that is, which consider that the enduring substance of the world is of the nature of mind; that the material is explained by the mental. They are traceable back to the Greeks.

Early in human thinking it is possible to trace cosmological attempts to reduce the universe to Air (Anaximenes), Water (Thales or Hippo), to, that is atoms (Democritus). The complex world of appearance they reduced to a simple world of reality. Given these simple parts man could arrange them himself. Nor has this view been confined to the early Greeks. It is a method with wide appeal. To Democritus, man, composed of soul and body atoms, is rigidly controlled. All thoughts, deeds, events are determined. Arguing from another element, Fire, Heraclitus found, long before Democritus, no core of lasting substance but impermanence and change. The conception has an analogy in Physics today, and in the central concept of growth processes in Psychology. Yet other Greeks, typified by Anaxagoras, were more concerned to discover an order in the world as much if not more than the world's constituents. Is it too imaginative to discern between Democritus and Anaxagoras the difference between Reflex Arc psychology and Gestalt, a reduction to elements as different from a "characteristic entity existing as something detached and having shape or form as one of its attributes... a product of organisation." To the Greeks, the elements (as Empedocles used Air, Earth, Fire and Water) that made the world were, of course, more than elements in that they contained souls, were animated or they were derived largely from metaphysical concepts.

The concept of quantity by which means psychology developed into a separate science, was added by the Pythagoreans.

Lacking from these early investigations is any deep criticism of the validity of knowledge. True, knowledge gained through the senses had been distinguished from knowledge gained through the reason, but the validity of this knowledge, whether "inquiry into the ultimate nature of reality is not, after all, quite futile," was left to the Sophists. Socratic interest in human affairs, his practical efforts to encourage philosophy as a way of living, led to an examination of processes, performances, situations that built up a knowledge of self, of duty and hence enabled
men to lead virtuous lives. Socratic belief that man ought to be considered in
relation to his fellows and to the state, was a mild precursor of present day
psychological emphasis on the social influences in human life.

It was Plato who first formulated the mind, matter dichotomy. Ideas,
revealed by reason, he regarded as possessing perfection and as more real than the
world known to the senses. The changing world of the senses was an imperfect copy
of the absolute world of ideas. Ideas (the mind), expressed themselves (itself)
through baser matter. Reason was the highest power and resided in the head;
courage, in the chest; appetitive senses, the lowest powers, resided in the abdomen.
These three powers he considered as parts of the soul. Now in the ideal state those
endowed with reason were to be the rulers; with courage to be warriors; dominated
by their appetites to be artisans or slaves. Inherent in these aspects of Platonic
time are several theories that have dominated much psychological thought. There
is, of course, the body-mind controversy. The mind as Plato held, being noble.
And the converse view, that mind being immeasurable and untractable is not a scientific
and therefore not a valid concept. Thirdly his location of the powers in the soul
was embryonic of a psychological school of considerable magnitude and tenacity, the
Faculty Psychology. Fourthly, Plato's determination of who should rule and be ruled
appeared to argue a case for individual differences among men.

To establish the relationship between earlier and later thought is to
suggest that the same kinds of problems, attacked from similar hypotheses, and
concerned in similar ways, have permeated men's thoughts about human affairs for a
long time. It does not necessarily commit us to a position of claiming that the
present consciously borrowed from the past, nor that the present ideologies are
implicit in ancient views. The admonition is also useful when considering Plato's
successor, Aristotle. If Plato's psychology was drawn from philosophy, epistemologically,
Aristotle's psychology was linked to Metaphysics and Biology, and psychologies of
both were valuable forerunners to Analytic Psychology.

Aristotle was concerned more with the practical than Plato and Aristotle
found no division between matter and form (as he labelled mind). Form existed in
the concrete object, rather than as a separate entity. "Matter is potential form;
the actual object is form realized in matter; it is union of form and matter." As
there is no absolute distinction between form and matter so it can be argued that
it is impossible to indicate where form ends and matter begins. Aristotle's concept
was one of continuity. The Supreme Being, however, is pure form towards which all
matter strives. All nature, including human nature is teleological. Modern
Science has found it difficult to go all this distance with Aristotle, and therefore,
tends to emphasise Aristotle's dictum that the body exists for the soul. Put
differently the implication is that the soul's activities derive from bodily actions. But Aristotle distinguished a mortal and an immortal part of the soul. And the active intellective immortal part is not a function of the body. The faculty of memory was empirically examined and the laws of association that dominated psychology later, were established. Further, as every human activity was good or bad, right or wrong to the extent towards which it conduced to happiness, Aristotle suggested a basis for utilitarianism. Another feature of Aristotle's theories that dominated, this time the Medieval Age Schoolmen, was that of the active intellect. The present day teacher can look back at Aristotle's emphasis of continuity in growth and activity processes.

With Aristotle’s death, the original and productive in Greek thought diminished. Stoic belief in suppressing desire in the interests of developing virtues and Epicurean harnessing of the same desires to achieve happiness although they have certainly persisted have added little that is fresh to the development of psychology. The Stoics reverted to a dichotomy between soul and the instincts and emotions and developed a detailed classification of faculties.

"The final phase of Greek psychology was neo-Platonism. The soul of the neo-Platonists, to be sure, was wholly engulfed by mystic-religious concepts, but these thinkers nevertheless achieved some significant insight into the life of the individual consciousness."

"Then, as now, there were the problems of elements and form, of the parts and the whole, of the relation of mind and body, of function and structure, of process and substance, and of the control and management of human nature in the interests of achievement, virtue and happiness." (Muller – The Evolution of Modern Psychology).

Idealism as a series of philosophies can be contrasted with another series of systems of thought whose centre lies in nature. This philosophy derives eventually from Bacon's induction and Descartes', division of body and mind, and was expounded by those who considered that mind might be part of or the same as the body. Experience is to most of this school, the Realists, a knowledge or recognition of a relationship between the person who experiences and the object he experiences. These objects are not created or altered by the Seer's act of perceiving them. At first sight the case for Realism looks patent. Its difficulties, however, (unlike those of Idealism which dissolve rather than increase) increase rather than dissipate the more the schema is examined. Herbert Spencer's emphasis of self-preservation; science as an intellectual and moral discipline typify the background ushering in naturalism in education. The movement took firm grip in education after Rousseau and was revitalized by Moore, at the turn of the 20th century, supported by Russell for a
period, Broad and American New Realists. Present-day realism, is due to developments in physics, more comprehensive than erstwhile. So much so that many writers of the realist school approach close to Idealism. Some evidence that this is so lies in an examination of a few significant concepts arrived at or adopted by the naturalists.

We find Spencer, for example, saying, "The education of the child must accord both in mode and arrangement with the education of mankind considered historically. In other words the genesis of knowledge in the individual must follow the same course as the genesis of knowledge in the race." Spencer adduced biological evidence in support of this contention. It is interesting to notice here that the biological denial of the transmission of acquired characteristics (which this Recapitulatory theory assumes) has not ended the Recapitulatory theory. Perhaps transmission may still be proven on a psychological level, especially if the significant part played by the will is examined with it.

It will be recalled how Hegel arrived at the essentials of biological theory; innate ideas; selection; environment, in postulating his theory. This constitutes a parallel of considerable value, especially in view of the fact that Hegel emphasised the influence of social behaviour. It is perhaps a weakness of the naturalistic approach that insufficient emphasis was placed upon the effect of society, of culture, created by man as it nurtures each generation.

There are, of course, differences between the beliefs. Especially upon the extent to which science is to be used in education. The naturalist wished to exalt science in education and still achieve both intellectual and moral discipline. The reference to moral, the ethical aspect of the philosophy, comes to the heart of the disagreement between them. "The ultimate standards by which all men judge of behaviour are the resulting happiness or misery." Kant's moral law, duty for duty's sake have no place here.

Education generally and educational psychology specifically as we know them in the 20th century have been greatly influenced by the naturalistic, realistic or biological approach. With educational psychology this influence has been inescapable as it is essentially functional and must ensure that its procedures bear scientific scrutiny. It is a young science and in building up its resources, defining its frontiers, establishing its hypotheses it had to pass from the descriptive stage in which it nestled during the 19th century to the defining or 'natural history' stage that we have become familiar with this century. From applying Psychology - a philosophically derived psychology - to education, it had to grow to a status of suggesting the lines of psychological investigation, based on educational experience.
The development of educational psychology seems to me to have been the natural outcome of an age of specialisms wherein sciences divided up into smaller units to improve their chances specializing which larger units would not, by their very nature, ever manage. If these sciences flourished it was due to their natural outgrowth from older sciences and their meeting a need of the times. Once established however, educational psychology has become aware of itself, its scope, and limitations and will, as it matures in its 'natural history stage' not only dictate to other purer sciences the lines of their experiments, but will make clearer to the philosopher where this age expects ethical, aesthetic, religious, political, logical, and metaphysical emphases to be directed. It will, that is, weave around itself, if not its own philosophy, then the philosophy from which it can draw directly. Teachers then will have greater surety that their methods, their curricula, their administration, be aware of the issues at work within the entire educational framework.

Man is not born a philosopher; most are perhaps not even born wishful to become philosophers. The most that can be said is that man is born capable under favourable conditions of becoming a philosopher. The practical men have been essential forerunners of the philosopher (although at the same time being potential philosophers). There is therefore, little weakness in starting from educational application of psychology and from thence arriving at a philosophy of educational psychology. A device always has behind it a (perhaps unconscious) principle, and the principle has behind it a system of related principles.

The main principles that the realist employs and that educational psychology is occupied with include, instinct; eugenics; mental testing; behaviourism; individuality; adaptation.

In a philosophy that upholds nature; whose bases are preponderantly scientific procedures; that embraces natural selection, considerable attention will be - as it has been - given to applying the observation of experiments with animals to justify methods of conditioning behaviour of the young human. Investigations with animals pointed strongly to their possessing more than one "instinct." The explanation of activities in man was based on the premis of instinctive activity in animals. It was not until the 20th century was a decade old that the limitations and implications of such a view were realised generally. Instincts, as they were then defined, could only hinder the learning of new ways, education was not as effectively all embracing as once believed. Instinctive action was not conscious of the end to be attained, the end result was all we could judge an act by. And here we must leave.

The concept of innateness of ideas held peculiar significance for
educational psychology. Developed as it is with reference to the further concepts of natural selection and the survival of the fittest, it led to the opinion that if the quality of the "innate ideas" of a nation is to be maintained then "natural" selection should be altered in favour of 'Human' selection (the argument was roundly supported by the success achieved in breeding animals) because man having by-passed the "survival of the fittest" struggle when he mastered his environment will breed inferior 'types.' No matter how much education is given, the eugenicist pointed out, the innate inferiority of the persons to be educated would mitigate against all efforts. This in itself was a matter of some import for educational psychology, but more so was its application. The (what may be called) negative approach - that is, to work out all the inferior, rather than a positive approach, to raise all levels including the inferior - to living as propounded by the eugenicists was not confined to them alone. We find it permeating new developments. The case we are particularly concerned with is that of mental testing. That this adjunct to educational psychology has had much value is undisputed in the western world; its true value was recognised however only when there grew up a change of attitude towards educational testing. At first mental tests were regarded by many as a valuable means of determining mental defectives and isolating them. Such an intensive approach unable to apply the tests and derive advantage for all, could have condemned the mental testing movement in its infancy, to perpetuate the error of finding only what it was looking for - mental deficiency. As testers - and in Britain it was this approach that advanced - discovered unsuspected abilities; discovered that it was not innate capacity alone they were testing, but a compound (or mixture) of such capacity and its interaction with environmental forces, so the tests ceased to support any stereotyped, aristocratic social state; so, indeed, the tests bore fruit.

In so far as the realist's arguments led to attention during the 19th century being devoted to "autonomous development of the individual" and in so far as the concept "individual" was approached broadly, much strength was accorded educational psychology. Broadly conceived, individuality took into account the individual's personality and character. Full development of both have become significant educational aims. Unfortunately individuality was often not broadly applied but rather restrictively used, to separate each person from his neighbour and show him as a distinct unit. Psychology shows this trend at the end of the 19th century with 20th century emphasis being re-balanced to correct the un-sociable elements involved in such a view. Individuality may or may not, therefore, be a valuable derivation from the realist philosophy. The same care must be exercised when discussing adaptability. If adaptability means simply an adding to or subtracting from, a patching up of an unsatisfactory psychology of human development
and behaviour, it helps us little. Indeed it becomes a conservative and reactionary
force allowing little change and confining us to the restriction of a condemned structure
that needs altering. Where, however, adaptability is considered as a characteristic
pertaining to a dynamic organism, then educational psychology has a place for the concept.
It is highly doubtful, though, whether this latter concept was the view of the 19th
century naturalist - and even of some 20th century realists.

Probably it was in America that educational psychological advance was most
severely prejudiced by the too stringent application of this mechanistic philosophy.
It was here that comparative psychology dominated; it was here that Behaviourists
applied and extended the Bechterev- Pavlov conditioned reflex theories to education.
It was here that methods of teaching, the project method, for example, were introduced
to fit the concepts of the philosophy. True the system worked; true, men like
Thorndike gave valuable service to educational psychology deducing his laws of learning
as he did from artificial experiments with domestic and other animals; true, also,
that Behaviourism is not extinct. But also true, is the inadequacy of the philosophical
background. Does the behaviour of an animal indicate how men will conduct themselves?
Can animals create situations on anything approaching the scale man can? Can animal
reasoning, judgment be compared with man's. There has been considerable reaction
within America itself to this particular philosophy and its bearing on educational
psychology.

We may sum up then by suggesting that this philosophical system that
"Looks to the past for the cause and explanation of human activity", though of shorter
history than Idealism, has had a distinct bearing upon educational psychological
development. In some respects it added support to the opinions of the Idealists -
recapitulation and biological processes were affirmed. At other points e.g. instinct,
the two philosophies are at cross purposes, not on the term as much as on the implications
of its use. On yet other matters, place of individuals in society, the power of
education, the realists go part way and no further. And, again, the question of the
innateness of ideas, brings closer agreement between the Realists and some idealists
than between two schools of idealism.

I have omitted the sceptical schools of philosophy because their refusal
to admit more than intrinsic characteristics to all thoughts only results in all
practical activity - such as education is concerned with - being ignored.

The other "school" of philosophy, or "combination of naturalistic methods
with the conclusions of Idealism", Pragmatism, is so recently developed that it scarcely
enters the field of this survey. This is not to suggest that Pragmatism originated
in the last years of the 19th century. With roots in Aristotle's distinction between
speculative life and speculative activity; Bacon's search for truth as a means of employing nature to serve man; Galileo's questioning physical laws; Locke's, our business is to know those things which concern our conduct; and, Kant's emphasis of Practical reason, with all these roots, there are sufficient stepping stones in the path to a natural path towards the philosophical thoughts of Peirce, James and Dewey and others.

The Pragmatist is opposed to the custom of testing his ideas, hypotheses, faith, religion, everything by the degree to which it accords with certain general notions or principles accepted (perhaps too readily and often) on the authority of others and with too little criterion for coming to a decision. He wants new hypotheses specific to each problem. He tests all his acts and beliefs by the way they work, by, that is consequences. And yet he is not to be considered a utilitarian, for, although that may be in, say, Dewey's opinion, the best ethical doctrine since the Greeks its emphasis on pleasure, as the summum bonum subserved it to tyrannical authoritarianism. To avoid authoritarianism the Pragmatist insists that every specific situation must be considered for itself evil attacked, and worth gauged by a particular consequence in a particular case. In our study of man, for example, we ought to be concerned less with states of consciousness and more with modes of response. The brain is an organ of a certain kind of behaviour, not an organ by which we know the world. Thought is an organ just as much as our limbs are, the organ, or instrument by which we re-adapt to our environment and readapt our environment. Experiments have to be made in this process of adaptation and adjustment and the imagined contacts we have in this process are what have been called Ideas. The adjustment is not passive. It is "Spencerian" adjustment, whereby all response is a desire to control the environment. So most pragmatists would recast the Philosopher's problem from that of coming to know the world to how to control and remake it; from an analysis of sensation and knowledge to a synthesis and co-ordination of knowledge and desire. All thought is personal and purposive and pure thought is a figment as mental activity is coloured by attention, bias, interest, selection and other factors.

Thought, the instrument of readjustment, must be studied in specific situations. When a difficulty occurs an hypothesis should be created from which conclusions will be drawn after some behaviour and experimentation.

If necessary a new premis will be developed and this must be scrutinised by continued observation. Thought, then, is more than a personal attribute and organ and instrument, it is social, in any given cultural milieu. Society is a product of the individual, but just as much is the individual a product of the society. The trouble is that the influences of society work so rapidly that they are often
mistaken for the workings of heredity. This has led to the over-rating of instincts, and the under-rating of early childhood training. Those instincts we know the human race possesses, e.g. power instincts of sex and pugnacity are modified by society, hence it is concluded any others we possess can be modified by education. We must unlearn our ideas about an unchangeable human nature and an omnipotent environment. There is no knowable limit to change and growth.

It was one of the strengths of the Pragmatist that he seized upon concepts that ages of thought were demonstrating to be central and fundamental, and embodied these in his doctrine. The concept of growth was one such central concept that the pragmatist absorbed. Whereas the authoritarians proposed a summum bonum - whether it was good, pleasure or happiness - and where as Dewey and others could appreciate the value of these criteria, they wanted to go beyond them. As a consequence a pragmatist either denies that there are any good or absolute values or refuses to make one. "the good" - absolute. "Some goods," says Dewey, "are not good for anything; there are just goods. Any other notion leads to an absurdity. For we cannot stop asking the question about an instrumental good, one whose value lies in its being good for something, unless there is at some point something intrinsically good, good for itself." The concept of growth took Dewey in particular beyond the need to postulate a good.

Another keynote in Pragmatism has been the stress laid upon activity. Knowing is merely a prelude to and thought secondary to action. Wm. James said, "From its first dawn to its highest actual attainment we find that the cognitive faculty, where it appears to exist at all, appears but as one element in an organic mental whole, and as a minister to higher mental powers - the powers of the will." Pragmatic methods insist that before there will be full understanding of a principle, pupils must see it applied to facts, see it tried out. The appeal of this approach to the children taught was immense and instituted additional argument that the interests of children once roused, the incentive to learning is multiplied.

At the uneconomical use of precious time; the neglect of motives; and other strident doubts about the Pragmatic philosophy we must only hint because they belong in the generalness with which they are noted now, almost exclusively to the 20th century.

By the time psychology came to disengage itself from philosophy - and we discuss this in the next section - there were abroad several dominating views that, despite the school of philosophy adhered to, philosophy played a decisive part in determining the original fields of psychological research. Most restricting in its development was the tendency for general psychology to be subject to rather than master
of these views. The direction that educational psychology took shows these same philosophical influences.

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Note. References to the Philosophical Works are taken from Everyman editions.

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PSYCHOLOGY'S ATTENDANT INFLUENCES.

Comparing the vast body of systematised facts of the physical sciences with those of psychology, psychology appears as a very unsatisfactory science, until one considers the potential contributions which it can make to our understanding of the universe. "Science becomes easily divorced from life...Life becomes a flight from science, science a game. And thus science abandons its purpose of treating the whole of existence. If psychology can point the way where science and life will meet, if it can lay the foundations of a system of knowledge that will contain the behaviour of a single atom as well as that of an amoeba, a white rat, a chimpanzee, and a human being, with all the latter's curious activities which we call social conduct, music and art, literature and drama, then an acquaintance with such a psychology should be worth while and repay the time and effort spent in its acquisition." (Koffka)

Workers in the physical sciences approaching their problems in the absence of any established psychological truths and being compelled to make certain assumptions about the mind, made them ad hoc. In the past the physical scientist, unwittingly provided the "indispensable minumum of psychological doctrine." Where these minima were arrived at through attempts to establish hypotheses in a physical science two possibilities developed. First the less clearly perceived psychological aspect was woven to achieve a physical law. The accuracy of the psychological aspect was incidental. Second, the psychological doctrine unravelled by the physical scientist, tended to be adopted as his legitimate province. Thus was psychological thought interwoven with theoretical understanding about other sciences.

It was impossible to achieve a separate science of psychology until mankind was clearer in its grasp of physical matters. Valuable insights into psychology have been newly discovered time after time from the days of Plato. When Socrates described the principal branches of mental constitution he employed a description of two distinct elements in the soul, one rational, the other irrational, appetitive or concupiscent. When there is any division between these two principles a third element, the spirited, passionate or irascible element, the seat of anger, spirit, resentment, arrays itself on the side of the rational. In book 6 he continued to discuss two worlds, one visible that is apprehended by the eye; the other intellectual that is, apprehended by the pure intelligence. Each world comprises two subdivisions, which, proceeding from the most uncertain to the most certain are, in the visible world, images, objects: in the intellectual world, knowledge, attained by the aid of assumed premisses on which all the conclusions depend, and employing objects by way of illustration; knowledge, in the investigation of which no material objects, but only essential forms, are admitted. Corresponding to these four classes, four mental states, which, again
proceeding from the most uncertain are conjecture, belief, understanding, reason."

Valuable as this description has been, little more than anecdotal significance can be attributed to it.

What invariably promoted early psychological developments was development in the realms of physics or the physical sciences. The reference in chapter 3 to the lead that astronomy and physics gave to the modern scientific movement should be recalled. Galileo early in the 17th century with others revolutionised physics when he demonstrated the dependence of physical processes upon motion and inertia. Galileo's abjuration could have been Descartes'. Descartes was ready to publish his application of such knowledge of physics to animal and human behaviour, shortly after Galileo's book was burned. When Descartes discussed, Principles of Philosophy he said, "When we receive news, the mind first of all judges of it, and if the news be good, it rejoices with that intellectual joy (gaudiam intellectuale) which is independent of any emotion (commotio) of the body...But as soon as this joy passes from the understanding to the imagination, the spirits flow from the brain to the muscles that are about the heart, and there excite the motion of the small nerves, by means of which another motion is caused in the brain, which affects the mind with the sensation of animal joy (laetitia animalis)." This flow of spirits or motion of fluids along the nerves was his basis for behaviour, and the embryo reflex arc concept. Sense organs were excited by physical forces and the fluid set in motion physical processes towards the brain and away from the brain to the muscles. In humans there was a non-physical soul located in the brain which could intervene in this sense-organ-to-muscle cycle.

But animals, since they have no Res Cogitans, are automata. The difference between humans and animals was the reasonable soul which operated through the Pineal gland at the base of the brain to influence the flow of spirits. Mind and body thus interacted. Just how they interact Descartes did not explain. His point of view is not new, but the approach is nearer that of our day.

Another aspect in Descartes' discourses that bears upon modern Psychology appears in Meditation III, of God: that He exists. "But among these," says Descartes, "some appear to me to be innate." And he pursues an argument with the Programme of Regius to show that by innateness of ideas he intends a mental modification which, existing in the mind antecedently to all experience, possesses, a potential existence, until, on occasion of experience, it is called forth into actual consciousness. This, and other "truths", Descartes "proved" by using the existence and trustworthiness of God to demonstrate their existence.

The validity of Descartes' argument was, however, questioned strongly and
by an older contemporary, as a start. Hobbes, like Descartes, appealed to Reason rather than to experience, making use of the concept Rational man. In this, like Descartes, he was consistently following the current of thought in his day. Hobbes advanced when he adopted the "truth that when a thing is in motion, it will eternally be in motion, unless somewhat else stay it." "Sense," he added, is but original fancy caused by pressure, that is, by the motion of external things upon our organs. Imagination, the image made in seeing, and Memory - which are but one thing - are continuations of that "decaying sense," motion. "Mentall Discourse, Consequence or Trayne of Thoughts" are "not altogether so casuall as it seems to be. Not every Thought to every Thought succeeds indifferently. But as we have no Imagination, whereof we have not formerly had Sense, in whole, or in parts; so we have no Transition from one Imagination to another, whereof we never had the like before in our Senses. The reason whereof is this. All Fancies are Motions within us, reliques of those made in the Sense: And those motions that immediately succeeded one another in the sense, continue also together after Sense: In so much as the former comming again to take place, and be praedominant, the later followeth, by coherence of the matter moved, in such manner, as water upon a plain Table is drawn which way any one part of it is guided by the finger." The basic principle of associationism that we noted in Aristotle earlier is implicit here in Hobbes. Hobbes "The Trayne of Thoughts as of two sorts. The first is Unguided, without Designe, and inconstant; Wherein there is no Passionate Thought, to govern and direct those that follow, to it self, as the end and scope of some desire, or other passion: In which case the thoughts are said to wander, and seem impertinent one to another, as in a Dream."

"The second is more constant; as being regulated by some desire, and designe." The concept of Free and Controlled Association appear in this materialistic mechanistic, deterministic writer.

Locke, as we noted earlier was particularly critical of innate ideas, and although his argument was epistemological it held considerable psychological significance. It established an atomistic concept of mind. Mind, which knows "simple ideas" is thereby composed of units that combine in a variety of ways. The suggestion seemed to follow that when it was discovered how these simple ideas "combined" the human mind and all its potentialities would be comprehensible. If Hobbes's arguments suggested the field with which Associationism could commence, it was Locke's attempt to interpret unit combinations that provided a stimulus for the (mainly) British School of Association Psychology.

So far in the development of thought major and minor writings had touched upon psychological matters in the process of attempting to arrive at a metaphysical
system: It was not until Bishop Berkeley of Cloyne wrote his New Theory of Vision in an endeavour to demonstrate how it is "we perceive by sight, the distance, magnitude, and situation of objects:" that we have a problem attempted because a problem exists - a strictly psychological exercise. When in Section XI he says, "It is plain that distance is in its own nature imperceivable, and yet it is perceived by sight. It remains, therefore, that it be brought into view by means of some other IDEA that is itself immediately perceived in the act of VISION:" we glimpse one of his many applications of laws and principles of association to psychological problems. The role of the sense organs though more clearly envisaged by Berkeley than by many of his successors, did not blind him to the problem created by the existence or non-existence of abstract ideas. Berkeley denied their existence, and appealed repeatedly for experience to be used as a determining guide. "Now I do not find that I can perceive, imagine, or any wise forme in my mind such an abstract idea, as is here spoken of. A line or surface, which is neither black, nor white, nor blue, nor yellow, &. nor long, nor short, nor rough, nor smooth, nor square, nor round, &., is perfectly incomprehensible," is representative of his attitude throughout his New Theory of Vision. "Though the point did not come out explicitly in the discussion," says Heidbreder (P 47), "the difference between Berkeley and Locke on the possibility of abstract ideas really involved the question of the possibility of imageless thought. In the background were the questions: Must our ideas be copies of the things we are thinking about? Or if not that, must they contain some sensory content that in some way represents them? Can there be thoughts that have no sensory content at all, and which nevertheless have a genuine function as thought? Such questions as these were implied in Berkeley's inquiry; but they did not emerge as strictly psychological problems until two centuries later, when the imageless-thought controversy gave them the clearness of formulation that an experimental setting made possible."

The glimpses of Associationism we gain from Berkeley are substantiated in the writings of Hume. Hume it will be recalled, denied causality. Yet he appreciated that many persons strongly believed in causality. He explained the apparent paradox as due to the result of custom, habit and very strong association. In the first section of the work, on The Sceptical and Other Systems of Philosophy, he said, "My hypothesis is that all our reasonings concerning causes and effects are derived from nothing but custom; and that belief is more properly an art of the sensitive than of the cognitive part of our natures." And in Book 1; Section iv; of the connection or association of ideas, he said, "Were ideas entirely loose and unconnected, chance alone would join them; and it is impossible the same simple ideas should fall regularly into complex ones (as they commonly do), without some bond of union among them, some associating
quality, by which one idea naturally introduces another... we are to regard it as a
gentle force, which commonly prevails... The qualities, from which this association
arises, and by which the mind is, after this manner, conveyed from one idea to another,
are three, viz. resemblance, contiguity in time or place, and cause and effect.

The astronomer, if no-one else, might be thought to work in an "utterly
objective world... uninfected by the peculiarities of the human mind." Yet "curiously
enough, it was a problem of this most objective of the sciences that first revealed
a common ground between psychology and physical measurement. The astronomer's problem
of the observer's reaction-time became the starting point of a host of psychological
experiments." As Dingle suggested "The universe of astronomy is a creation of the
astronomer's mind." and modern astronomical theory is "intricately entangled with the
psychology of the astronomer." The relation between the development of concepts in
the physical sciences and the ideas that eventually became the peculiar province of
psychology, is tangible and close.

The new concepts that science introduced in the 17th century form a useful
distinguishing mark to delineate a pre-modern from a modern period in mental outlook.
Pre-modern thought about mental processes was limited by confused and complex thinking
within which it is possible to determine three major trends that have influenced not
only psychology but also philosophical and physical scientific thought to the present
day. The three views were met in the previous chapter. One was the philosophy of
the pure idealist who considered experience alone to be real; and all that exists is
experience. From this point of view psychology becomes the science of pure individual
experience. A second was the theory of ideas which form the previous chapter also,
we have seen has so influenced psychological thought that the very word "idea"
permeates every text on psychology. The conception of "ideas" changed at the hands
of Locke, Berkeley and Hume, from the Platonic "idea" signifying an objective universal
form and which suggested an ideal pattern towards which things moved, to become
substitutes for the mind itself. "All the perceptions of the mind may be divided
into impressions and ideas... and there is an attraction or association among impressions,"
said Hume. This psychology of ideas considerably absorbed and supplemented the
psychology of pure experience. Experience now became an "attraction of ideas."

The psychology of ideas grew up as a rival to a third major trend that had
preceded it, the psychology of the soul or faculties. Early attempts at what might
be considered psychological thought accepted a soul and concerned themselves with
distinguishing the soul's functions, a "seat" for each function being found in parts
of the body. Sensation, imagination, memory, attention, thought, desire, bodily
motion were described as though they were so many different types of activity, all of them different from the processes of physical nature - which also was described as being of many different types. Description in such terms generally came to be termed Faculty psychology. Herein, experience derived from the functioning of the various faculties of the mind or soul or both. The mind was subjectively conceived as a number of distinct though unverified powers or faculties. The mind was compartmentalized.

A cursory glance at writers like Locke and Spencer is sufficient to prove how firmly faculties became established in psychological and educational thought. "There are," said Locke, "three miscarriages that men are guilty of, in reference to their reason, whereby this faculty is hindered." And again, "Everywhere throughout creation," said Spencer, "we find faculties developed through the performance of those functions which it is their office to perform." When, however, the faculties were subjected to scientific analysis and precise measurement to determine the effects upon them of various training or teaching methods, their existence per se came to be questioned. One way around the challenge was to invent new entities and allot them a fresh name. It became clear, however, that multiplication of numbers of faculties provided no explanation of faculties; that the approach tended only to conceal what many suspected might more rightly be the essential, namely, a unity of mind. Gradually the faculty psychology became discredited. But the reason for any faculty psychology in the first place was an attempt to establish an hypothesis to account for apparently permanent mental attributes. By what then must faculties be replaced. Stout, Groundwork of Psychology, suggested "modes of being conscious." McDougall postulated instincts. It was Spearman who realised that "faculties have a way of losing every battle, but always winning the war." This warning was timely. When faculties were dethroned some writers seemed to assume that the development of factorial analysis revealed the "fundamental elements of which human minds are compounded. We should realize that factors consist primarily of categories for classifying mental tests and examinations." (Vernon P 160.). Burt, attacking this problem from another angle, supplements this contention, "strictly, therefore, the scientist can never really measure mental abilities as entities in themselves; for there is no ground for believing that such abilities can have any real existence apart from the behaviour by which they are displayed or the organism that displays them. What we call an ability is simply a convenient name for designating a set of potential reactions on the part of the individual tested. If our mental factors as such can claim no necessary concrete existence, still less can we endow them with effective causal powers. Explanation in terms of causal agencies is a legacy of nineteenth century science - a mode of approach which should now be considered as out-of-date in mental science as
it is in physical science. In psychology concepts of this kind appear little more than relics of the old-fashioned faculties, which were invented to perform the same function in psychology as were performed by forces in physics, and have since got ingrained in our everyday habits of speech. Nearly all psychologists are nowadays agreed in repudiating mental faculties, or at any rate the name; but their reason for this rejection seems rather that there is little or no objective evidence for any set of faculties that has hitherto been proposed, and not that the whole idea of faculties springs from a crude and obsolescent notion of scientific explanation. Factor-analysis, I believe, owes much of its present confusion to the fact that most psychologists still tacitly assume that, if faculties do not exist, mental factors must be invoked to fulfil their explanatory functions. (P 219 Burt.)

There are, I believe, few clearer examples of the influence of an ancient doctrine upon a new discipline than the way in which the Galenical humoral category has carried over into modern educational psychology. Writing (1944) in his Subnormal Mind, Chapter 1 on the Normal Mind, concerning Temperament, Burt says, P 53, 'Hence two broad questions can be asked, and the alternative answers lead to a four-fold classification: If they (emotions) are quickly excited, but die down just as quickly, the man is classified as sanguine; if they are quickly aroused, but slow to die down, he is classified as choleric; if they are slow to be aroused and slow to die down, he is classified as melancholic; if they are slow to be aroused and die down again quickly before they have reached any appreciable degree of intensity he is classified as phlegmatic.' Galen (131-201) seeking the why of everything, reverent in his obeisance to Aristotle's dictum that "Nature makes nothing in vain," considered that every thing in nature showed an element of design, the design being (if we examine it as he puts it) a somewhat artificial and abstruse rendering of Arabian beliefs about the causes and sequels of disease and Pythagorean number systems.

Arabian physicians as typified by Jabu (or Geber 702-765) six centuries later regarded the heart as the "Princé of the body", the lungs as the "fan of the heart," the liver as the "guard of the heart," and the seat of the soul, the pit of the stomach as the "seat of pleasure," and the gall bladder as the "seat of courage." The sun was considered to rule the heart, Jupiter the liver, Saturn the spleen and Mars the bile. Under the will of the stars, the metals Sulphur, Salt and Mercury and their compounds "were specifics for the diseases of these organs."

The Pythagorean doctrine embraced seven naturals, six non-naturals, and three conta-naturals. The seven naturals were elements (fire), qualities (hot), members (brain), faculties (cognition), operations (hunger), spirits (animal, from...
the brain by the nerves), and the humours. There were four humours, blood — hot and moist; phlegm — cold and moist; yellow bile — hot and dry; black bile — cold and dry.

From Hippocrates (460-370) whose central doctrine of humoural pathology drawn from Plato and Aristotle, used the "Mind" and senses as diagnostic instruments, through the foremost contributor to experimental physiology before Harvey, Galen, 20th century educational psychology derives nomenclature for concepts of central inference in the study of temperament, sanguine, choleric, phlegmatic, melancholic.

Only conjecture can suggest what might have occurred had the trend of thought followed the therapeutic diet, air, sun, exercise schema of Asclepiades who opposed Hippocrates. As it turned out the world had to await Vesalius (1514-64) before any ardent voice was raised against Galenic teaching. The views of Galen lasted seventeen centuries and still influence modern writing.

Vesalius has been labelled "the most commanding figure in European medicine after Galen and before Harvey." In his writings of the brain he denied that animal and human cerebration were different, and hence Vesalius appears as a "pioneer of experimental comparative psychology." (Garrison).

Rudimentary though these fields of thought may appear today, they were, with typical Greek thoroughness, an advance upon the unspecialized, undifferentiated Priest-magician-medicine compound so familiar among some peoples both contemporary with Greek ascendancy and with our social order. Now, in the 20th century we can notice a unity among the three specializations ... During the years in which they appeared to travel their own discrete paths, religion has come to be the "communal belief in and worship of some universal power or powers greater than man himself," the instigator of law and ethics; magic engendered alchemy, and medicine from Arabia sired the same cult. Alchemy was combined with Astrology, Astrology begat Astronomy. The doctrine of sevens exemplifies the lineage. Seven planets (sun, moon, Jupiter, mars, mercury, Venus, Saturn,) correspond with the seven days of the week and the seven metals (gold; silver; iron; quicksilver; tin; lead; copper). "Planetary influences fecundated these metals in the bowels of the earth." Alchemy sought to find the germinating substance. Alchemy leads on to chemistry.

The development of science has, of course, never been continuous nor even progressive, but rather like the tangled tortuous line which Lawerence Sterne drew to represent the course of his whimsical narrative of Tristram Shandy. Ideas of the greatest moment have been throttled at birth. Great ideas enter into reality with "evil associates and with disgusting alliances." But the greatness remains
nerving the race in its slow ascent. (Whitehead). The thin white line of science has depended upon a few spirits and the time of the discovery. Great ideas are not to be conceived as merely waiting for enough good men to carry them into practical effect. Could we survey the web of thought woven of three different threads, the black thread of magic, the red thread of religion, and the white thread of science (simple truths drawn from observation of nature) we should probably perceive "it to be at first a chequer of black and white, a patchwork of true and false notions, hardly tinged as yet by the red thread of religion. But carry your eye further along the fabric and you will remark that, while the black and white chequer still runs through it, there rests on the middle portion of the web, where religion has entered most deeply into its texture, a dark crimson stain, which shades off insensibly into a lighter tint as the white thread of science is woven more and more into the tissue. To a web thus chequered and stained, thus shot with threads of diverse hues, but gradually changing colour the farther it is unrolled the state of modern thought, with all its divergent aims and conflicting tendencies may be compared. Will the great movement which for centuries has been slowly altering the complexion of thought be continued in the near future? or will a reaction set in which may arrest progress and even undo much that has been done? To keep up our parable, what will be the colour of the web which the Fates are now weaving on the humming loom time? Will it be white or red?" (Frazer)

There is abundant trustworthy evidence that there have been sick people get well aided only by faith, hope, a charm, ministry to a mind diseased. Many in the 20th century who would scrupulously avoid ascribing such cure to supernaturalism, who would probably baulk at a healing power of nature, might consider the cure due to nature's ability to restore equilibrium to unstable chemical states. The question why? is, of course, still left unanswered, but since Bechterev, Pavlov and Watson, it is no longer questioned that the philosophical concept 'Idea' can be considered as a "process which can cause chemical changes in the body." The effect of mind on body or, more probably, the interaction of the two is now considerably recorded as bringing about as least glandular changes. Freud's work swung considerable emphasis towards the effect of the mind, conscious and unconscious, upon actions. The timeliness of a concept recurs again as it so often has. It was Paracelsus (1493-1541) for example who was the first to correlate cretinism with endemic goitre; Darwin's diary that stimulated Gesell's investigations into certain reflexes.

Between psychology, with emphasis on educational psychology, and medicine throughout the history of thought, there has ever been the relationship that from new findings in the natural science, new aspects, properly the field of psychology derived. At times the relationship was so close that one can almost suspect that
the progenitor conceived of psychology's existence; at others, only because of the present state of our knowledge do we realise that 19th and 20th century concepts were implicit in the thoughts of earlier natural scientists. Some additional significant names, events and trends may establish this contention and provide a fuller though still rather incomplete portrayal.

The western world's transition from more to less medieval ways of thinking was accompanied by the many relevant operative forces we noticed in an earlier chapter.

From the Renaissance through to the 17th century we find men distinguishing themselves in many fields, as mathematicians, astronomers, physicists, chemists. Meibom, for example, presided over Philosophy, Philology, archeology, geometry, and medicine.

The feature we are interested in now is the operation again of free thought. The right to criticize grew apace. Magic and astrology were gradually rationalized and witchcraft opposed. Tycho Brahe accorded an empirical cast to science; Kepler fused the heliocentric studies of Copernicus with the experimentalism of Brahe and gave impetus to mathematical and inductive methods; Gilbert gives his name to experimental observation. The receptive neo-platonists Da Vinci, Cusanus, Paracelsus began to develop some signs of a division of medicine into specialities. Natural perception, a device we can perhaps attribute to Campanella, was exhibited startlingly in the accuracy of physiological and anatomical drawings and data established by Leonardo and furthered by Vesalius with whom Garrison considers "anatomy became the starting point of modern medicine," and physiology was "no longer to be a teleological science, explaining hypothetical functions assumed a priori." Physiology had not, however, entirely lost its medieval mysticism. Harvey (1578-1657) inductively proved that "the heart acting as a muscular force-pump propels the blood continuously and cyclically." Yet he burdened his explanation of the function of the blood with the Aristotelian doctrine that the heart is the seat of the intelligence (soul). The import of Harvey's work lay in his mathematical demonstration of blood circulation, quantity and velocity. "With this start physiology became a dynamic science." (Garrison)

But physiological speculation did not die. It continued, and was much influenced by the old, traditional ways of thinking and speaking; especially by the doctrine of animal spirits. Stahl (1660-1734) was an advocate of animism, the 'sensitive soul' of van Helmont, that permeated and guided a passive body. Yet Stahl was a link with the present (c. f. Bergson's elan vitale) in that he observed many remarkable effects of the mind upon the body, postulating latterly a theory that a distraught psyche was the causa causans of disease. In retrospect we can sense the germ of Freudian thought. Nearly 150 years later Tylor (E. B. 1871) purposely sought
to explain the psychology of the primitive man by using the Stahlian concept. "As a reaction against the empty formalism of the 18th century, the animism of Stahl is of considerable importance to the anthropologist and psychiatrist...As an advocate of psycho-therapy, Stahl is a connecting link between the present and the past... The animism of Stahl became finally merged into the vitalism of four 'B's' Bourdeu, Barthet, Bichat, Bouchut, to find a more recent avatar in the tedious entelechies of Driesch." (P 313 Garrison) The field of psycho-therapy, which absorbed Stahl was not new. We find Asclepiades of Bithynia (124 B.C.) taking mental sufferers out of their dark dungeons, employing occupational therapy and, of especial moment to Educational Psychology introducing exercises to promote memory and fix attention, playing music (and administering wine!) to ensure sleep. And that the phenomena of psycho-therapy, hypnotism and autosuggestion were wellknown in the 16th century is apparent from the writings of Pomponazzi, Cornelius Agrippa, Cardan, Van Helmont and Kircher. The essence of psycho-therapy is the secret of the influence of Religion upon mankind. For bodily ills, especially of the nervous system, psycho-therapy is far more efficient and respectable than that of many a drug which is claimed to be a specific in an unimaginable number of disorders. Pinel's (1745-1826) humane writings, succeeded (towards the end of the 18th century) in creating in the medieval world a view opposed to the demonic one. The insane are ill not evil and so thorough were his analyses that the authority he established erased the demonic view almost from history. Pinel's gross symptoms of disorders were refined by Esquirol and De Tours (1840) supplied a Psychological account of mental disorder.

Another blow was struck at the medieval sleep of scientific enquiry when Cullen (1710-1790), regarding muscle as a continuation of nerve tissue, and regarding life itself as a "function of nervous energy," substituted the modern concept of "nerve force" or "vital principle" for the Galenic "animal spirits." Just earlier, the little studied Hoffmann (1660-1742) had perceived that "pathology is an aspect of physiology." He assumed a "mysterious etherlike fluid acting through the nervous system upon the muscles, keeping them in a state of partial tonic contraction; and also keeping the humours of the body in the motion necessary for life." He admitted humoral changes...as causes of disease."

The 17th century was characterized by strong individualism. The 18th century exhibited considerably greater methodistic system, although not by any means corresponding with 16th collectivism. Looking back we notice that the best work in the established sciences during this century was in the fields of chemistry, mathematics and physics. Perhaps the finest example of this co-ordination was the completion of the modern theory of respiration by five chemists, three mathematicians and two physicists, a strange mixture incidentally of both the mechanical and animistic views.
Borelli (1608-79) a Neopolitan mathematician, follower of Harvey, pupil of Galileo, swept away then current beliefs about respiration by treating it as a purely mechanical process. Cruickshank (1745-1800) in his Experiments upon the Insensible Perspiration of the Human Body demonstrated that the skin, like the lungs, gives off carbon dioxide. The finishing touch was added by Magnus (1837) when he showed that venous and arterial blood both contain oxygen and carbon dioxide. The work of these men was dependent upon the discovery of the gases in the atmosphere - carbon dioxide (Black 1757); hydrogen (Cavendish 1766); nitrogen (Rutherford 1772); oxygen (Priestley and Schule 1771); and the work of Lavoisier 1743-94 who demolished the Phlogiston theory and "discovered" oxygen, and discovered the "true nature of the interchange of gases in the lungs." In conjunction with Laplace (1780-85) the originator of the theory of Probability Lavoisier demonstrated that "respiration is in every way the analogue of combustion, the chemical products being carbon dioxide, and water. Lagrange through Hassenfrazt, finally corrected Lavoisier's belief that oxidation of hydrogen and carbon took place in the tubules of the lungs, by maintaining that "the dissolved oxygen of the inspired air slowly takes up carbon and hydrogen from the tissues as the blood courses through them."

Two additional movements may be included. Hunter's (1728-1793) study of the relationship between structure and function has a modern flavour still. His study was an endeavour to connect morphology with physiology. The name of Muller, perhaps the greatest German physiologist should be recorded as the founder of scientific medicine but he was equally eminent in Psychology. He introduced two new elements into Physiology, the comparative and the psychologic. Among other fields he developed particularly those of nerve energies, colour sensations, spinal nerve roots, colour contrast. These we must proceed to notice in greater detail.

The major trends that led to the growth of a science of psychology and then educational psychology, may now be drawn before we examine the immediate specific stages that the 19th century presents us.

Prior to the renaissance man's thoughts were undifferentiated and unspecialized. Religion, magic, alchemy, astrology were cults within which much sound observation derived and around which a vast body of knowledge, inadequately searched for accuracy, was accepted and handed on blessed by an aura of authority. The authority was often the substitute for and seal of accuracy in the pre-renaissance days. Systematizers and interpreters like Francis Bacon, encouraged the empirical cast that led to greater enquiry into observed facts. New discipline arose out of old procedures, alchemy was to become chemistry, astrology to become astronomy, and new fields of optics and mechanics arose. The trammels of religion thrown off anatomy increased.
By the 17th century a spirit of individual enquiry was strongly abroad and flowing with it were the disciplines of mathematics, and physics, both of them satisfying servants for empirical spirits. Rather than appeal to reason or authority, the desire to experiment was the fashion. It was the virtue of this century that the free roving enquiry was accompanied by a philosophical appreciation of the significance of the new findings. Natural science was the major concern of the great philosophers of the age, Leibniz, Bacon, Descartes, Spinoza, Locke.

From Italy where its spirit first established itself, the Renaissance movement spread in all its implications North and West to France and England and then East to Germany. Italy - and Latin - dropped out of importance, great names like Galileo remaining and occurring to inspire more westerly and northerly thought. In France from the 17th century, arose the academy of sciences enjoying valuable Royal support and some of the advantages that accrue from economic ascendancy. Internal communications enabled advanced national integration, Mathematical studies such as astronomy grew prominent. The inspiration of Copernicus, Kepler, Brahe, Galileo, Harvey, Newton was in all its mechanical characteristics borrowed into the works of Voltaire, Laplace, Lavoisier. France proffered some encouragement to her scientific quest. Italy and England neglected theirs. For Italy the neglect as seen in Galileo's life was scarcely conducive to the growth and future welfare of science. In England the developmental struggles of experimentation were paralleled by the establishment of the Royal Society, rarely favoured by Royal support. It is significant that the advances France made in mathematical sciences were in no small way due to her hearty acceptance of Newton's logical use of empirical, mathematical procedure. It was particularly in the field of chemistry, optics, mathematics, physics, that the main stream of activity in the natural sciences proceeded in England. The proceeding was still tortuous, as witness Young's wave theory of optics in opposition to Newton's corpuscular theory.

Again in France Cuvier's work in comparative anatomy wherein he accorded a central position to the nervous system established France not only in the field of physical but also biological scientific development. His name and work, to omit Linnaeus, Bichat, Cabanis, Condorcet was a powerful influence in France against the Lamarck - Darwin evolutionary movement in England. But if France held the leadership in the Physical and Biological fields, it fell to an Italian to bridge Physiology and Biology. Galvani's work on electrical current generated by stimulation of the sciatic nerve of frogs was believed then to contain the germ - as was Humboldt's discovery of the torpedo fish's electrical discharge - for bringing together scientifically the physical and the biological sciences.

Meanwhile in Germany a further synthesis approved possible, Wohler, Liebig's
pupil synthetically prepared Urea. Here was the bridge between the organic and the inorganic.

Germany it was that became the champion of the biological sciences. It happened through the 18th century re-organization of the German University and the introduction therein of a faculty of Philosophy. Through Philosophy, unity of all knowledge was to be achieved.

Haller, for example, the greatest physiologist before Muller did a great deal to establish the unity between the sciences. Through him the experimental and empirical processes were applied to human and animal life processes. The British and French were using such methods in mathematics, chemistry, and physics. Haller applied them in Biology. Physiology as an experimental science was established. Astrology and the occult were dead at last (or were they?) It appeared that Britain and France had scrupulously avoided biology because they considered it incapable of quantitative and qualitative scientific analysis. Now the Germans (Kant) showed that all knowledge including the knowing process could become an exact and systematic discipline. Haller had not been reticent in borrowing French and British methods to apply to a new science. Nor was Schleiden slow to build upon Bichat's discovered relationship between organs and the fundamental structures or tissues, of which they were composed. Schleiden (1830) went ahead to establish that these tissues of "fundamental structures" were composed of cells, each cell being in certain respects an independent unit. The crowning step was made by Schwann (1840) who showed that what Schleiden had established for plant cells, applied equally to animal cells. Biology as a Science came of age. The consequences for anatomy, physiology, psychology were far-reaching. If Physiologists, Biologists and Philosophers, without experimental method, but through their faith in the method of collecting data could describe the structure of tissue, the processes of the human mind, why was a science of psychology not possible?

The same period found another German developing another Newtonian concept – conservation of energy. Helmholtz collected the previous works on this idea and sought to show that the living organism was no exception to the physical law, a crucial advance in man's knowledge.

And while the closely linked German University system built up a position of leadership in biological science during the 19th century, and France forged on with her prestige in the physical sciences, Britain's individual genuises with little assistance were keeping alive physics and scientific developments in that country. As the 19th century progressed, the way towards an independent science of psychology opened. It was not, however, until after the middle of the century had been firmly passed that there were such people as self-styled Psychologists. Before 1860, and
very often after 1860, experimenters, observers, scientists were physiologists, physicists, astronomers, medical men, biologists and philosophers by choice and psychologists by derivation. The interaction of thought arising from these discrete fields not only promoted a specific science itself to a more advanced or detailed level, but also furthered knowledge in related fields. Franklin's 1774 experiment with a kite in a thunderstorm seems little related to Galvani's 1780 discovery of twitching frog legs when connected (in series) to two different metals. But their ideas led to a sensitive 'galvanometer' which potentially assisted the 'Farad'-ic currents that the 19th century physiologist used to stimulate animal nervous systems. Since that day we have become familiar with the Psychogalvanic Reflex. Feré in 1888 related some of the features of strong emotional reactions to similar features in electrical disturbance. The nervous system in its turn had been brilliantly explored by Bell (England) and separately and more methodically by Magendie (France) and in the second decade physiologists were examining the sensory and motor functions of sensation and movement.

Nervous energy was commented on by Locke as early as 1690. It was nearly a century and a half later that specific nervous energy was attributed to each of the five senses. Helmholtz recognized the significance of this finding for psychology and extended the doctrine of Specific Energies to account for different qualities within each sense.

The senses and sense organs, too were enjoying the attention of scientists. Earlier we noted Berkeley's contribution, and how the development of the telescope showed up in astronomy the personal equation. Now in the 19th century there developed a vast field of research in acoustics and optics, special emphasis falling perhaps on vision. We can note, for example, Goethe's anti-Newton and anti-Young outburst. Goethe proposed to account for the phenomena of colour blindness, colour contrast, negative after-images, by postulating four primary colours. Purkinje 15 years later (1825) dedicated his two volumes on visual phenomena to Goethe.

Starting back in the 17th century again, this time with Descartes (1650), we find a long chain of controversy as to whether the movements of men are automatic. The conjecture by the 19th century had reached the stage of discussion about voluntary and involuntary actions. The term Reflex had become common parlance but its central problem, whether reflexes from the spinal cord are conscious, was still an academic wrangle, the physiologists tending to consider that the usefulness of reflexes in everyday life meant that they must contain the element of purpose and as such must be conscious. The Philosophical contenders felt rather that as reflexes were localized in the spinal cord, they could only be unconscious because the brain was the organ of consciousness. Reference to the brain as an organ of consciousness reminds us
that brain research had travelled apace and had localized the brain as the seat of the mind (Sic Galen). Broca succeeded in 1861 in finding a specific centre for speech.

Interestingly enough this very important - to educational psychology - question of brain localization of specific functions in the brain, drew considerable stimulus from a now highly disreputable and specious doctrine, Phrenology. Gall, the exponent par excellence, of Phrenology, set out to show that specific functions of the mind depend on a specific region of the brain, and that as a muscle grows with exercise, so an area of the brain (and eventually the skull) grows as a function is exercised. Now 120 years later, 'Personality' appears to the educational psychologist rather more obscure than Gall seemed to find it. Phrenology stirred a specious excitement. Helmholtz's proof that nervous impulses moved much slower along nerves than was imagined, convinced investigators not only that mind and nervous system ought to be studied, but also that such study would yield fruitful results.

The growth of physiology, physics, philosophy, astronomy, biology, medicine, chemistry, all of them related sciences, developed questions they jointly and severally required some specialist investigation into. Some 19th century names pigeon hole three introductory trends that led to the formation of that specialism. The trends are (1) psychological physiology as portrayed by (to mention some outstanding names and omit a host of lesser names who in turn added as much knowledge) Helmholtz, Muller, Weber; (2) The science of physiological psychology, as derived from philosophy, medicine, mathematics by, Herbart, Lotze, Hartley, Bain; (3) the neurological pathological psychiatric emphasis with which we can associate, Gall, Galton, Charcot, Mesmer. These three trends are climaxed by another wherein certain personalities think in terms of psychology as a purpose rather than an aspiration. These men include Fechner, Wundt, Ebbinghaus, Titchener. If on occasions we grow impatient at the somewhat slow acceptance of educational psychology, it may be some consolation to recall that before the 19th century, physiology, a discipline with a long history can be considered to have achieved its emancipation from the practical demands of medicine only when J. Muller was appointed Professor of Physiology and Anatomy at Berlin in 1833. Muller's activities are a pivot point for a multitude of experimental developments on human and infra-human sense organs in the 19th century, all of which came gradually to hold a great place in the science of psychology.

Weber (1795-1878) principally a proponent of anatomy and physiology showed in his classic work on the psychology of sensation Der Tastsinn und das Gemeingefühl (1846) that the smallest perceptible difference between two weights can be started as a ratio (independent of the magnitude of the weights) between the weights. He provided
the concepts of threshold, or limen, two point threshold, error of localization, and his experiments with 'muscle sense' gave us the concept of Just Noticeable difference. (It was this principle that Fechner seized upon later). His beliefs, on the physiology of the sense organs of touch, smell, hearing, vision, muscle were all carefully detailed; clearly distinguished between these as they concern physiology and philosophy. He accepted that senses of touch (which included for him, pressure, locality and temperature) and common sensibility locate themselves in the spinal cord and deduced evidence that the brain was their eventual seat. It was logical then that these nerves came under the influence of the mind. Weber's findings were by no means isolated. He was influenced by predecessors and contemporaries. What he was perhaps most important for was his influence upon at least two men, Fechner and Lotze.

Anatomy and physiology, through philosophy, and that the philosophy of Kant, also were the principal responsibilities of J. Muller (1801-58), investigator, experimenter, and author of Handbuch der Physiologie des Menschen (1833-40). In this Handbook, Bk III on Physiology (in which the doctrine of reflex action is described) in Book IV on muscular movement, especially voice and speech; in Book V on the five senses and his famed line of investigation Specific Energies of nerves; in Book VI - of the mind, association, memory, imagination, thought, feeling, passion, mind-body, sleep, phantasms, action, temperament; in Books VII and VII on Reproduction and Development, embryonic and postnatal, he pronounces the current of psychological thought in his day.

In J. Muller we witness the true significance of the part played by German philosophy in producing a belief in the unity of nature. Muller was a philosopher and a physiologist interested to relate physiology to other sciences. His keen powers of observation which helped so much overthrow the tendency to shoddy observational standards engendered, in large measure one can suspect, by Hegel, were applied (to link both physiology and philosophy) in his doctrine of Specific Energies. From the earliest antiquity there had always been an assumption of some sympathetic bond between the object and the eye, or between the external process and the inner physiological process. The direct importance of what is called Muller's law of Specific Energy is that it contains "A specific denial of any necessary qualitative connection or resemblance between the physical processes of stimulation and the psycho-physiological changes associated therewith in the sense organ and consciousness." (Brett P109) The indirect import lay in the attempt it made towards a definite statement on the subject. This and the 'plasticity'of the theory gained a long life as a hypothesis in experimental psychology.

It was in Book VI on the mind that Muller came closest to approaching
psychological matters from an experimental viewpoint. In his discussions on attentive selection of particular phenomena he frequently attempted his explanations in terms of judgment, "mind", association, reasoning rather than concern himself solely with the physiological sensation.

J. Muller's was one influence in the life of Hermann Von Helmholtz. If Muller's findings lacked sufficient specificity to be clearly a starting point for physiological psychology, then Helmholtz's interests, energies, skills, if ranged alongside Fechner's and Wundt's perhaps represent that starting point. Psychical concepts ranked after physics and physiology in Helmholtz's life, to be sure, but his experiments on reaction times; his vision and auditory studies contain much that psychology later needed as a foundation for its hypotheses. Helmholtz reopened the astronomer's problem of 'personal error' in star observations. His studies of conduction time with frog motor nerves gave him fairly consistent results. The reaction time with humans, however varied so from individual to individual and from trial to trial in the same individual that he dropped the experiments. Individual differences were only discouraging variables! Much additional work on these and related fields by contemporaries led to Donder's realising that both the stimulus and the nature of the task had considerable bearing in the investigation. Donder demonstrated that the variables concerned not only conduction but also central processes. Donder emphasised the psychological aspect of the physiological experiment and "laid the corner stone for the analytic study of the time relations on mental processes."

(Murphy P 148)

Helmholtz worked in vision, colour contrast and colour vision, acoustics, and in both fields his work was epoch making. The eclectic nature of the man's thinking shows itself in the emphasis (in music, for example) he places on factors of habituation; and his thought of the educational significance of his writings; his laws of unconscious influence and his simple theory of exception. His views did not go without challenge, and particularly we should note Hering's views on colour theories and colour blindness.

Helmholtz accumulated the essential facts concerning two main senses. Fechner it was who showed that psychology could employ scientific measurement. With the material, method and the zeitgeist the way was open for a synthesis. That man to do the synthesis was Wundt. We shall glance at Fechner, Hartley and Bain for a moment before Wundt.

Fechner discovered that the effects of stimuli are not absolute, but relative to the amount of sensation already existing or exerted, the relation being expressed in the equation \( S \) (sensation) = \( K \) (constant for each sense) \( \log R \) (the stimulus).
Immediately after he read Weber's work on Just Noticeable Differences and this law remained his guiding principle. For it, he felt he had to find a mathematical statement. Thereafter began long and painstaking research into sensations, perception, feelings, action, attention, investigation of "right and wrong cases" (originated by Vierordt) average error. Murphy (P 92) goes so far as to claim, "Indeed, Fechner's long and careful research did much to give Wundt and his contemporaries the plan of an experimental psychology.

Hartley's place in the field is one of promoter or assembler of ideas already profounded. He had read Locke and adopted his "association of ideas;" he read Newton and as a physician attempted to apply Newtonian concepts of vibrations to the nervous system. In so far as he endeavoured to build a psychology around the law of the association of ideas he was a Psychologist. And with his physiological training and work he became perhaps the first physiological psychologist. His laws of mental ideas and body vibrations are parallel, he insisted. In this way he could also be considered the first mind-body dualist since Descartes; a psycho-physical parallelist. He certainly anticipated later thought when he insisted upon the validity of synchronous (simultaneous) and successive association. Association for him was an adequate explanation of thought trains and the fusion of simple into complex ideas. Wundt was later to think similarly. Hartley's "primary seat" of a medullary substance's vibration although anticipated by Descartes, was better conceived and in its turn anticipated Lashley's work of today. And too, Ebbinghaus was to prove the Hartley contention that the more remote the ideas the weaker must the association be. Association became a fundamental psychological law when he applied it to a variety of matters: words acquire meaning by association of ideas; memory is accurate association; recollection crude association, so are dreams; emotions are aggregates of sensations, pleasure and pains, or their ideas and pleasure and pain are habitually related to sensations through associations.

It was the achievement of Lotze (1871 - 1881) that he won a synthesis of materials from medicine and philosophy (metaphysics) to apply in his psychological work. This was unique. Bain tried to synthesize physiology and psychology. Lotze managed the unity at least in his own mind and seemed to incorporate philosophy and medicine, too. Lotze argued that it was futile to try to find mental processes which are not related to physical processes. Psychology, he felt, must deal with the organism. The nervous system and the mind must be seen in relation to each other. The significance of Lotze was the way in which his approach encouraged seekers of psychological principles to continue their search in the natural sciences. Again, on the
psychology of emotions his detailed statement of the nature of the expressive function paves the way for the James Lange theory and for experimental investigation of emotions.

If Hartley was the progenitor of Association Psychology and Physiological Psychology and Lotze the synthesizer, Bain was the congeneric terminator. After Bain empirical association psychology was gradually absorbed into physiological psychology and experimentalism. Bain subscribed to—some said originated—Psycho-Physical Parallelism. He, therefore, also subscribed to a physiological psychology. In this psychology he emphasized the senses and movement. When on the question of intellect, Bain dwelt essentially with Association and its, for him two basic laws: contiguity and similarity; and its "compound" nature, "associations that are individually too weak to operate the revival of a past idea may succeed by acting together." In regard to these matters Bain "stands exactly at a corner in the development of psychology, with philosophical psychology stretching out behind, and experimental physiological psychology lying ahead in a new direction." (Murphy)

The future of psychology promised by the third quarter of the 19th century to become either nothing or a very complex study. Between those who, with a physiological training, aspired to develop a psychology, and those who sought to systematize psychology by relating it to physiology there were the related fields of philosophical psychology, medicine and psychology, or psychiatry and a number of other incidental—though extremely significant—disciplines, some already mentioned.

It was Wundt who showed himself the instrument of the zeitgeist to synthesize the intellectual forces surging in the psychologies around him. In particular we note the sight and hearing, sensation and intensity, reaction time psychological studies emanating from the experimental physiology laboratories; the genetic work and method of Darwin; the association, imagery, empirical, evolutionary activities of Galton; and, the increasing interest in affective and volitional as well as the newly defined cognitive processes. All these Wundt was materially responsible for synthesizing in his laboratory established in 1879 at Leipzig to study psychology. The establishment of this laboratory is often accounted the foundation in the history of experimental psychology.

Wundt systematized the method of introspection, employed earlier but with insufficient thoroughness by Fechner and Helmholtz. He united introspection and physiological experiments; he placed physiology and psychology side to side—began with a stimulus and followed through to a response. There was his work on the tridimensional theory of feeling; the sequences of feelings leading to emotions, leading into acts and will; purposive reflex acts. For Wundt, the description of any experience had to take account of the whole complex integration of sensory and feeling elements. This led naturally to his doctrine of apperception—the process to Kant and Herbart of assimilating and interpreting new impressions; to Wundt, "the process by which the
elements of experience are appropriated or laid hold of by the individual and drawn into clear introspective consciousness. " This is the process of creative synthesis. The very nature of human experience is that it will organise itself.

Much of Wundt's empirical experimental work was not new, but rather an extension and fuller analysis and systematization of already started fields of investigation. Often out of this extension and re-examination he inaugurated a fresh attack. For example, he came to disagree with Fechner that sensations could be measured. Measurement applied to stimuli. The difference between stimuli allows for judgment. Hence the physical law of Weber came to have a psychological explanation.

Associations, Galton's strong field, were another interest of Wundt's and Wundt brought out clearly the inner and outer associations between words and simplified the whole inductive process so that the relation between the stimulus word and the response word could be measured - as well as the time relations.

Wundt also devoted time to animal, folk and child psychology and thus brought a selectiveness to his main fields and to his writings. As an original thinker; as a prolific writer; as a great enthuser of students; as an analyser of past experiments; as a man of foresight; as a keen critic of quality in work, Wundt stands at the turn of the century as a funnel absorbing the loosely floating threads of querulously developing ideas leading to psychology and gushing forth a speight of new disciplines carried to Germany, U.S.A. and Britain by his students. Cattell and Titchener represent two great figures - of Titchener, something later.

Cattell extended the reaction-time studies; span of attention investigations and established the factor of overlapping - that we can carry on simultaneously a perceptual and motor response and deal with various stages in the total response to several stimuli. Bryan and Harter working with telegraphists applied this concept to the learning process and showed that a new activity could begin while waiting to complete a higher unit of work or skill. Cattell pursued a systematic attack on the questions of how children read. He found that "the perception of whole words took no longer than the perception of single letters. In effect letters took longer . . . " This principle of the organisation of higher units of response was much utilized later in experiments on learning.

Cattell also devised the frequency table for classifying responses in association tests and these tests led him to decide that responses in controlled association were quicker than free association; that some types of controlled association were quicker than others, for example, supraordinates more than subordinates; that even fixed and mechanized associations were capable of quantitative differentiation.

The nature and the significance of individual differences was Cattell's work, too, as were ranking and rating methods for determining personal qualities of individuals.
Important though Wundt and his pupils have been, it is necessary to remember that there were thinkers who were relatively uninfluenced by Wundt just as there grew up to be groups of thinkers in considerable opposition to Wundt. The opposition led to the "schools" of psychology later.

G.E. Muller of Gottingen was a contemporary of Wundt's not positively influenced by him. Muller in his laboratory (founded shortly after Wundt's) was also experimenting with weight lifting comparisons. The subjects' reports indicated that instead of retaining images of the first weight (stimulus) and comparing the second with the first image, they actually forgot the first stimulus but that the second gave the impression of heaviness or lightness in comparison with the first. This report plus the observations of the experimenter combined introspection and objective observation. The new method Muller went on to apply to memory studies. Out of the facts he discerned the concept of mental set, adjustment or Einstellung. Mental set is one of those 19th century concepts that has become part of every day psychological language.

Muller's memory studies supported those of Ebbinghaus, also independently of Wundt's influence. Ebbinghaus's experiments with nonsense syllables, the curve of forgetting; his objective investigations of memory, are additional salient developments.

We may sum up by saying - many and different were the influences leading towards a science of psychology. Influences exerted by chemistry, astronomy, medicine, physiology, biology, zoology, anthropology, physics, psychiatry, gradually, by the end of the 19th century established psychology as distinct from philosophy. Psychology in its own right, preceding any real psychologists as such, also clamoured for this distinction. The psychological revolt against its traditional inclusion as part of philosophy, a revolt within the psychological framework that travels back at least to Descartes and Hobbes' revolts, was completed by the end of the 19th century. The influences of the times were strong enough to effect the break. They were not mature enough to show psychology which direction it was to take. At the end of the third quarter of the 19th century a definition of psychology would probably have foundered around two points - that psychology was the study of consciousness; and the importance of the individual as the experiencer. The method of psychology would have been mainly introspection. With the establishment, however, of experimental psychology the emphasis lent towards performance. Introspection was to be severely questioned.

In Britain the negligible support for psychology, especially anything savouring as much of materialism as experimental psychology was then supposed to, resulted in a delayed start. Philosophical psychology as expounded by Ward, Sully, Stout, paralleled by genetic Darwinism and the evolutionism of Galton were far in advance of experimental laboratories. Cambridge did allow Ward a laboratory in 1897, soundly established by Myers in 1913. Oxford decided on a Chair of Psychology in 1947.
In Britain, psychology has attached itself, more to persons than to institutions, as a result of its reception. It was after the war in 1918 that philosophical psychology in Britain was accompanied by any strong move, and that was from industry's attempt to apply psychology. Experimental psychology as Germany knew it, passed Britain by.

Bain's death meant the end of associationism and physiological psychology in Britain. Bain was followed by Ward and Ward by Stout, the last two being influenced by Brentano and Herbart respectively. Their influences were perhaps most noticed in the work, later, of McDougall. Galton, on the other hand, influenced, outside of Britain, Wundt and Cattell, and in Britain Pearson adopted his statistical methods. The advantages of Wardian psychology over Bain's associationism were, his argument for the unity of human experience and behaviour and of total experience as opposed to discrete functions; his stress of activity and adjustable nature of the organism. This second point readily allowed him to absorb Galton's ideas concerning evolution. Evolutionism can be said to have dominated British psychology at the end of the 19th century. The other major feature of British psychology was its truly comparative nature, aided no little, again, by Darwinian practice. In this evolutionary, comparative atmosphere the names of Romanes, Lloyd Morgan and Myers can be cited.

In Germany at the same time that experimental physiology was established there were traceable Darwin's genetic approach and Galton's evolutionary approach leading to empirical investigation of sensation and imagery, and to emphasis of cognition, affect and volition in behaviour. Galton's analysis of association was one major influence in Wundt's work. Mill and Bain gave Wundt his systematic structure. All these features were synthesized in Wundt's physiological psychology. Wundt's physiological psychology was empirical, introspective, associationistic, elementistic, sensationistic; was a union of introspection and the new experimental approach. Other major influences upon Wundt were Schopenhauer's Will. The will was central to Schopenhauer's philosophy, a will that need not be a conscious function. This concept Wundt utilized. Leibnitz's term apperception became Wundt's concern; Helmholtz and Donder's reaction time; G.E. Muller's, Fechner's, psychophysics. The erudition of Wundt was such that he incorporated and extended these concepts into his physiological psychology. To the already noted influences, can be added Wundt's stimulation of Kraeplin to experiment in psychopathology; his slight influence in Switzerland, the Netherlands and Scandinavia.

There were great names in Germany beside Wundt. Helmholtz's acoustics; Stumpf's fusion between tones; Lipp's subjective projection of self into optical illusions; Kulpe and mental set. But Wundt's was a psychology of content, easily examinable. Much of the contemporary and later work - especially in Austria - was more philosophical, act or form psychology and less easy to experiment with. Boring suggests we
can think of Fechner, Helmholtz, Wundt, G.E. Muller as tough, rigorous, using the experimental technique; using descriptive analysis; stressing the import of learning in perception. And that we can think of Herring, Brentano, Mach (Mach and Avenarius were to influence Kulpe and Titchener, two of Wundt’s pupils), Stumpf as employing phenomenological description; and nativism in perception – the belief that perception depends on the inherited properties of the organism.

Germany then, was first with an experimental psychology which developed out of philosophical psychology and led on to applied psychology. Her lead was due to the support she garnered from society, help that enabled her to develop institutions or homes for her psychologists.

She lost her lead to America in the field of applied psychology. Applied psychology caught the imagination of Americans after a long delayed start. Earlier, American psychology had been dominated by the Scottish school. It was William James and Stanley Hall who altered this, and Cattell, Munsterberg, Titchener who proceeded to develop American thought space. Titchener’s isolated position in America rendered him a less far reaching influence than his personality suggested he could have been. But the new spirit was under way.

In France and Italy the field of psychiatry was a common strength. Charcot, Janet, Ribot are obvious names. In France, Taine was associated with physiological psychology and associationism; Binet with thought processes and intelligence testing; Père with the psycho-galvanic reflex, the ergograph and fatigue.

Italy, in addition, was examining the physiology of the emotions and interested in neurology.

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RELATED CONTEMPORARY FIELDS.

Students from Germany and from Britain took up opportunities or what they hoped would be opportunities after their degree courses, in Europe or Britain, out in America. There are names and tendencies almost at times amounting to movements of which we need to take cognizance. To include both requirements a few names will be used around which to focus discussion of movements. In many respects these movements and the thoughts of these men were the result of their own revolt against tradition; in part the new world engendered new spirits; in part the internationalism of thought acted to build up new concepts. Such are some of the elements of the 20th century Zeitgeist. All the movements we record have whatever their beginnings, made positive contributions to Educational Psychology.

We begin with an Englishman who represented German thought and much German psychological tradition in America:- Titchener the exponent of introspection; structuralism and existentialism. Titchener was a pupil of Wundt's, a friend of Kulpe and of Angell. In his decision to avoid Philosophical explanation of his psychological thinking Titchener somehow resembles G. E. Muller, and, they both championed the new experimental approach. Looking back now it seems true that Titchener divined his purpose as that of establishing Psychology in America. Equally likely is it that his text, "Experimental Psychology," was written in order to establish a new science in the new land.

Titchener's interest lay in the generalized normal human adult mind. He and his Experimental Group (until he died) excluded any extraneous studies, e.g. animal, child, abnormal, applied psychology. Once launched on his study, his magnum opus, several other launchings followed, namely in the field of attention: feeling: thought: meaning: apperception.

Titchener was thorough; and he was analytic. Hence we find the younger Titchener who was so interested in the structure of his studies called a Structuralist. He is as important a figure as any of the Structural School of Psychology. Gradually he drove his systematic structuralizing to the stage where meanings and values and all references to anything beyond the experience that is being described were taboo. This is Existentialism. Titchener the elementist, the associationist, introspectionist, structuralist, existentialist, the sensationist, experimentalist was the champion of Psychology among his Philosophical associates at Cornell. He it was who insisted on the "stimulus error" in the thought of those who failed to observe a distinction between the physical, physiological, philosophical and psychological in an act or point of view.

His structuralism was similar to Wundt's and its significance for Educational Psychology he indicated by this outline. Mental states are made of sensations, images,
feelings. There are only two simple feelings, pleasantness and unpleasantness. All other feelings are compounds of sensations and feelings or images and feelings. These three, sensations, images, feelings, are elements. This was a move away from Wundt's three dimensional theory of feelings and from those who considered feeling to be an attribute of sensation. To attention, Titchener gave attributive status. He saw it as the process by which sensations or images took on greater clearness or gained meaning. Where others (c.f. Herbart) stressed apperceptions to explain this process, Titchener discarded apperception. Meaning then became the content in which mental structure appears; the conscious sensory or imaginal content that accrues to the initial sensory core of a perception or the initial imaginal core of an idea. This "law" was developed and applied only to new perceptions and ideas. Old or habituated perception and ideas contained a core the meaning for which is carried unconsciously or without conscious content.

The task of the structuralist then included close examination of the elements (sensations, images, feelings); their attributes; modes of composition; structural characteristics of compound feelings; attention, its nature and role. There were Titchener found, no mixed feelings, but very rapid fluctuations of feelings; no two items in attention at once but rapid fluctuations of attention to appear to include more than one item. And Titchener's pupil, Geissler, studied the focal and marginal clearness of attention and its several other levels; Perky demonstrated the relation between percept and image.

So much structuralism, so intensively promoted, by a man so unabsorbed into American psychology brought reaction. The reaction to structuralism emphasised its complement, functionalism. It would, I believe, however, be an error to suggest that Titchener's adamant structuralism gave rise to functionalism. There has always been psychological thought. That it was for long incidental suggests that it was a derivative related to events and behaviour - it was functional. Titchener realised this and aimed to make psychology a science by giving it its structure. And the very detail he went into in his structuralism led to functionalism. In 1898 he pointed out that Biological structure contained three elements - the purely structural, Taxonomy; the functional, physiology; the genetic, ontogeny. Psychological structure contained the same three elements he thought. He promoted the first and left the other two to others because, especially the second, had had enough thought expended on it in the meantime.

What were the chief features of functionalism? We must emphasise at once the significance of the whole functional movement for educational psychology.

Titchener reminds us that it is perhaps the one "school" of psychology that did not begin as a revolt; that this "school" for long enough was psychology. In the
20th century functionalism has, however, taken on specific trends and has, along with structural psychology, systematized itself. We have noted the functional nature of British psychology in the hands of Darwin, Spencer and Galton, and except for the period of Ward and Stout, through to the present with Isaacs, Spearman, Burt, Vernon, Bowley, Wall. Of all these - and with others - perhaps only Galton should be called a perfect functionalist. That is the way with psychological thought. There are truly no schools. One can, indeed, trace functional approaches in the more genetic or the more structural of psychologists. Great functionalists include James and Dewey, with whom we are more concerned as educationalists than psychologists; Angell, Cattell, Thorndike, and the special school of functional approach, the Purposevist or Hormic school of, say, Nunn and McDougall.

If Titchener gave the functional boat a push, Angell cared its momentum. As president of the American Psychological Association in 1906 he spoke on "The Province of Functional Psychology." (Psychological Review 1907, XIV 61-91). In the course of his address he said, "The functional psychologist, then in his modern attire is interested not alone in the operations of mental process considered of and by and for itself, but also and more vigorously in mental activity as part of a larger stream of biological forces which should daily and hourly be at work before our eyes and which are constitutive of the most important and most absorbing part of our work. The psychologist of this stripe is wont to take his cue from the basal conception of the evolutionary movement... Not a few practical consequences of value may be expected to flow from this attempt, if it achieves even a measurable degree of success." Pedagogy and Mental Hygiene both await the quickening and guiding counsel which can only come from a psychology of this stripe. It is not surprising then, that such opinions, together with those of Dewey in 1900 in his presidential address before the American Psychological Association, "Psychology and Social Practice," in which he made a plea and proposed a programme for educational psychology - that such opinions had the consequence of furthering, among other matters (e.g., Animal Psychology), educational psychology.

Angell's researches advanced in particular studies of adjustment and a genetic view of attitudes. The Society of which he and Dewey were Presidents had been started by G.S. Hall. It is interesting to note not only how important this effort of Hall's was in promoting psychology as a science but also that both Hall and Dewey by their lectures to teachers stimulated so much educational thought about psychology.

Much though Hall, Dewey and Angell gave to both functionalism in general and educational psychology in particular, Thorndike, if anyone did, established educational psychology in its own right and distinct from experimental psychology, pedagogy or child study. His masterpiece, Educational Psychology, is a classic on the subject.
It appeared in 1903, four years after Cattell had insisted on Thorndike being appointed to Teachers' College, created when Columbia University took over New York College for the training of teachers. Here Thorndike was able to pursue his Transfer of Training experiments, the signal of his return to the study of humans after he had dropped "telepathy in young children" for the study of the intelligence of chickens and the learning curves of animals. These days of experiments with animals provided Thorndike with his Trial and Error and Success learning. "Success" was later to become 'pleasure' and even later, 'satisfaction', and as such to be much criticized (as the Law of Effect) by the Behaviourists. The strong functional element in Thorndike's thought shows up in his claim that in association, as well as ideas, we must take cognizance of movement.

Another significant text, "Mental and Social Measurements" stands as a monument of another major field of Thorndike's work, that of Mental Testing. The functional relation between himself and Galton can be traced when it is realized that Thorndike's book was a direct extension of the Galton-Pearson statistical method. Mental testing from then on developed into a major method. Whether or not Boring is accurate in stating that the test movement and educational psychology paralleled each other in their development, the test movement assuredly provided educational psychology with its most important tools. Galton 1880; Cattell 1890; Binet 1900; Whipple 1910 make abundantly clear the development in mental testing. And by 1910, "educational psychology had become the general psychology of learning, motivation and emotion; heredity and environment; personality; individual differences; some of it derived from the use of tests and the rest of it taken over bodily from the experimental laboratories. Intelligence was its special discovery." (Boring P. 569.).

Behaviourism in its tenets advanced vocational guidance, but Behaviourism was foreshadowed by Thorndike who in his Educational Psychology, 1903, indicated what kinds of tests were best in predicting educational success.

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THE PURPOSOSTIXIC: HORIC: FUNCTIONALIST EMPHASIS

We have been much concerned in tracing the development of educational psychology, with such terms as 'attention', set, attitudes,' In introducing McDougall's work we add another term, 'purpose.' Both 'attention' and 'purpose' are dynamic concepts (for psychologists since 1850 who did not subscribe to a faculty psychology) and represent a sort of time scale in the development of dynamic thought. The earliest attempts to explain the dynamic principle, "the specific determinant of a psychological event," were centered around studies of attention. Gradually (revolt and familiarity again!) the study turned to an examination of 'expectation'; then pre-disposition; set; determining tendency; attitude; instinct; drive; incentive and eventually, need.
To this list McDougall added, after incentive, 'purpose.' The means by which McDougall arrived at his opinions can be traced from Stout - and in remoter measure Brentano. Stout in turn was influenced by Ward (Brentano) and Herbart.

Stout believed that psychology dealt with psychical processes that in themselves are subjective and that in themselves have mental objects, say, sensations. This subject-object relationship is what provides psychical processes. With their mental character, sensations are objects of the psychical processes. Stout divided the psychical processes into cognition and interest and he subdivided interest into conation and feeling attitude. Conation became the equivalent of desire or of Will. Conation is characterized by its relation to its satisfaction of fulfillment. It disappears with satisfaction. The object of conation is whatever appears as its end or as the means to the end. Care must be exercised to distinguish between apparent and actual ends.

This discussion on conation had a strong influence upon McDougall. McDougall's view of mind was organized around the role that purposive striving plays in mental activity. Human behaviour could be considered purposive if it met the following criteria any or all of which established its 'purposivisticness.'

a. if it was spontaneous;  
b. if the activity undertaken persisted independently of the initiating impression;  
c. if movements that were persistent showed any ability to vary;  
d. if it ended after a particular kind of change had been brought about;  
e. if it prepared the organism (and in the preparation involved action) for a new situation;  
f. if its effectiveness improved upon its being repeated under similar conditions;  
g. if the whole organism reacted.

Behaviour of the whole organism resulted from the interaction of the body and mind.

Of McDougall's writings probably "Body and Mind" and "Social Psychology" had the most profound influences. In his Social Psychology he outlined a doctrine of instincts that was to perpetuate a controversy of extraordinary vigour. McDougall's contribution was the point of view that all human action and social interaction is the result of basic inherited instinctive action and its modifications in experience. Every one of these prime motives - and the list became formidable - he analysed into three parts, its receptive part which predisposed the organism to notice certain activity rousing stimuli; the executive, also a predisposition but to make movements or effect changes in the situation; emotive, the core of the instinct. Instincts were mental as well as motor.

Important though instincts were in the development of McDougall's thoughts about psychology, he did not overlook the importance of learning. All instincts are subject to modification through experience on their sensory side. The modification works through the instinct being attached to new stimuli. Modifications on the motor side are occasioned
as new ways of expression are developed.

Instincts combine to form sentiments or attitudes. These forces motivate adult behaviour. The sentiment the educational psychologist is chiefly concerned with is the very strong self-regarding sentiment. This sentiment McDougall advised was important in aiding the growing organism to achieve self-control and to develop morally.

McDougall because of his origin, England; the influences, James and Stout particularly; his personality; his contentions and their implications, became a much read storm centre. He was an experimentalist; an introspectionist; an ‘act’ psychologist; a Behaviourist. He closed his mind to no (new) possibilities – he, for example, refused to close his mind to Lamarckian inheritance of acquired characteristics. The psychology he sponsored relates systematically to that of Holt and Tolman.

He was all these schools, he was related to many new emphases and he was still distinct. He was different in that he saw, as all purposivistic or Hormic (c.f. Nunn) psychologists see, purpose is the fundamental fact of psychology. He saw that when the existentialist meant sensation; behaviourism meant bodily movement; Gestalt meant perception of patterns; psycho-analysis, the unconscious.

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**PSYCHO-ANALYSIS**

Psycho-analysis which, as we shall see, has so much to give to and receive from educational psychology, can be said to have had its modern origin in the 19th century. Its historical origins ante-date the 17th century; certainly antedate Pinel. But from the 18th century mental disease gradually came to be conceived in terms of first physical pathology and increasingly somatic and psychic factors. Progress in psychiatry came more slowly than it otherwise might have. There was little recognition of the part psychology could play in its development. More knowledge of neurology, particularly the brain, was essential. Once these disciplines advanced, psychiatry was speeded. It was speeded, too, by Dorothea Lynde Dix's international evangelical work for the insane – she directly influenced at least 15 countries in 30 years; by Itard's and Seguin's attitudes towards and studies of "wild" children and feeble minded in France; by Seguin's work with training of blind children in Boston; Guggenbuhl's Swiss studies and instruction of cretins; and, Saegert's instruction of deaf mutes in Berlin. When eventually a definitive history of educational psychology is written a great deal of importance will attach to ascertaining the detailed procedures adopted by the enlightened, isolated forerunners of educational psychology, Pinel, Itard, Seguin (especially), Guggenbuhl, Saegert.

The occult and the scientific ran a torrid race from the time of Mesmer. He and his mesmerism; Puysegur and Elliotson and their magnetization; Braid's wonderment about the results of mesmeric trances, were the forerunners of many new developments. Braid
realized that imagination or expectation were probably of central significance and his view, inclining towards the theory of suggestion, was perhaps the first psychological introduction to hypnotism. By the third quarter of the 19th century hypnotism was not so roundly condemned by the medical world and Esdaile's successes with operations under hypnosis, as does teeth pulling under hypnosis today, caused at least wonderment, serious wonderment. Medicine, however, preferred anaesthesia.

Liebault and Bernheim followed Braid's contentions and went on to show that diseases such as hysteria, caused by suggestion could be cured by suggestion. Their development was the use of direct verbal suggestion in inducing hypnotic sleep; and the examination of auto-suggestion.

Charcot reverted to the more physiological approach of Braid. Hypnosis for Charcot was a physiological phenomenon and a manifestation of hysteria; hysteria being a disease of the nervous system. His lethargy; catalepsy; somnambulism manifested a variety of symptoms of this disease.

Charcot's influence was considerable. Among the many he influenced, there were Janet, Prince, James, Ribot, Binet, Freud. It was Freud more than any other single person who created psychoanalysis.

For many writers the term psychoanalysis has two oft confused meanings; the first refers to an endeavour to explore mental operations in order to ascertain the unconscious roots of behaviour; the second refers to an agglomeration of hypotheses woven by Freud into a number of theories and by his disciples into a doctrine. Allied to the psychoanalytic school are other thinkers who may have started as psychoanalysts, may employ some psychoanalytic techniques but who diverge considerably in the interpretations they allot to Freudian material. The range of these allied writers is wide and important, Abraham, Adler, Brill, Cover-Jones, Horney, Isaacs, Jones, Jung, Klein, Riviere. All are psycho-therapists, but as Jones warns, they are not necessarily psychoanalysts.

The creative mind of Freud stimulated by the thought provoking Charcot and his experimenting colleague Breuer, overcame as no other single 20th century thinker overcame, the limiting habits of thought pertaining to the period. To claim that Freud overcame is not to suggest that he was not a product of his time and as coloured by the zeitgeist of his region and experience as we all are of our own, but rather to suggest that he was perhaps very much a product of his times. "At an early age I was made familiar with the fate of being in the opposition and of being put under the ban of the 'compact majority.'" (Freud, Autobiography) So it was that his 'preposterous' ideas were generated early in the century for more ready acceptance thirty years later.
Early came the concepts of abreaction, defence, repression, resistance, the techniques of transference and free association and the insistence on unconscious. These were to remain; others, like the endo-psychic censor and the pleasure principles were to fade; new ones were added—libido, oedipus complex; regression (infantile) sexuality; and still later, narcissism, eros and thanatos, id, ego and super-ego.

Just as the name of Freud stands as a symbol, so does the nomenclature he employed and in the field of educational psychology possibly the main acquisition has been the vocabulary Freud created.

Freudian psychology is based on the inflexible conception of Causality. There is an antecedent cause for all behaviour. There are no fortuitous events or "accidents." Freudian psychology is thoroughly deterministic. Slips of the tongue, forgetting, daydreaming and night dreams are part of a causal pattern. These, and all events, all behaviour of each individual stem from the dynamic mental forces working in all of us. Mental forces, what other writers have called drives, urges, motives, instincts, are, unlike these innate unalterable concepts, part of our mental make up but do respond to influences in our environment, both consciously received and unconsciously imbibed. To Freud and all psychoanalysts these mental forces, the multiplicity of which they wondered about, are all active, dynamic forces showing some opposition to one another, changing themselves and others ceaselessly.

Before Plato, the Greeks were aware that the mind contained much more than we are aware of at any given time. So, in medieval days the realm of the unconscious concerned writers. One way around an unconscious was to suggest the presence and influence of 'evil sprites' and to build up a system of superstition, magic and the supernatural. Another was to develop as Freud did the concept of, ludicrous as it sounded when he first postulated it 'unconscious' forces in human beings. From these we derive the element of potential significance in psychoanalysis. Only psychoanalytic techniques had any chance of delineating these unconscious forces which otherwise remain in all of us active dynamic forces about which we never become aware and whose influences we may never suspect. As unconscious material remained unexposed to intelligent observation, Freud suggested that the material we are able to recall was part of pre-conscious forces, also dynamic, but not so profoundly influencing human behaviour. These subjective qualities of ours Freud endeavoured to study objectively by means of hypnosis, free association, psycho-pathology, post hypnotic suggestion, dream studies and the behaviour of sleepwalkers, alcoholics and (acute) psychotics.

His studies decided him that the human personality divides itself into three layers or is organised into a whole by three suborganisations, id, ego and super-ego. These three suborganisations are not in any way synonymous with the three qualities, conscious,
pre-conscious and unconscious, that Freud attributes to mental processes. The Id forces are unconscious but they strive to become conscious. The unconscious is always so and in addition to hereditary forces, the Id includes repressed forces. Ego and super-ego formations can be found in the three mental states. And, too, the divisions between the personality and mental processes is at no time absolute or permanent.

The basic instincts, Eros and Thanatos, are present in every mental process. The dynamic Eros - whose total available energy Freud calls Libido - is present before the Ego differentiates to establish an ego-id personality. The Libido serves to neutralize the destructive impulses which are simultaneously present. Everything we know about the Libido relates to the ego, in which the whole available amount of libido is at first stored up. "Libido is an expression taken from the theory of emotions. We call by that name the energy of those instincts which have to do with all that may be comprised under the word (love)." (Freud, Group Psychology and Analysis of the Ego, P 37). Throughout life the ego remains the great reservoir from which libidinal cathexes are sent out on to objects and into which they are also once more withdrawn. A characteristic of the libido is its mobility, the ease with which it passes from one object to another - although it can fixate.

Personality is the product of the development of the libidinal components of the life instinct. Personality develops as basic forces are restricted in regular, systematic fashion. For educational psychology, the greatest implication is that both normal and abnormal behaviour are explained as different outcomes of the same forces.

The major libidinal force on which personality is built and which undergoes modification as personality develops is sexuality. Sexuality or 'love' is sexual love with sexual union as its aim; self love; love for parents; love for children; friendship; love for humanity; devotion to tasks; love of abstract ideas. The justification for the breadth of definition comes from psychoanalytic research which has shown that in all cases these tendencies are an expression of the same instinctive actions. Sexuality - that function which has pleasure as its goal; that behaviour which drives the individual into intimate contact and develops a tendency towards physical or bodily contact as well - results from the interaction of a number of component instincts for each of which component a corresponding erotogenic zone is traceable. The zones - and the educational psychologist is concerned with these - are the oral, anal, urethral, genital, scoptophilic and exhibitionistic visual, sadistic and masochistic pain zones, muscles, skin, smell, senses.

There are three periods of development in personality, infancy, latency, pubertal and each period has its stages closely related to the interest that the growing organism demonstrates for the erotic zones - and related to the component instincts which seem to dominate at that time. As we grow through childhood we pass from one stage to another and one period to another as a matter of course.
The oral stage is when with little or no realisation of self, no apparent development of the ego or super ego, children's libidinal cravings are concerned almost entirely with obtaining sustenance from the mother by sucking. The id striving for pleasure strives through the oral erotogenic zone.

Frustrations, altered drives, personality forces interact gradually to develop the ego. Children come to distinguish themselves from their not-selves. An aggressive element enters and the oral stage becomes the oral biting stage where pleasure derives from biting and chewing as well as sucking. Individual experiences at these stages of development have an important bearing on subsequent development and behaviour. Progress from one to another is neither complete nor smooth necessarily. Few make perfect transitions - not that we yet know what a perfect transition is - from one stage to another. It is this uneven development that makes for individual differences. Where difficulties are encountered at any stage it is possible, still within the confines of normality, that behaviour will be arrested or fixated on the level of that stage. It is not surprising, Freud alludes, to find strong oral and oral biting tendencies in the alleged adult. Of course, by the time adult years have been reached, the nature of the oral character is complex.

Abraham rather than Freud has examined this oral and oral biting stage and it is of importance to teachers that he finds that if the sucking pleasure has been undisturbed and great, the character of the growing child is one of optimism together with a carefree attitude of indifference. Generosity is a character trait. Frustration at this stage gives rise to a demanding social attitude; a tendency to cling; impatience, a dislike of being alone. A little later difficult transition at the oral biting stage may engender attitudes of hostility, dislike, envy.

To reach the genital stage children must pass through the anal, buttock, sphincter, urethral stage. From this anal stage children gain much pleasure but meet with frustrations in the form of adults around them disapproving of their pleasure. Some children then gain their satisfaction by retaining their faeces - only to meet disapproval again. It was this anal stage that Freud first analysed and the anal character that he first 'discovered.' Those children - and adults - who suffer from over cleanliness, extreme petulance, disgust of faeces among other symptoms have intensified the training instilled in them as a result of the loss of pleasure they suffered as they were toilet trained. Freud believed that all children take pleasure from expulsion and retention of faeces and in the product itself and if denied direct expression of this eroticism children and adults find outlets for their unconscious desires in the variety of ways suggested. The typical anal character is the meticulous, possessive, petulant person. However, dependent upon whether the expulsion or the retention component is causal, characteristics will vary.

The growth of the genital character is rendered more complex by its close connexion
with the development of an Oedipus or Electra complex, and the Castration Complex. This third phase, the so-called phallic one, is the forerunner of the final shape of sexual life, "AND ALREADY GREATLY RESEMBLES IT." Its complete organisation, attained at puberty after experiencing the latency years, is the true genital phase. During the phallic phase the primacy of the genitals for sexual functions subordinates other trends of the component instincts. And unsatisfactory development of the human personality during this phase breeds a genital continuation manifesting itself in interest and pleasure derived from such practices as masturbation; petting; dancing; sex jokes.

The phallic stage marks the end of infancy, a period to which Freud attributed a wide range of sexuality expressed through the mouth and other members of the body. Such rapid development of impressions through erogenous zones lapses in a sort of plateau or consolidation period of latency. During this period children tend to become more objective in their activities, less ego-centric, less interested in simple gratifications and explore the wider world and wider social relations. The latency period is not however a 'dead' period in personality development. On the contrary, the dynamic forces continue to exert, mainly unconscious, influences upon mental attitudes and human behaviour. Few new erogenous zones become significant. Perhaps a refinement of visual observations, muscular enjoyment, pain experiences, tactile, olfactory and kinaesthetic interpretations demonstrate that libidinal cathexis continues; the whole body becomes, perhaps, an erogenous zone.

Passage of time brings every human to the pubertal or adolescent period when libidinal concentration is in the genitals, preparing the adult for reproduction. In the course of normal development these periods and their various stages although overlapping, flow naturally into one another, interacting as they do so flow and the component instincts dynamic as they are co-ordinate and organise as the personality forms. The dominating component instinct is the genital. All other components serve to unfold directly or indirectly, early or late, the reproductive function. If this process is not carried out adequately, abnormality ensues. Abnormal behaviour, with which teachers and educational psychologists are concerned in the early stages, results from fixations of the libido to conditions at earlier phases, the trend of which, moving independently of the normal sexual aim, is described as perversion.

Just as there are three stages in the development of the libido, so there are three stages in the direction of the libido, auto-erotic, narcissistic, allo-erotic, all significant for us. During the auto-erotic stage of libidinal direction children are not aware that they and others are discrete beings. They have developed no ego, the self and the not-self are therefore not distinguished; nor, then, do they separate the lover and the loved one. Ferenczi refers to this as the first stage in the development of the sense of reality. And Isaacs discerns two main aspects, a primary auto-eroticism antedating all object cathexes (to cathect is to direct instinct energy to people and cathexis
refers to "psychical energy being lodged in or attaching itself to mental structures or processes."); an almost complete omnipotence - conditioned by subjective gestures, cries and the like. The exteroceptors and musculature are not yet developed enough to make perception of things and persons possible.

When the outer world of persons is drawn into the circle of the psyche, the solid and continuous self suffers sporadic incursions from the not-self at first isolated, without relation, and therefore without meanings. The incursions throw the self into high relief until this purposeful deterministic being assimilates the not-self into the self. The libido is directed towards the self. The lover loves himself. This is the period of self-love, or the Narcissistic stage. The ego-subject coincides with what is pleasurable and the outside world with what is indifferent. (Freud, Collected Papers, Vol. IV, Page 78).

To reach the third stage we have to direct the libido to others, or other objects. The mother is the first object to which the child attaches his libido. This is perhaps the cardinal point of Freudian Psychology and for educational psychology. It is a concept that is only now being explored and analysed in its implications.

As the allo-erotic stage proceeds the whole situation of mother-child love, jealousies, frustrations, identifications, reaction formations, comes to be a complex of such magnitude that it is specially named Oedipus Complex. The oedipus complex and the mother-child relationship are in their sexual components complementary. Closely allied is the need felt by the mother for action against many overt sexual actions of her children during the phallic stage. Prohibitions by the loved mother if too severe strain the mother-child relation and implant a worry that the male genital, the penis, will be removed as punishment for the child's non-compliance. This is the Castration Complex. The sexual practice or wishes may cease - be repressed - but strong unconscious influences may cause the child's future sexual life to lie under the weight of the prohibition. The desire may be repressed but imaginative phantasies may replace it and behaviour warped by unconscious motives may be swayed by these phantasies into unnatural, abnormal, neurotic channels if the strain becomes too severe.

We must note these factors, the strong sexual desire of children for their mother; the strong resentment of any competition and particularly behaviour of the father's that leads children to the impression that father is in competition; parental prohibitions upon masturbation and sexual behaviour which prohibitions stimulate the elements of the developing super ego; the working of the super ego and parental prohibitions to repress into the unconscious these infantile sexual desires and thereby avoid castration. Any strong - there are always germs of it - fixation of the libido's auto-erotic or narcissistic direction will affect sexual practice at a later stage, viz., the genital. Some persons, for example, cannot marry, some cannot adjust in marriage.
The importance of infantile sexuality in developing character is fundamental but it must not be assumed that character development is unaffected by subsequent experience. Character is influenced all the time. The main emphasis is on the early age at which personality unfolded i.e., during the infantile sexual stage. And finally we must note that the super ego has its origin in parental prohibitions. Gradually children take over the role of self-censorship, repressing the unacceptable and transforming libidinal forces.

Freudian writings have introduced such a multiplicity of new terms, given special meanings to older terms, e.g., identification. Sometimes, these terms, scientifically applied by the originators, have been taken in one or a few of their many aspects and used for facile description of behaviour qualities. Scientific educational psychology would not be guilty of such inaccuracies. But scientific educational psychology has a duty to acquaint its lay operators, the teachers, with the real meanings of the terms that they use. So widely known are Jung's terms, 'introvert and extravert', Adler's, 'inferiority complex', Freud's, 'frustrations', that few users are concerned that the terms are scientific designations. Psychoanalysis has built a vocabulary which it has made available to the public. The lay public tends to take the vocabulary as signifying something real and concrete, measurable, whereas the scientist is still examining the terms to decide whether they mean anything at all. Some of the concepts that are under revision at the present include, inhibition, rationalization, sublimation, projection, identification. Freud himself and his seven ring men altered their own terminology so that early and late we see some words and miss others that are to be found in works published in different years. Some terms referred to the human personality, others to processes by which human behaviour was recordable to itself. In the former group we have libido, id, ego, super ego. In the latter, reaction formation, defence mechanisms, sublimation, conversion, symbolization.

What within psychoanalysis - omitting all reference to its procedures - is of most importance to educational psychology?

In Freud's own words, the aetiology of present behaviour is to be found in the developmental history of the individual, that is to say, in the early part of his life. For educational psychology, this finding means that teachers now have to be aware not only of the subject and the pupil they are teaching but also of the pupil's years and experiences as they have flowed before the teacher ever sees his charge. No longer is an academic interest in children sufficient. Their social development, their emotional living is part of their personality and teaching is at simplest a relationship between personalities. This relationship is made even more complex by the size of the class group wherein upwards of forty personalities are interacting. Only when the teacher brings the parents of his charges into the school framework with him can he hope to work with his pupils in such a manner that his and their personalities continue to develop. Teachers carry into the child's unconscious much of the significance formerly attaching to the parents. These
These attachments are deep seated and early to establish themselves. Successful teaching depends upon the attachments children make to their teacher and the bond the teacher feels towards the children. The bond will in both directions contain positive and negative attitudes but the deeper the bond — and the better the parent-child relations earlier—the more frequent become the positive attitudes.

The aetiology of human development has another significance for teachers. The teacher was once a child. The aetiology of his present behaviour is to be found in his early life. To the extent that his libido has directed itself allo-erotically; and that his personality development has not been fixated unduly at any phase of any early period, he is maturing. To mature satisfyingly one needs to be in contact with the child in himself: "By knowing what it is to be a child, by coming to terms with the child in ourselves are we able to put ourselves in the right position with the children! To be aware of psychoanalytic principles will assist the teacher realise more clearly than he otherwise might that his own motives and actions can be called into question. Many of his beliefs, activities, opinions, attitudes may be based on complexes of more or less irrational origin and his life may be full of rationalizations, projections.

In the realm of difficulties, psychoanalytic knowledge aids the educational psychologist in two ways. Most teachers at some time or other meet up with children who are behaviour difficulties. That few teachers have come to appreciate the meaning of psychoanalysis for education is manifest in the continued use of the strap, detention, and general negative treatment of children. Psychoanalytic answer to all queries becomes, search for the causes, rectify the causes and behavioural difficulties will ease. That the causes may be difficult to ascertain, that the true cause must be located if permanent improvement in social behaviour is to result, psychoanalysis also warns.

E. Jones, in Papers on Psychoanalysis (Page 648) points the second difficulty. "Many times in the psychoanalysis of patients I have found that an apparent incapacity for a given school subject, say mathematics or history, was not really a true incapacity, but an inhibition of interest produced by some aversion from the subject, an aversion of which they were entirely unaware." And in his What is Psychoanalysis (Page 76), he says, "It constantly happens during psychoanalysis that a faculty in which the patient believed he was deficient is simply released by overcoming the repressions unconsciously connected with it."

Jones elaborates another matter for teachers. The act of teaching can be resisted, he points out, when children get the impression that an endeavour is being made to remedy their previous ignorance and 'improve' them. "Children are deeply sensitive to anything resembling moral criticism, and one may lay down the proposition that the more moral a flavour is imparted into the teaching, the greater the inhibiting effect on the child's future intelligence. Psychoanalysis has awakened, with McDougall's and others' 'schools',
a concern about instincts. Psychoanalysis demands that as instincts are innate they cannot be decreased in strength or suppressed but can be sublimated and turned to a (socially) worthy end.

Until a great deal more investigation has been carried out on early childhood, much in psychoanalysis that appears promising and instructive for educational psychology must remain speculation.

A great deal of controversy ranges around the validity of Intelligence Tests between countries and within countries. Psychoanalysis in suggesting that suppressed material remains unmeasurable in the unconscious until psychoanalytic techniques can release it suggests a very real field for educational psychology. What is an intelligence test measuring? - the unrepressed elements in mental life, or put elsewise, the successfulness of parents in avoiding fixations in personality at times of conflict, tension, anxiety and fatigue during the first five years of life when, as Jones concludes, "all character is permanently formed for good or ill, later influences having only superficial effects or at most re-arranging the elements already built." The psychoanalytic definition of intelligence is in terms of interests and the possession of them or the dynamics of the ways the interests possessed by a personality work. Such a definition stresses the affective aspect of mental life whereas Spearman and Thurstone endeavour to minimise this aspect.

"It is exceedingly hard to define to what extent the influence of Freud and his followers outlined new problems and concepts, and to what extent they merely added form and colour to an existing tendency towards the study of conflict, dissociation and other dynamic factors in personality disturbance," says Murphy (History of Psychology, Page 333). Certainly, although from Britain come educational texts that are written from a psychoanalytic approach, little enthusiasm for psychoanalysis appears directly in educational psychology. The major tenets of psychoanalysis, its deterministic nature, a theory of dynamic motives and the existence of unconscious motives explaining normal everyday as well as abnormal behaviour have been subordinated in lay minds to the objections felt towards the animistic, mythical language of oedipus, libido, censorship; to the infantile sexuality concept, not to mention the "unscientific nature of psychoanalytic methods and the unhappy divisions among psychoanalysts themselves."

From several and a growing number of sources come doubts about the validity of Freudian claims for their theories. The strongest field of criticism and the one directly concerning educational psychology, is that of the social forces in operation and their part in determining personality growth and development.

Anthropologists have pointed out that in some societies (Trobiand Islands) where the family organisation differs from Western patterns little evidence for the oedipus
complex can be accumulated. Freud did not adequately emphasise the importance of social forces in human development. Orlansky (Psychological Bulletin 46, 1949, Pages 1-48) studied the effect of nursing experiences on personality development. He concluded that there was no evidence that breast fed babies were better adjusted in later life than bottle fed babies, or that children who received early or late sphincter training were particularly different from other children. (In her turn Mead considers Orlansky's work an extreme example of failure to take sufficient relevant factors into account - American Journal of Orthopsychiatry, July 1954.). Orlansky's data did not support the Freudian concept that "certain specific infant experiences provide the overwhelming basis for adult personality." Instead, Orlansky decided that "the total cultural context in which a specific practice was embedded plays a more decisive role." Again Ruth Benedict (American Journal of Orthopsychiatry, 1949, Pages 342-50) concluded that the child's "character is not determined by the overt details of early infant care but by the attitudes and motives communicated to the child by the mother in connection with the practices employed."

Much time and energy has been spent in testing and trying to understand personality development in the individual. What now needs to be studied is the effect of the group upon the developing personality. Psychoanalysis as it was originally developed had less to offer to the group dynamic approach than to studies of individual development.

In two related fields, psycho-somatic medicine and psychiatry, developments of interest and concern to educational psychology are taking place.

The field of psycho-somatic medicine is relatively new. 19th century medicine had a considerable volume of psychosomatic hypotheses about disease. What was conspicuously lacking was an adequate system of behavioural concepts by which a genetic and dynamic explanation of the meaning of the various emotional states which were described could be elaborated for understanding and psychotherapeutic treatment. Much of the present day writing on the subject draws heavily upon psychoanalysis. For example, Deutch (Journal of Psycho-somatic Medicine, July-August, 1952) says, "The narcissistic, exhibitionistic personality traits of this patient with is hiding tendencies is apparent. As the involvement of these trends in the struggle between the passive feminine and the aggressive masculine drives came to a climax the bodily representations and symbolizations of these drives with their cathexed sense perceptions were set in motion... Hence the choice of the skin for the solution of the pathologic conflict depends on the occurrence of an organic dysfunction (hyper or hypo-) in the neonatal or early infancy period."

The extent to which childish ailments; school boy/girl complaints; the degree to which physical tendencies to diarrhoea or constipation, backache indicate a personality type; to what extent there is differential emphasis in somatic response to stress; whether there is a relationship between emotional repression and the occurrence of psycho-somatic
symptoms; whether there is a relationship between specific attitudes and emotions to
certain bodily diseases or symptoms, are some of the questions in this field that are of
deep significance for educational psychology.

In psychiatry, the active initiating of "preventive programmes aimed at the control
of mental disease," (Beaglehole - Mental Health in New Zealand, Page 128), is the move
of interest to us. Mental Hygiene weeks, Mental hygiene in teaching and teacher training,
referral of school aged children to educational psychologists and psychiatrists in time for
preventive and early remedial action are some of the developments.

What Isaacs did at Malting House, what psychotherapists are doing with neurotic
patients; what psychoanalysts have advocated, namely allowing the patient to talk out
unrestrictedly the tensions preying upon him, is gradually entering into everyday procedure.
L.S. Kubie, (Journal of Orthopsychiatry April 1952) speaks of "discussion groups in the
pre-school centres and primers in which children will be aided to think about and state
openly their feelings towards adults and other children and themselves."

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GESTALT PSYCHOLOGY

The Gestalt doctrine is that a living organism reacts to its environment never in a
merely mechanical way of a photographic plate but in a constructive creative manner that
presupposes the organism's ability to cognize the situation or the pattern of the situation.
The Gestalt principle is a dynamic principle, underlies all organic processes and enables
the organism to restore and maintain its own dynamic equilibrium.

Each gestalt or configuration is a system of energies in which every part or process
co-operates to determine the gestalt - and the gestalt in determining every part. What
happens to a part of the whole is determined by inherent laws in the whole. Any field of
perception is a configuration and not merely because of juxtaposition in time and space
but rather because every part is what it is in and as a working part of the total con-
figuration.

The real data of experience are organised and extended wholes, never mosaics. There
is a degree of orderly data to which every organism may or may not respond without having
to learn. Children's behaviour is so described. Adults react to the more complicated
pattern built into their total experiences. These patterns are gestalten, the true
mental elements, that gestalt psychology studies. It studies how unitary experiences
are organised; their causes; the laws that govern their changes.

Gestalt psychology, like psychoanalysis, had its origin in dissatisfaction with the
state of psychological thought at the turn of the 20th century. Gestalt disagreements
were with the associationist, sensationist and elementist psychologies, with, that is,
Wundt, and the German "new" psychology. Gestalt roots, like those of other psychologies, are in the past rather than add much that is new. It has served the very considerable task of clarifying what is old and selecting from the past several matters of importance that had been overlooked. In its own parlance it has closed the gap so that we can now comprehend better the relations between concepts.

As the word Gestalt implies, gestalt psychology deals with wholes and its data (givens) have been called phenomena.

The wholes it studies are wholes as given to the observer in experiences. The wholes are not to be thought of as artificially created ideas but as concrete objects and like concrete objects have practical limits. What is important for us to notice is that the wholes, whole objects, movements, can be perceived without the observer's knowing the qualities or elements of the objects or movements. Whole experience is segregated into objects and the many properties of the objects emerge when the parts constitute a whole. Parts remain parts when the relationship between them is insufficiently similar or contiguous to be perceivable.

A dynamic whole is a field, any part of which when altered alters all the other parts. This field theory is a constant concern of gestalt psychology and became the chief work of K. Lewin in America. Lewin looked upon man's life space as the dynamic field within which he lived and strived. Koffka, too, understood human action in terms of a behavioural field which includes the outer world of objects as perceived and conceived by the actor. And Kohler considered any field dynamic, even the field of static forces acting to maintain equilibrium.

The basic observational data in these fields of dynamic wholes are phenomena. Phenomena given in experience, are, like wholes, dynamic and include both objects and meanings. The meanings were deduced - and induced - after considerable study of laws of physical dynamics in the field of vision and acoustics. Indeed, most of the gestalt findings have been applications to the human organism of experimentally obtained data in physical sciences and partially controlled experiments with animals. It was because of Kohler's belief that human perception seemed often to follow laws of physical dynamics that he supposed neural brain fields underlying and accounting for the dynamics apparent in the phenomena of perception. As with physics, so with phenomena, there are laws to indicate how a perceptual field becomes organized and takes on form (gestalt) or structure. There is the first law; that a perceptual field does structure itself, does take on a form as it becomes organized. The structure is divisible into figure and ground. It has a contour which may be simple or complex. Depending upon the degree of complexity of the contour structure a form can be said to have a degree of articulation. Form that a whole possesses is "good" if it is well articulated. Forms can be 'strong' and 'weak'. The
strong form absorbs the weak one, and itself resists disintegration. When a form is both 'strong and good' it will be found to be closed. Open forms tend to achieve closure. Closure is a special case of the law of pragmance or the principle of equilibrium. This law is of very great importance to us. It may be stated more fully in this fashion - every experience tends to complete itself and to become as good as possible. Its importance lies in the fact that gestalt psychology uses the law as an explanatory principle in learning and in perception.

The remaining laws extend the earlier ones and increase our knowledge of form and organization. The remaining laws, too, are of considerable significance to us. We are now concerned with organizations and their dynamic naturally stable properties. Organizations tend to persist and to recur, and as they build up, develop in a symmetrical, balanced, well proportioned form. Those units that are adjacent and similar tend to combine into yet better articulated wholes which tend to preserve themselves. This power of self-preservation of form is called object constancy.

Organization, form, object character depend on relations between parts and do not depend upon the particular characteristics of the parts. This was a valuable realization in the learning process. It suggests that if the parts change and the relations remain then the form will remain. The struggle to establish transfer of training disappears naturally if tackled by the gestalt approach. This fact of persistence of form even with transposition of parts is a basic principle of relativity. It is not surprising to read later in Koffka that "all sensations, perceptions and conceptions that the human organism experiences are the result of organisation" as just outlined. The nature of our sensations, perceptions, conceptions is determined by the content, the links with other phenomena that we have experienced.

Memory is a result - as well as a determiner - of organised processes. Such a concept of memory takes us well away from any view of memory as merely an entity or function. Being a determiner as well as a result, memory can be expected often to leave traces which will influence our way of behaving and thinking.

The concept of insight is included in the writings of the gestalt exponents.

From the beginning gestalt psychologists have insisted upon the organised wholeness of behaviour. Personality they look upon as an organized whole, a gestalt. Development they consider is from the simple movements of the whole organism to more elaborate movements of the whole organism. Infants start with behaviour of a fluid and crudely organised sort and their adjustments to the environment involve organisation on the sensory side as well as on the motor side, these two parts being embedded in the total activity of the organism. This total activity has from the outset and throughout, a character which may well be called, purposiveness. It is worthwhile noting here how well these explanations
of behavioural development accord with the work in the prenatal field of Bolaffio, Artrom and Lashley, and with the studies by Cogbill on amblystoma punctatum.

When an organism operates on a task tensions generate in that organism which are not completely released until the task is completed, or the organism believes the task to be complete. Too prolonged a state of tension wears the organism unduly and interest, rarely rising to a great level, has neither great powers to sustain nor great powers to compel to complete. Translated into educational language, this implies that children set a monotonous task that has no apparently definite goal within their experience cannot be expected to work to achieve a result. Boredom, behavioural difficulties likely ensue. When tension (in the Gestalt sense) exists it becomes in the nature of a quasi-need. Being quasi, it can and does evaporate. Similarly a task that is finished sees the quasi need met and the organism released from tension can forget. An interrupted task retains tension in the organism and provided the interruption occurs after the task is well under way and the goal is in sight or appears likely to be achievable, such interruption can be beneficial to teaching practice. The astute teacher, does in fact, use such a device. Instead of allowing his pupils to live out their interest by excessive manipulation at a task, he will return to that task at a later (not too distant) time while the pleasant memory of the earlier tension and interest remain clear within the pupil's framework of experience. Another aspect of interest is the opinion that children who have an exciting experience will be strongly affected by it especially if it is novel and that the occasion is not allowed to be trampled by boredom. Such pleasant experience may last with them all their lives.

Of all the curriculum subjects probably reading, followed by spelling and composition or written expression, has benefitted most by the application of Gestalt emphases. The use of the sentence method is an outcome as much of gestalt thinking as of any other system of thought. If the mind perceives the whole unit and not the parts first, to start with the parts or letters and build up from an alphabet to a sentence was to reverse the real order in which the visual percept was formed. The real action is for the young developing mind to envisage the gestalt, the larger unit of grouped words, the contour of black letters on white ground; the mass of colour in contrast with other masses and to relate the picture to the word picture and hence finally to be able to analyse the parts of the gestalt or whole having absorbed the whole. In the meantime while the whole is being absorbed, subjective changes are orientating the organism to enable him to change the gestalt.

Gestalt psychology did not set out specifically to improve teaching methods, but rather, being interested in the nature of the perceptual processes involved, the general implications of their findings and the zeitgeist resulted in changed operations within the classroom. In the matter of reading problems most of the major contributions came from
educational psychologists interested in the laboratory studies of reading, and when psychologists and teachers in the 1920's recognized the value of scientific studies in increasing our understanding of the nature of reading, in improving the teaching of reading at all levels, the stimulus led to the development and refinement of procedures.

Daniels and Diack have recently questioned the Gestalt view. They stress readiness and teaching. Their aim is to help the child get hold of the idea that letters stand for sound in a particular order, and that the sounds have meaning. They advocate a teaching technique in accordance with the nature of learning and the nature of alphabetic writing.

On the broad field of learning Gestalt psychology closely concerns us. Koffka considers that no learning takes place but there is insight. He uses the term insight to displace Thorndike's, trial and error. The experiments with chimpanzees to establish the insight concept are world renowned. Insight appears to have a descriptive and an explanatory use. The former, 'to show insight' would seem acceptable to describe behaviour that once was random and now suddenly showed understanding, direction and purpose. But the explanatory use, 'learn by insight' seems another psychological tautology. Learning by insight; learning is insight. Garrett suggests that non-gestaltists find it hard to accept since there is a certain mystical or intuitive flavour about it.

If we use insight to refer to that occasion when the learner is apparently well acquainted with the conditions of his task and can as a result organise his understanding of the solution swiftly, it is, I think, a concept of legitimate value to educational psychology.

The dynamic aspect of gestalt psychological thinking on learning comes out when we compare their teaching with that of Herbart. The Herbartian rules for presentation of material so that learning would be facilitated call upon the teacher to systematize his procedure. The pupil's age, ability, aptitudes are kept in mind, but the onus is on the teacher to arrange the situation. The gestalt description alters the emphasis on to a relationship between teacher and learner. For the learner to learn all the elements of the situation must be visible and the learner should be able to combine these elements, that is, see the pattern of the situation. The function of a teacher is to be able to marshal these elements, array them in close enough proximity and where necessary in logical sequence so that the 'phi', the neural brain fields, are capable of effecting closure and the understanding dawns - there is insight. Perhaps, as with psychoanalysis, the major contribution of the gestaltists has been to stress with different emphasis the importance of dynamic education.

In the learning process gestaltists stress the perceptual factor. Learning means carrying out a 'new' process, new to the doer. The newness consists in re-organization of the situation to bridge the gap between it and its goal. The perceptions of each
particular situation are compared with successive perceptions and the preceding ones influence the present ones. The phenomenon is referred to as Successive Comparison. The inter-relations and inter-communication of past perceptions influence the present. So we have an addition to the theories of learning, a learning by insight supported by the argument of human tensions motivating to completion of the act. Thorndike's theory of learning by trial and error supported and interpreted by his famous Law of Effect had a salutary effect upon educational psychology in practice in that it disclaimed the value of practice or exercise for its own sake, of, that is, mechanical repetition and drill. Gestalt emphasis upon understanding, relationship between elements, generalization, has materially assisted teachers to realise that as well as hosts of facts pupils need to see broad principles emerge if they are to comprehend the scope of knowledge, if, that is, pupils are going to be able to transfer knowledge to fresh situations.

The ability in a teacher to wait for insight is a relatively rare gift and calls for courage. But teachers should be encouraged to wait for insight to appear.

The final main tenet from Katona's work for the gestaltists is that learning with understanding improves retention and enables the learner to perform new tasks better.

McDougall points to most of the gestalt inadvertencies - their stress of the ambiguous closure principle and insight; the non-recognition of foresight as well as insight; the failure to point the source of psychical energy; and his 'mighty objection' to Kohler's attempt to apply the gestalt principle as the key to morphogenesis because it inevitably ignores "every ontogenesis of all the wealth of morphogenetic processes which are manifestly consequences of the phylogenetic history of the organism." (The Riddle of Life, Page 138).

BEHAVIOURISM

Few other 'schools' of psychology have had a more natural outcome from the spirit of their times and few other 'schools' have had a more comprehensive spight of boundaries than the so called Behaviourist school. Much of what falls under the heading of Behaviourism could be equally well dealt with under Animal Psychology and Gestalt and yet behaviourism is neither; much could be dealt with under functionalism and yet behaviourism is not functionalism. In so far as consciousness is denied any validity, the link between Cartesianism and behaviourism is not difficult to trace. In that Watson's naive behaviourism was positivist in its approach it has a natural affinity with philosophical positivism - Comte's, not Mach's, as Mach held that immediate experience provides us with all basic data and Comte considered basic data to be social and introspection of the private individual conscious to be impossible.
In its antipathy for introspection, associationism and elementism, Behaviourism followed the lead of Beere, Bethe, Uexkull, the German Objectivists. Some conceivable value lies in considering Behaviourism as "Objectivism." And yet Behaviourism as Watson regarded it was not to be considered with objectivism. The Germans mentioned and Nuel endeavoured to interpret animal behaviour without reference to any mental event whatsoever. Sensation was excluded. Ear, for example, became phono-receptor. This terminology of the so-called objective schools generally, Watson labelled "absurd". It is of no little interest to anticipate here the desire of a later Behaviourist, Walter S. Hunter of Brown University, to avoid the use of mentalistic terms, even suggesting that psychology is too mentalistic a word and that anthropomony, his synonym for Behaviourism would be a better term. Bekhterev earlier had suggested that the term psychology savoured of past mistakes.

As a main tenet of Behaviourism during Watson's day was the conditioned reflex, another link exists, that with the Russian school of Sechenov, Bekhterev and Pavlov. Nor would it be difficult to establish links in other directions, with Kulpe's Warzburg school of imageless thought; tropism; psychopathology; operationism; logical positivism. Watson's behaviourism had all these affiliations, and yet it was a "school" apart from all these. We are concerned only with certain aspects of behaviourism best located in Watson's views and as extended by a few later thinkers.

At this stage we can note in passing how, as stated in the first lines, behaviourism was very much a product of its zeitgeist. Its home was an American psychological aura reacting against German tutelage and proceeding functionally. Watson used of the functional approach what he needed, anything of psychopathology, of mental testing, of applied psychology. But we are anticipating.

Before J.B. Watson and his co-workers established their techniques, between 1912 and 1920, little actual experimental work with the growth and development of the human being, especially the human infant, had been attempted. There had been some praiseworthy biographical observational accounts of children, notably those of Darwin, Preyer, Shinn, but Watson's were pioneer studies extending this biographical approach and remedying the experimental omissions. In so acting Watson and his cohorts, legions of them in their heyday, promoted an atmosphere of extreme favour to educational psychology. Their work, however we assess it, accomplished two great services. It emphasised the need for and the importance of further experimental work with young children. This has been re-emphasised in the succeeding years particularly perhaps by Gesell, Bridges, Cover-Jones, Klein, Isaacs, Buhler, Bowley in an ever extending list. Much of the interest in the study of young children gained its impetus from the early behaviourist experiments.
Watson believed that animal experimentation could be extended to man and to the genetic study of the young. Whether this extension is possible or not is still being hotly disputed. We might do well to realise that animal and human studies are perhaps best considered complementary.

On the question of imitation, animal psychology through Thorndike, Small, Cole, Kohler, Yerkes, has suggested that even if not with cats and dogs, then with chimpanzees, it is legitimate to claim that apes imitate in those situations which they understand and in which they are interested. In the matter of the passive element in imitation there appears to be close similarity between apes and man. Imitation has been a major consideration in animal psychology as it is in educational psychology. The last word has yet to be said on the matter. Perhaps there has been inadequate examination of the process labelled imitation; a failure to distinguish between the process itself and the response to the stimulus whatever the intervening involvements of past experience, mental set and purpose. Both Valentine and Piaget see imitation in the young at a very early date. Valentine says, "My earliest note on possible imitation is of ______B on day 10." Earlier in the same book, Psychology of Early Childhood, Page 172, Valentine says, "The psychology of imitation is in somewhat chaotic state, partly owing to the ambiguity of the term and partly owing to disagreement as to the fact." That our behaviour stimulates an infant to respond to us, yes; that our use of certain parts of our body, hands, mouth, eyes, tends to encourage the infant to focalize any response around its own hands or mouth - may follow; but the age of the infant and its facility with discrete movements need to be considered before actions are labelled imitation.

Of equal importance to both animal and educational psychologies is the use made of Gestalt insight; and to Hunter's concept of delayed reaction or response in both animals and children. Animals, it was found, could 'remember' over fairly long periods. Children, too, are capable of delayed responses in learning, in emotional reactions. Animals mature faster than the young of man, but fall behind in the degree and quality of the intellectual capacities. Development depends on the species and not on schooling alone.

Although the labour involved in establishing facts to this degree of certainty was far more extensive than Darwin or Romanes imagined would be needed the evolutionary continuity of mind has been firmed and Watson's behaviourism played no insignificant part in inspiring the processes if it did not actually subscribe directly to them. From being at first a reform of methodology in antagonism to introspection and the subjective methods of the existing early 20th century psychology, Watson's behaviourism came to influence the concepts of methods and the terms used to describe the methods. His emphasis lay on the performance itself rather than on man's experience of the performance. By so
placing the emphasis many of the loose ends of philosophical influence upon psychology were severed. Psychology appeared likely to establish itself as a science on an objective basis and in its own right.

The performances Watson was interested in were human physical growth and behaviour in various situations. To examine these he observed and recorded from animals, neonates, infants through to adults. His tabulations helped to give a picture of human development; he catalogued fundamental reflexive and instinctual tendencies as they appeared; he scrutinized perverse emotional attachments and proposed remedying such bad habits early in their occurrence; he investigated unlearned emotional expressions; and, searched out the relation between early habit development and innate modes of behaviour; he studied sensory, motor, social, intellectual, development; probed into maturation; set up new criteria for learning; employed tests of development; injected new light into emotional development. These matters all lie within the gamut of educational psychology's inner core.

As a functionalist his was a most valuable contribution to the applied elements of educational psychology, even though he, himself, disliked the term applied to psychology. "Experimental pedagogy... is sometimes wrongly called... applied psychology... this field is truly scientific." He proceeds to plead for its recognition as a unique study in its own right. That he is not enamoured of the functional school completely shows up when he says, "This type of psychology (functional) throws emphasis upon the biological significance of conscious processes instead of upon the analysis of conscious states into introspectively isolable elements... I feel that behaviour is the only consistent and logical functionalism." (Psychological Review XX, 1913, Page 164).

Educational psychology has drawn upon Watson's work on the question of handedness in children. Experiments involving clasping and grasping, random slashing movements, reaching as well as careful measurements of both hands and arms, led Watson to stipulate that no inborn preference for either hand was discernible. The origin of handedness was left obscure. As, however, this is a right handed world, what of changing a left hander? Watson pointed out that left handedness can be well established by two years. By one year parents can watch to try to turn a preference from left to right by always encouraging the child to use the right hand. The present day educational practice, although still uncertain, seems to be to leave the child using the left hand especially if attempts to change appear to be accompanied by signs of tension, speech disorders, irritability or other undesirable behaviour. As Watson suggested, changing involves expending nervous energy and unless the result justifies it, the attempts could well cease and conserve energy for other pursuits, especially as the negative behaviour establishable in managing this circumstance can carry over to other situations. Where children seem able to change from left to right hand, they can be encouraged to make the change.
On the topic of emotional development, especially concerning the ways in which children acquire fears, Watson's work was of considerable value. He put the lie to the opinion that children were born "afraid" or possessing innately the multitude of fears they were capable of manifesting. His studies have been extended so that many now believe that beyond a 'capacity' for fear nothing fearful has been inherited. The stimuli that called out fear in the young were, Watson decided, loud noises, lost support, painful stimuli. He measured the presence of fear by observing infant behaviour patterns to the situation, what he called the "fear-reaction." Watson further decided upon fear, love, anger as being the only three that appear at birth or shortly after. These matters have entered into educational psychology as we have realized that behaviour in one situation may be influenced by attitudes formed by closely and not so closely related events earlier in life.

The question that directly concerns us is, how do children acquire their emotional attitudes? Here we are confronted with the extension of Pavlov's Conditioned Reflex Theory to children. Fear, love, and anger are primary emotions. Stimuli can call out a reaction, a set of reflexes. Watson's method was to condition a child to a stimulus and show that fear, love, or anger could be aroused. Taken far enough a differential reaction could occur when the child was sufficiently acquainted with a double stimuli that eventually it would respond to the minor when the major stimuli was absent. Having germinated fear, love, or anger Watson then re-conditioned the child to a state where fear, love, or anger were no longer expressed at the presentation of the original stimuli. Conditioning and re-conditioning experiments have established these concepts in psychological thought.

Education is a process of conditioning. Much handling of negativistic behaviour in children could be attempted by a re-conditioning process. What are some of the methods of re-conditioning that could be employed? Perhaps one most commonly and unwittingly employed in educational and parental circles is that of allowing time to effect its own changes. Elimination through disuse is a useful re-conditioning technique.

Another much used measure is the method of verbal appeal. Skilfully manipulated without long description, the child can fully comprehend, factual statements in an order that enables the child to assemble the related parts. This method has commendable features providing it does not intensify the condition that the adult seeks to re-condition.

The third method that Watson catalogued is again not new, nor did he introduce it so much as systematize it. He called it the method of Negative Adaptation or Toleration. It might be better considered as non-positive or indifferent rather than negative adaptation in that although little that is positive reveals itself in the measure, there is not necessarily any negative inducement. Popularly, the idea is expressed, "familiarity breeds contempt." Familiarity with conditions often avoids any disturbing elements in emotional attitudes. Some fears can be outlived if we have knowledge of the facts and familiarity with the situation, e.g., fear of dogs being overcome by owning a dog. Again, the method
has its values; again it is the how it is employed; and who employs and in what circumstances and for what purposes that seem really to matter.

Related to this method is that of ignoring the emotional disturbance rather than providing opportunities for its expression. The intention behind this method of re-conditioning is that when no results are achieved the organism will beat itself into submission. This method depends, to an extent, upon a careful interpretation of the motives for action. If the emotion is fundamental, then a distressing degree of inferiority or loss of confidence or security could be implanted by injudicious use of this exhaustion principle. And in addition to motive, it would be necessary to be sure that the result would justify the energy consumed. No doubt, however, a lot of behaviour that adults pay attention to would re-condition itself were it ignored.

The link with psychopathology appears when Watson discusses repression as a principle of re-conditioning. Repression is, as we have seen, a psychoanalytic term and takes two forms, self-repression of items frowned upon by the super ego and items frowned upon by the super ego at the instigation of authority. The latter method is being employed continually, according to Freud, from early years. Watson was more concerned with our own efforts to repress our own feelings.

Closely allied to repression but overt in its initial stages is the technique of re-conditioning by using social stimulation in the shape of other children in the peer group. A child who is afraid of animals who is brought to play with children not afraid of animals can re-condition himself, so that all traces of fear disappear—at least on the surface.

For some other modes of behaviour it is possible to use the technique of distraction. Quite young and, indeed, most pre-school children's state of mind can be altered by providing an alternative attractive stimulus or centre of appeal. To divert the restless or interfering child on to a purposeful activity dissipates the a-social behaviour.

The method par excellence that Watson was responsible for taking out of Pavlovian animal experiments and adapting to the human animal, was positive conditioning. Conditioning determines an organism's reaction to a stimulus. If the reaction is unpleasant and we wish to remove it, instead of stirring up the unpleasant, we associate the unpleasant with some acceptable stimulus thereby weakening the feeling or reaction to the undesirable and promoting feeling for the desirable. To be effective, a more basic positive pleasant stimulus must be used or else the unpleasant will dominate—it has an advantage already—over the pleasant. Food was found to be a stimulus strong in positive conditioning away from overburdening fears.

With the success of the conditioned response methods in animal psychology, came an
enthusiasm to carry the methods over into human psychology. Lashley elicited responses in human salivary glands by using chocolate as a stimulus. Krasnogorski in Russia, one of Pavlov's students was the first to apply Pavlov's methods to study learning in young children. He conditioned the salivary reflex in young children to a variety of stimuli, food, bell, music, blood, and noted the number of mouth openings and swallowing movements made by the child. He found that conditioned responses break down more readily in normal than in abnormal children. In U.S.A. Marquis, Razran and Mateer extended the work. Mateer applied chocolate to the mouths and bandages to the eyes of a group of ten months to seven year olds and recorded the repetitions required to open the mouth on the application of the bandage (to the eyes). The 3 - 7 year olds among the group also had standard mental tests applied. The number of repetitions necessary for conditioning was found to have a large negative relationship with intelligence scores. Moreover the children who learned most quickly to open the mouth when the signal was given were in general the ones who learned most quickly to cease when touches were no longer followed by chocolate. The experiment while obviously crude, is highly significant both for the problem of the nature of the relation between intelligence and learning, and as an expression of the widespread belief that the speed of the conditioning is an important element, if not, in fact, the chief element, in the organism's ability to adapt itself to new situations." (Murphy, Page 269).

Watson faced the fundamental question in psychology, does psychology deal with the data of consciousness or with behaviour, and answered, "It's theoretical goal is the prediction and control of behaviour." Consciousness could be by-passed. He decided to study behaviour in stimulus-response situations and omit all neurological assumptions and "conscious concomitants." All mental processes he postulated as being internal forms of behaviour. Hence, learning and thinking were listed as sensori-motor behaviour each of which begins with a stimulus to some organ and terminates in a response of some muscle or gland. The nervous system functioned in complete arcs. Behaviour, of course, is not always readily and apparently observable. It may be explicit but it may also be implicit. Visceral behaviour, e.g., is implicit. Behaviour being instinctive (unlearned) or habit (learned) responses might be either explicit or implicit. We learn, therefore, that "memory in the behaviourist's sense is any exhibit of manual, verbal or visceral organization put on prior to the time of the test." (Behaviourism 1930, Page 177).

If Watson had been like Smith and Guthrie, he would have declared - he never did finally decide - all learning based on the conditioned reflex. As it was he preferred to join forces with Thorndike on the issue of the latter's Law of Effect or Satisfaction. This law states that an animal's successful responses are stamped in because of the satisfaction they accord the organism; the unsuccessful ones not, because they annoy the organism. This law, Watson believed, contained the suggestion of conscious feeling states in the animal and hence was, to him, taboo. Watson arrived at the same conclusion as Thorndike.
by calling in the laws of frequency and recency. The argument that ensued has not yet been finalised.

Watson found himself in a similar tangle with Thinking. Here, however, he resorted to the implicit behaviour of an organism - as he did with his explanation of emotions. Thinking for the behaviourist is speech movements made on a very small scale and substituted for the overt act.

To replace the association of ideas, Watson evolved the explanation - an ordered series of motor responses; and emotions he considered as profound changes in bodily mechanisms as a whole but particularly of the visceral and glandular systems. Cannon's findings substantiated visceral patterns connected with the heart, arteries, blood, stomach, all related to the sympathetic system.

It is difficult to assess behaviourism, so wide spread are its ramifications. In its attempts at objectivity it forced any complacency out of the subjective campus; in its attacks it has tended to be concerned as much with negative statements as positive ideas; in its pioneering ways it has opened up fields of great possibility in the study of young children. It can be, I suggest, that it gave to educational psychology an over-stress of the importance of the environment in human development; a sometimes facile explanation of emotional development; a glimpse at higher mental functions; and a series of challenging yardsticks for growth and development studies. Behaviourist weaknesses and gaps highlight the gaps and directions for future experimental procedure in human growth and development.

One field of promise is the maturation concept. A necessary framework as Watson worked on it (it was like nearly all other concepts he used, not his, but he employed it to great advantage in constructing his theory), it is now outdated and antiquated. It is gradually being replaced by objective, behaviourally minded thinkers. What Weiss and Lashley were both working towards when the former died, Lashley, Hunter and Skinner are now pursuing. Maturation was employed to distinguish activity that occurred when the organism's structure was ready. Mainly the occurrence had no connexion with practice and was to be distinguished from instinctual behaviour. The pattern or function evinced itself when structure and function led the organism to such a level of development. Lashley's experiments in foetal development have suggested that maturation is a constructional framework better replaced by the idea of a critical period of growth at which development tends in one field whereas earlier it could have developed in more than one. When translated in the field of educational psychology, the suggestion is that if we can determine major critical periods in human development, we can arrange for education that will neither anticipate by too much nor be delayed by too long. It is possible that further experimenting along Lashley's lines combined with added work on human needs and the psychological needs in particular, will eventually, if gradually, suggest to the educational
psychologist where the critical periods lie in human development and how best we can manipulate the environment prior to and after the critical period, as well as during.

Holt, Tolman and Skinner have all contributed to further thought in fields that may concern us vitally. Holt has conceived knowledge as being functional. He claims it has the capacity to respond adequately to the world’s specificity. In its general terms and unelaborated the contention has little we can dispute. Questions arise, however. Does he envisage knowledge becoming the realm of a specialist few, or does he believe all sentient beings in their own degree are capable of learning to interpret the world they encounter?

Tolman works on the equation that \( B = f(S, A) \). "behaviour is the consequent of the present Situation and Antecedent situations. Between S and A, and between both and B, there are, quite probably, intervening variables. It is the task of psychology, to decide upon the functional relations among A and S and B. We need to know more about the intervening variables, but some we are told are, like wisdom, cognitive and determine action; others are demand variables and serve as motives.

Still working within the gamut of Reflexes, Skinner has decided that there are two reflexes, those whose responses correlate with their stimuli, which Skinner calls Respondent; and those whose responses occur without observable external stimuli, or operant behaviour. "The operant eating of a rat is a function of the time elapsed since it last had food... when you know what function food taking is of food deprivation you can see how that function varies with other parameters, like the age of the organism." Pavlov’s aides could not make clear what stimuli were in their reflexes. Operant behaviour circumvents this difficulty.

Whatever place history has for K. Lewin, Tolman has tried to ensure him a place by linking his name with Freud’s, "Freud, the clinician, and Lewin, the experimentalist, these are the two men who will always be remembered because of the fact that their contrasting but complementary insights first made of psychology a science which was applicable both to real individuals and to real society." Boring suggests that the name of Lewin could be linked with that of James as they, "more than any others, had opened new fields in psychology by the reasonableness of their unaggressive insistence, reinforced by their unusual capacity for friendship." (Boring, Page 726). Lewin’s work with Group Dynamics; his picture of a person in his life-space; his basic conception of topology, has formulated and begun to solve something of the forces at work in individuals in a class and of group forces at work on individuals.

---- SCIENTIFIC TESTING ----

Scientific testing to assure the validity and reliability of facts handled has
progressed hand in hand with the development of educational psychology. Quantitative data have accumulated at such a pace that it is difficult, if not impossible, to assimilate the facts obtained. That testing is essential is not likely to be denied; but one may well wonder why there have been such extensive developments in methods of measuring scientifically the traits and abilities of human beings.

Mental tests are one means of endeavouring to acquire reliable knowledge about human abilities and aptitudes. Individual differences can be established. "All normal children tend to follow a general ground plan of growth which is characteristic of the species or of a cultural group. Every child therefore has a unique pattern of growth, but that pattern is a variant of a basic ground plan." (Gesell, Page 8). This similar dissimilarity is a ground plan itself for mental testing. Mental activities are on three levels, cognitive, conative, affective. Full measurement of personality, therefore, calls for tests at all levels; tests of aptitude, application, motivation, emotion, character, intelligence and so on.

The work on the subject of intelligence is of central importance to educational psychology. Mental content is one problem, but the problem of modern educational psychology has been to devise means of examining mental capacity. The most promising advance of this century can be characterized in the work of the theorists in intelligence, Spearman, Thurstone, and others.

Like so many features in modern science, events of the past contain, we see in retrospect, embryonic germinal ideas that have lain dormant. The forces in society that directed Dorothea Dix, Paracelsus, Pinel's attention to the abnormals, stimulated attempts to devise means to meet the needs of these incompatibles in society. Greece, Rome, Christianity, showed their concern. We know of the exposure of undesirables in Sparta, of Fitzherbert's 1534, "An idiot is such a person who cannot tell who was his mother or father, nor how old he is..." We have noted the interest in deaf, dumb and blind children, work by Leon, Bonet, Pereire, Abbe de l'Epee Gallaudet, for the deaf; Haidy, Itard, Seguin for the blind and feebleminded.

But the strongest single positive influence leading to mental testing could be considered as that of the development of experimental psychology from Wundt's Leipzig laboratory onwards. Their interest in the general laws of the normal human mind; differences between the reports of individual observers came to be studied for themselves; Kraepelin's carry over of these methods into the psychopathological field, backed by Sommer and Ziehen, are part of the zeitgeist that stirred in Binet and Freud.

Closely related to the development of experimental psychology and arising from it is the concept of individual differences as we saw it in Cattell. In 1890 Cattell was
pleading for standardized methods of procedure in mental tests and measurement; and the need for norms. Cattell's tests were still sensory and sensori-motor rather than tests of general intelligence. They were a beginning; and in 1894 Cattell began testing students at Columbia. He, and Farrand, published the results in 1896. In 1897 Ebbinghaus offered his work on the Completion Test as a measure of intellectual ability. Ebbinghaus's work resulted in both a theory of intelligence and a technique for measuring intellectual capacity. The theory did not meet with general approval; the tests were readily accepted. Ebbinghaus's work was followed by Jacob's "memory span." Hall, Bolton, Bourdon, Johnson, Henri, Simon, Kirkpatrick, Wessler, Kelly and Norsworthy as well as Binet are other names that landmark developments in mental testing. Norsworthy in 1906, gave, in essence, group tests of intelligence and expressed the child's standing in terms of the variability of the group. The stage was set for Binet.

Galton's emphasis on natural abilities focussed attention on the inheritance of these abilities (his plea for Eugenics) and the necessity was seen for some means of measuring or evaluating the quantity and quality of the inheritance. People, said, Galton, differ from each other in "general ability" by measurable amounts. He elaborated a scale of fourteen grades. His Anthropometric and Eugenics laboratory of 1884 and 1905 were separated in the founding by Pearson's 1903 Biometric laboratory. The British Biometric school has been foremost in mental measuring statistics. We note particularly the theory of correlation; the concept of the graded scale; and the fundamental importance of ratios.

Not all the development of the mental testing movement was reputable. Attempts to measure head sizes, cephalic indices, and their relation to physical and mental qualities, associated the testing movement with the much discussed and generally discredited Phrenology movement.

Binet is generally acknowledged to have been the originator of the modern intelligence test when he (originally he compared intelligence and head measurements) measured sensibility to pin pricks with the aesthesiometer. He shortly realized, however, that "mental qualities could only be judged by mental symptoms" and like Galton earlier, he set out "to obtain a general knowledge of the capacities of a man by sinking shafts as it were, at a few critical points." (Galton, Page 380). Binet sank shafts and consequently came to regard intelligence as a complex of many abilities. Binet and Simon's first metric scale of intelligence published in 1905 (elaborated 1908, revised 1911) laid the foundation of modern mental testing. Thereafter Binet added the concept "general intelligence" and mental age. The mental age concept was perfected by Burt, Stern and Terman, who also popularised the phrase, "I.Q."

The 1911 Binet-Simon scale has been continually modified and adapted by many persons
but its essentials remain. The main types of tests and modifications now in existence
include - tests that are individual or group; verbal, non-verbal or performance; self-
administering or administered by an examiner; diagnostic, remedial, for specific disabil-
ities; for curricula disabilities; for guarantees of normalcy; as vocational tests. On
the broader scope of conation and will, the possibilities are multiplied enormously.

Mental tests and particularly intelligence tests are designed to measure certain
qualities. Can we measure these? How can we be sure we are measuring these? What is it
we are measuring? These three questions suggest the truth, that profound as the work on
mental test has been, much remains yet to be done. The last question, What is it we
are measuring?, when applied to intelligence specifically suggest how much is still to
be done.

Binet, although he described intelligence with considerable insight, was less con-
cerned to define it. His procedure suggested that he considered intelligence as a com-
plex of many mental abilities. Attempts were also made to "integrate" these mental
abilities. Thorndike conceived the mind to be a "host of highly particularised and in-
dependent faculties," modified later to a theory of "unique traits." Kelley, Hull,
Paterson and other Americans also described intellectual abilities in terms of a limited
number of independent traits. Spearman in Great Britain, however, showed, he believed,
that cognitive activity of all kinds was reducable to a common factor, In his own
words, "All branches of intellectual activity have in common one fundamental function
(or group of functions)." This central intellective factor he declined to define and
denotes by "g". He went on to add, "the remaining or specific elements in intellectual
activity seem in every case to be different from that in all others." These are the
specific factors, again not designated as a concrete thing but labelled "s" as a value or
magnitude. The way he developed his concepts made them easily translatable into the
mathematical form \( S = a_1 g + a_2 S \ldots \) where \( a_1, a_2, \ldots \) represented weights of "g" and
"s".

Mathematical analysis of this two factor theory has been prolonged. New attempts
on the problem have been made by Thurstone, Hotelling in a multiple factor method (ability is specifiable in "n" factors); Alexander; Burt; Lashley.

Burt adds to Spearman's two factor theory of "g" and "s", group factors - more
specialized abilities which enter into a limited group of mental processes only and which
are not so specific that they enter into one test only; and "chance" factors - due to
the difficulty of planning the experimental and statistical procedure, and the operation
of the, at present, unknown influences.

Lashley regards the functional organisation evidenced as intelligence as independent
of differentiated structure. Instead of complex structures we should think in terms of configurations of potential gradients. Do these configurations constitute the "factors" of intelligence?

The main trend in the theory of intelligence has been to define intelligence as an Ability. Binet referred to intelligence as judgment. Stern, as the ability to adjust oneself to new situations; Burt, the power to "understand" the relatively novel situations by organising new psychophysical combinations; Wells, the property of so re-combining our behaviour patterns as to act better in novel situations; Terman, ability to carry on abstract thinking; Lashley, a functional mechanism by which reaction to a ratio (ratio has a qualitative and quantitative implication) is produced; Knight, the ability when we have some aim or question in mind (a) to discover the relevant qualities and relations of the objects or ideas that are before us, and (b) to evoke other relevant ideas - the capacity for relational constructive thinking directed to the attainment of some end. This last definition adds to Spearman's noegenetic principles (a) ability to observe one's own mental processes (b) ability to discover essential relations between mental fundaments (c) ability to educe correlates of a mental fundament when a relation is known, two additional factors (d) relevance or significance of the task (e) aim or objective behind the task.

Of the significant findings that have stemmed from these activities we can list the following: The distribution of intelligence appears to conform to the normal frequency distribution in each age group; the absolute variability of intelligence increases with age; the spread of intelligence at any age is proportional to the mean level (m) of intelligence at that age (Richardson found \( \mu = .18 \) approximately); the mean growth curve of intelligence is a "g" curve, the general form of the equation being \( y = a^b \). The closely approximate relation of this curve to the curve of physical magnetisation suggests that in the growth of intelligence two forces are at work, a building construction tendency and a decay tendency. Growth is the resultant); extrapolation suggest that at birth a child possess \( 6\frac{1}{2} \) % development in all round ability; the inflexion point is about 4 years; 96% of full maturity is reached at 18 years; 99% by 24; 10-14 years is the stabilization period and intellectually a period of great importance.

Schonell (British Journal of Educational Psychology) has summarised the, mainly British, developments in Educational research. He points out that the shift has been towards mental testing and to studies that embrace cognitive, conative and affective factors, in particular of attitudes and interests at school and home.

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Psychological Review 1913; XX; Page 164.
The close of the 16th century was characterised by changing opinions concerning human worth. The close of the 18th century was characterised by more changing opinions concerning human worth. Does the promise of present day advances hold out a hope that the 20th century will close with yet more advanced opinions concerning human worth?

Throughout the ages a band of writers and thinkers and teachers has perpetuated sufficient of certain practices to enable us to speak of a continuum of "education". The certain practices would include, helping younger minds to learn to read, cipher; discipline themselves themselves to learning, and to discipline; and at times might include opinions mightily in advance of the general powers they and their fellow men possessed to implement them.

Only a few educators are mentioned herein. A scheme of education involves a lot of people and it is the efforts of these many who are epitomized in the names of the few. The 19th century educators, for example, drew on the great influences from previous days.

And then, too, in addition to names, we have operative here as elsewhere, the influence of the zeitgeist, the attitude of the people at the time.

To note these provisos is not to detract from the great penetration, courage and enlightenment of the few.

Educationists divide, not neatly but with overlap, into four categories. There are those who have almost as it were in by play struck a chord of profundity, have been read and hence have influenced educational thought. In this category we might place Rabelais. His buffoonery over the effects on Gargantua of being subjected to an (then) orthodox education contains enough truth within its satire to cause him to be re-read and remembered.

There are those who have in intellectual calibre applied themselves strongly to education as a metier at the same time that they won renown in other intellectual fields. Herbart and Dewey might be considered as representative of this grouping.

There are those who evinced little pretention to academic prowess but whose practical example fired the world. Pestalozzi is perhaps a natural example.

And there are those who are a blend of categories. Rousseau, who belongs more to the first and yet cannot be denied a place among intellectual thinkers. Froebel belonged more to the third, yet could have had a strong claim to the second.

Unsatisfactory as these groupings are, they serve to remind us that in discussing the influences emanating from education and educationists upon educational psychology,
consideration must be given several threads; that no one man or movement typifies them all.

Various attempts have been instituted to name a "father of educational psychology." G.N. Blair suggests Pestalozzi because of his efforts at Yverdun Teachers' Institute, and because he sought to psychologize education. Monroe reminds us that Herbart was the first to formulate a science of education based directly on psychology, and that although Pestalozzi announced his intention of psychologizing education, while he rejected the old psychology, he was not able to construct any system of his own. Herbart's educational thought was constructive. Cubberly finds it possible to label one section of his chapter on Comenius, "Educational Psychology."

Perhaps there is no one father so much as a naturalistic, liberal, romantic, individualistic movement giving direct impetus to a psychological approach to education, an impetus applied by Basedow, amplified by Pestalozzi, Herbart and Froebel, sifted and examined by Isaacs, Dewey, Gesell, Nunn, Clarke, amongst many others.

There is another complication. The large fields that justifiably fall under the title of educational psychology mean that no simple basis of comparison between developments in related branches of the whole field is always possible. Sense knowledge, as an example, was one topic around which Comenius hinged his thoughts, and sense knowledge was the concern of philosopher, Berkeley, physiologist Helmholtz, physiological psychologist, Wundt, educational psychologist, Thorndike. Transfer of training, imagination, reason are all topics that have been investigated in various fields. Such a state of affairs is, of course, only to be expected in the, at least early, development of a special field such as educational psychology.

Much of what was psychological was not obviously so to the participants in pre-psychologically orientated days. Often the significant feature of an educator's contribution lies in his attitude, personality, reactions or some equally intangible quality. We can record a few major items pertaining to the times, educational theories, writings, beliefs, lives and work of a few of the greater educators and thereby hope to indicate (a) the inherent movements of historical zeitgeister and (b) some important contributions within the zeitgeist at any given moment of its course, important, that is, in the historical development of educational psychology.

What is truly psychological in education? The answer contains many aspects: the study of education as education; the development of a system of education; the comparison of several geographical educational areas; the motives underlying the system; the purpose of the education. No one aspect supplies an adequate answer, and, consequently, all the aspects and their inter-relations engage us. Often a major, if unwritten, reason for a system of ideas not engaging contemporary attention was the multiplicity of negative
statements also made by the writer. Later generations could often afford to select those elements that suited their requirements best and neglect the others. In so far as these later generations differed in the emphasis they placed upon educational matter so they selected at times what predecessors overlooked.

The sense realists, typified by Comenius anticipated the modern naturalistic approach by a sufficient number of years for us to use them as a starting point in the two way process of looking forward but keeping a perspective by at times looking back.

Those who suggested that knowledge comes primarily through the senses and that if we train through the senses, education will be effective, proposed the germ of all modern concepts. These thinkers believed nature to be the source of all truth and considered education was and ought to be a natural process. Education was based on rational rather than empirical grounds. That laws or systems of education were discoverable in nature was their rudimentary philosophy. This philosophy, influenced by the recent inventions and scientific discoveries, was based on scientific investigations, on speculation. And it constituted the first compact attempt since the days of the Greeks to formulate a psychology of education. The disappointment of the sense-realists in innovations in religion and classical literature to bring any manifestly permanent social improvements inspired the movement in its re-emphases, prompted Mulcaster to emphasize that young children need neither force nor repressive measures if their natural endowments are to flower; rather they need help.

The age contained Francis Bacon, and his claim for an inductive method in education; for a move from emphasis on form and style to an emphasis on realism, the study of objects and ideas, a knowledge of nature through observation, investigation, experimentation. The thoroughness of his attitude is shown in his yielding of knowledge if one "negative instance" does not accord with the findings. For Bacon, education was a discipline in its own right.

Despite their scant knowledge of the child (and for that matter of the human) mind, ideas such as Francis Bacon's were applied practically by educators such as Ratich (1571 - 1635). Ratich insisted upon such methods as educational psychology today approves in principle: repetition of work; no undue reliance upon rote memory; no compulsion to learning; provide the object before its explanation - Pestalozzi principle later; learn all things through investigation, experience or experiment.

Again, for the first time since the Greeks a plea went out for the importance of a study of children. This age saw the introduction of educational processes adapted to the child; saw the plea for universal education at an elementary level; saw the attempts to provide for boys and girls alike.
If Bacon, Mulcaster, Ratich supply the background, Comenius supplies the focal point, despite the neglect he suffered until Froebel rediscovered him.

Comenius's central theme was, "Eternal Happiness with God." This goal would be achieved, he said, by acquiring as complete knowledge as each individual was capable of. Moral development, self control developed with knowledge, knowledge of self and therefore knowledge of all things. Through knowledge to virtue: Through virtue to piety. The preceding centuries had striven for the same goal but by disciplining the instincts and emotions to eradicate natural desires. Sturm earlier had clarified the ends of knowledge, viz., virtue, piety. It was Comenius's genius that these isolated ends were unified into logical and psychological relationships.

The vastness of the man lay in his influence upon the content, organization, method, and text books of education.

Comenius's writings were arranged on the inductive principle and were based on natural phenomena. The order he intended to unfold did not, but he did build up a huge bulk of general knowledge. His Orbis Pictus Sensualium (1657) stands as the first successful illustrated text for children. Of his method suffice it to recall his famous nine points.

Concerning school organisation, he would have two grades of school to precede the gymnasium; (a) the infant school (his book, "The School of the Mother's Knee.") is truly a remarkable foreshadow of the Kindergarten. He tells mothers how to care for the early education of children and advises that children's simple experience as to locality, time and causal relationships of many events could be and should be made quite definite by six years.

(b) the Vernacular from 6 – 12 was designed for those who would not benefit from higher education. Then followed the Latin School and the University. Of his writings the monument is the Didactica Magna (1632). Over 100 years earlier More had pleaded for education for all. Now Comenius organised a universal system; planned the teaching for it and prepared his own texts for it.

Such men as Francke, the Pietist at Halle, who embodied Comenius's realism, held firmly to their belief in the infinite possibilities of human nature. This belief stirred their desire to save some from the consequences of ignorance in the face of the uncertainty of providence. Universal education - the most momentous problem of the age - was one remedy and this Melanchthon set out to achieve when he established a system of state schools.

The idea of state schools was acceptable to Comenius whom we find claiming that schools are better than the home for instruction. Homes lack the leisure and the ability and schools provide a greater stimulus from the group. Emotions and desires, he believed,
were brought into harmony with virtue in a good school. The size of his group was certainly a stimulus and we find him advocating one master for 100 pupils. Such numbers are possible - 4 hours daily - if there is order, the order of skilled arrangement of time, subjects and method. His insistence on order meant that he could consider the process of education, being a preparation for life, as possible of completion before maturity in a real and thorough manner with rigour, but no blows or compulsion. His rigid pursuit of nature consisted of adducing analogues from natural processes in support of preconceived and independently acquired principles. He then proceeded to outline where deviations occurred and how these could be rectified.

Comenius's education theory and practice arise from his predecessors' and relate closely to some, for example, the Jesuits, whose equal insistence upon care in selection of texts; palatable methods and use of emulation as a motive, appear in Comenius. The new note he struck was the establishment of an educational psychology; his democratic tendency to use the vernacular and provide universal education; to teach children with objects before expecting them to express themselves in language; to use first hand knowledge and work through the senses. He advocated one teacher for each class; one author for each subject; the same exercises for the whole class; the teaching of all subjects by the same method; everything to be taught thoroughly, briefly, pithily; all natural connexions to be outlined; teaching in definite graded steps; teachers to empty out the useless in subject matter.

All the teaching should be in a quiet atmosphere in a school that is a pleasure to behold both inside and out because of its brightness, cleanliness, pictures, the open places to walk and play - absolutely necessary for children - its gardens.

In teaching a subject, teachers should proceed from the easy to the more difficult; from the general to the particular; should stress points of resemblance between cognate subjects; should supply examples before rules; excite in their pupils a desire to learn; and should teach only what is demanded by their age and mental strength; enable children to acquire skills. How recent most of this sounds, yet he was also steeped with the past.

The Greeks earlier had demonstrated many of Comenius's principles, especially the psychological. The Greeks, especially Athenian and later Ionian, emphasised the importance of the individual. They considered the aspects of the individual personality and strove to develop these in the individual through education. As early as 594 B.C. the Laws of Solon stressed the duty of the parents in educating their children. The training for the humbler needs of life was to be given at home. Liberal was the term given to the Greek concept of education.
In Sparta, infancy lasted 7 years, during which time, the boy was in the direct care of his mother at home. In the public barracks after 7 he was in a small group of several self-governed groups of boys. The entire life of a Spartan boy was a schooling. Family, commerce, church, social institutions all merged into one educational institution.

Where the Spartan system broke up family life at 7 years, Athenian life aimed to preserve the family as a means of developing and shaping personality. On the family was placed the responsibility for educating. The State established standards and supervised results but provided schools only for the 16 - 20 ages.

In the family during the early years physical exercise and children's games were started. "From the age of 3 to 6, children play with the neighbourhood children. Playgrounds are provided by the state. Matrons function as playground supervisors. Their (children's) games are treated as part of the state education system. The games have two sources, one spontaneous, and the other a certain measure of direction and control, to avoid spontaneity, which if left to itself entirely, may easily run wild." (Laws 65 - 3 df; 53 a - c; 69 bc). The list of games for children was nearly as extensive as today's. The later curriculum is well known as comprising in all their ramifications, Gymnastics for the body and music for the soul. Reading and writing appeared as early as 600 B.C. Literary interests dated later. Dancing was also important.

The method used by Athenian Greeks was that of imitation of living models selected for their strong personality and stimulating to the development and extension of the youthful personality in each one's care. Early education was education by doing. As the child aged and when habits had formed, instruction or inculcation followed to rationalise, give meaning to or explain the reasons for the habits earlier formed by example.

This education, full of opportunities as it is, made great demands upon the individual. When inculcation was introduced, concrete aims were kept in mind, supplied by a living model and immediate example of a virtuous tutor. Education was, therefore, a living process, active, encouraging self-expression.

Around 500 B.C. this rugged individualistic thought showed a strong tendency to turn in on to the individual. Reality was gradually sought in the activities and the nature of the mind. Thinking in the field of politics, social institutions, economics, ethics, literature, philosophy, became psychological. A need for new educational institutions arose and the Sophists, in measure, met that need. The Sophists were a natural outcome in a world of introspective individualism.

And the nett result? Learning by doing evaporated. Consistent attention to detailed analysis of verbal argument and elucidation of virtuous behaviour placed instruction first and relegated learning by doing to the limbo. Individualism extirpated activity. It was
the discipline of instruction that the Middle Ages, and the Humanists and the Formalists were to perpetuate. Only a few from Greek thought to Comenius urged the method of learning by doing, as we shall see.

The important theoreticians, originators and systematizers of the Greek way of education were Socrates, Plato and Aristotle. Socrates gave us knowledge as a universal. It had a functional value and could be gained subjectively through thought or inculcated objectively through conversation. The objective of education was to develop the power of thought.

Plato wrote of education in his Protagoras and his Republic mainly, and also referred to some psychological elements in his Laws so cogently that Rousseau later remarked, "if you wish to know what is meant by public education read the Republic."

Plato postulated three faculties, the intellect (whose virtue was prudence); the passions (fortitude); appetites (temperance). And there were three social classes to correspond with these individual faculties. For Plato, ideas and concepts constituted reality. It was on this contention that the Schoolmen based their Realism in the argument that grew up later against Nominalism.

The care of the child before birth was dealt with by Plato, and he developed this theme when he, in speaking of the early years, stated, "the beginning is the most important part of any work, especially in the case of a young and tender thing." He proceeded to make a plea for a good and simple environment for children. He believed in the unconscious assimilation by imitation in the formation of character.

Bodily exercise, when compulsory, did not harm the body; but knowledge, he insisted, which was acquired under compulsion obtained no hold on the mind, "then do not use compulsion but let early education be a sort of amusement, you will then be better able to find out the natural bent." When he wrote later, in the Laws, he emphasised the positive significant part of play in education. "The teacher should endeavour to direct the children's inclinations and pleasures, by the help of amusements, to their final aim in life. The most important part of education is right training in the nursery. The soul of the child in his play should be guided by the love of that sort of excellence in which when he grows up to manhood he will have to be perfected."

Number training had a value—a value as a training in abstraction. Whether the value was that of broadening or quickening is not stated, but its possible relation to the Transfer of training argument cannot escape us.

Education was to be for women, too, and Monroe wonders whether when Plato added, "as far as their natures can go," there was a germ of Thorndike's principle, "the general average intellectual ability of women is the equivalent of men's."

Aristotle ranks with Plato as one of the most important of the early—not only Greek—
educators. Aristotle approached educational issues from a different angle from Plato. Knowledge, Aristotle replaced by goodness. Goodness was a process rather than a condition. Reality was also a process or activity, the activity of ideas functioning towards an end. The end could be physical or social. In man the highest quality was Reason. The functioning of Reason self-control and control of conduct and behaviour - resulted in goodness of the Intellect. This goodness or well being resulted from good teaching. Goodness of character or well-doing was the outcome of habit. All persons were capable of achieving this goodness. Happiness was the result of these ideas functioning in actual living. Aristotle saw ideas not as values but as names of processes; not as reality but as names. The reality existed in the individual concrete objects. Scholasticism later in one of its aspects seized upon this nominalism as its guide.

Aristotle's writings cover a number of sciences of which he is often considered the originator. His life was devoted to the scientific and objective method in his attempts to seek and establish truths in nature. Although it was not his creation he did by his usage and emphasis make both deductive and inductive methods conscious processes. His writings were well known and he remained unchallenged throughout the Medieval Ages till the 15th century renaissance. Today, much of his writing has a modern flavour.

His comments upon education as they concern us can be located in his Politics (*1336), "... for whatever it is possible to accustom children to, it is best to accustom them to it at first, but do it by degrees... the next age to this continues till the child is 5 years old, during which time it is best to teach him nothing at all.... but he should be accustomed to so much motion so as not to acquire a lazy habit of body; which he will get by various means and by play also; his play also ought to be neither illiberal nor too laborious nor lazy."

Children's tales and stories that they ought to have needed careful selection. Reading, then was one subject for children to learn. Three other subjects it was usual to teach children were gymnastics, music and some added painting. The terms gymnastics and music were as comprehensive to Aristotle as to any Greek.

Disputes among children were to be allowed. Disputes in measure contributed to growth.

Education was to be at home until children were 7. He made a division at about 2, at 5, 7, puberty and 21. His advice was to follow the divisions of nature. "We must first consider if any regulation whatsoever is requisite for children; in the next place if it is advantageous to make it a common care; in the third place what it ought to be."

"There should be laws concerning education, and it should be public...Education ought to be one and the same in every city, and this should be the common care and not the individual's." Did Melanchthon derive his project from Aristotelian contention?

There is one flavour in Aristotle that is ultra-modern, "Nature requires that we not
only be properly employed but to be able to enjoy leisure honourably." Aristotle explained
the inclusion of music in the subjects to be taught by this statement. Can we read into
this quotation a hint for modern adult education?

Before the advent of the modern era, if we agree to consider that period as ushered in
by the Naturalists in education, the "schools" of educational thought that provide anything
considerable for the development of educational psychology, revolve around the thoughts of
Plato, Aristotle and Comenius.

Copies of their ideas, fortuitous - as they later proved to be - events, antagonisms,
were some means by which Platonic and Aristotelian concepts were perpetuated. These same
means paved the way for Comenius and fellow "sense realists."

The decadence of Rome and its parallel in education established the disciplinary value
rather than the early learn by doing outlook in Roman education. When Greek ideas first
permeated Rome, there were evidences of liberalism in Roman education. Home was the
chief educational institution; imitation was the chief method; doing preceded instruction.
A copy, however, is rarely satisfactory; and such was the nature of the Romans and such were
the conditions in Rome that gradually Greek ideas in Rome became formal, and unreal.
Individualism dissipated as education lost touch with the times and with the society in
which it had its being. The structure remained, but any social significance disappeared
as institutions became revered more than human activities. Finally, class distinctions
increased. It is striking how in the narrower humanistic days and in later reformation
days enlightenment capitulated to Ciceronianism.

Senecas teachings, clipped into these aphorisms, "We best learn by teaching; results
are gained sooner by example than by precept; we learn for life, not for school," place
him nearest to the Greeks in spirit. Cicero is important more for the use later genera-
tions of humanists made of him and his, "If we take nature as our guide we can never go
astray."

Of all the Romans, however, Quintillian summed up the best results of his predecessors'
work and expostulated what may legitimately be labelled the first scientific account of
education. "I would," he said, "begin to form his studies in infancy." Up till 7 there
was to be home education followed by grammar school education and a school for rhetoric.

Quintillian placed considerable emphasis on the importance of early environment, and
the use of suggestion and imitation in nurture. He made special reference to the father's
place in this early training. The dichotomy of nature and nurture seemed implicit in his
opinions. If children enjoy study, they will pursue it. Study should be treated as a
diversion to ensure it is pursued. He also noted the importance of the influence of the
group in stimulating study; and a most significant concept, that of the need of young
children for companionship of other children about their own age. On the question of
punishment he suggested that it was the "master's neglect that most commonly causes puni-
shment." He advocated a plain and simple manner of teaching; the co-ordination of subjects; time-tabling of subjects.

So much is valuable. The less valuable shows up when he stated, "Little is learnt before 7 years." But these first 7 years were not to be neglected because, "elements of learning depend on memory which is very ripe and retentive up to 7 years." And we might add, the more the child comprehends, the more retentive his memory.

Milton and others' interest in Quintillian centred largely around the disciplinary value of the system and the quintessence, Oratory. Even Geometry had a disciplinary value that could assist establish oratorical prowess. Geometry has had great powers attributed to it - Plato wanted to use it as a discipline for Philosophy.

The era of the catechumenal, catechetical, episcopal, cathedral, monastic schools was a miscellany of positive influences and negative attitudes. The Benedictine monastic schools neglected the family as an educative force and negated the state. They were, however, the first to recognize what the Greeks had despised, the useful arts. They introduced new craft processes, architecture, engineering. In New Zealand, manual crafts have become established in educational practice.

The monasteries of the Benedictines were havens for all who sought them, and, gradually it came about, "that the monasteries were the sole schools for teaching; they offered the only professional trainings; they were the only universities of research; they alone served as publishing houses for the multiplication of books; they were the only libraries for the preservation of learning; they produced the only scholars; they were the sole educational institutions of this period," (Monroe, Page 196) and, they were in contact internationally to borrow and lend books.

They drove out of education the classical learning of the intellect and of literature and fastened on to the moral. In this respect they resembled the Jewish education system, moralistic, essentially a preparatory training, a discipline. All objects of study for the Benedictines were logically organized; each was logically analysed - influenced by Aristotle, whose Nominalism some favoured while others preferred the Realism of Plato. Their interest was in the argument from which, if it was accurate, the validity of the conclusion would follow. Their studies were the 7 Liberal Arts, the trivium - grammar (literature, too); rhetoric (history, too); dialectic: and the quadrivium, - arithmetic; Geometry (including geography); music; astronomy (including physics).

Charles the Great (771 - 814) and Alcuin's influence on Charles, began in this era a significant movement that led on into the 13th century. "Let every monastery and every abbey have its school..." New types of schools of all grades increased gradually. Chivalric, the education of the knight, equally an education that stressed the disciplinary purpose of education, and with a meagre intellectual content, appeared. Arabic advances in
algebra and arithmetic; Hindu notation; medicine, surgery, pharmacy, astronomy, physiology, entered into the orbit of man's knowledge.

Joannes Scotus Erigina, a vigorous, radical, liberal was a symbol of the time. Scholasticism moved towards a basis of reason; intellectual interest was stimulated; knowledge was systematized. The new schools in Britain included Chantry, guild, burgher (a combination of guild and municipal school control). New personal and individualistic interests appeared; vernacular literatures became popular; commerce spread; and so did enquiry. Education gradually evolved a new spirit in keeping with the changing zeitgeist. The new spirit was the gradual movement that we now look back on as a renaissance.

This individualistic movement that emulated the Greek liberalism and humanism was to influence educational thought well into the 20th century. Its central tenets were the concept of the emotions and the reawakening interest in the world of nature. A corollary was the upsurge of aesthetic and artistic creation; invention; discovery. The propensities of the movement were more personal earlier and in the south of Europe; more social later and in the North and West. The different zeitgeister were a part explanation of differences of development. Unfortunately, the early promise of liberalism, aesthetic creation, physical and practical efficiency were limited, even ostracised. Some names, however, stand out.

There was Da Feltra (1378 - 1446), "the first modern schoolmaster." At "the Pleas-and House" he inculcated the 7 liberal arts, made provision for sport and games and indeed a pleasant active life for the pupils. Education's purpose was now to train for leadership in the state or church or citizenship. There was self-government by the boys; the natural interests of the pupils were appealed to; activity was emphasised especially the natural activities of children; manual constructive work was provided.

There was Erasmus, ascetic but discriminating. His tenets resound in modern educational psychology - child study is essential; personal care and direction of each child's studies; the mother is most important to the child; play and exercise are fundamental. Education must keep in touch with the times; teachers must employ plenty of repetition in learning; small portions of work should be mastered at any one time.

There was Ascham with his treatise, The Scholemaster, in English; and much of it in opposition to Elyot's, The Gouvernor. Ascham also stressed the importance of the early years, "Yong yeares aptest for learnyng." His opposition to Elyot and others lay in his attitude towards experience, "Learnyng, therefore, ye wise fathers, and good bringing vp and not blinde and dangerous, experience, is the waie that must leede your children..."

There was Sturm whose influence was greatest through the teachers he trained.

There was More who, in his Utopia, advanced the Comenius argument for universal education.
There was Elyot whose *The Gouvernor*, the first text on education written and printed in England, advocated the 'direct method' of teaching.

The secular nature of schooling was continued in Luther's expression that education was broader than the school. This could well be remembered today. He related home and school closely, "we must send boys to school one or two hours a day and have them learn a trade at home for the rest of the time. It is desirable that these two occupations march side by side." (Monroe, Page 197). Luther's belief was in compulsory state controlled, state supported education. He saw the advent of an increased number of schools and lived at the time Melanchthon's Saxony plan of 1528 established - the first state school systems.

Systems of schools based on the idea (More) of universal education called for people to be able to read, at least the scriptures. Here we note the influence of Calvin, Zwingli, Knox in their respective countries of origin or adoption.

The Jesuits' movement developed during the reformation as a system more for leaders than for elementary education. One or two of their principles are valuable stepping stones. They employed Drama to good effect; they outdated corporal punishment and substituted a system of motivation through emulation. The best previous example of this emulation belongs back in Greek educational practice. Instead of running several subjects contemporaneously the Jesuits experimented with a system of successive subjects, wherein one was completed, virtually, before a new discipline was undergone. They, like Melanchthon and Sturm will be remembered for their very thorough teacher training.

The Jensenists or Port Royalists added a slightly different flavour to the times. Their individual care of the pupil that Erasmus had advocated earlier was overdone to such an extent that the pupil was not left free. Their motive, love of the child, was laudable as was their insistence that the child should study only what it could understand. Their intention was to lay thorough foundations, attractively; to emphasise content rather than form; to build on understanding more than memory; and, most advanced, employ the senses more in education. Again, outstanding, they replaced the alphabet by a phonic system in reading. They, too, reiterated the chant that was to become established doctrine, a system of schools controlled and partly supported by the state founded on the principle that it was the duty of the family, church and state to see that every child attended and received at least an elementary education. In England the 'system' was left to the family, charity and the church; in Scotland, to the church and in 1696, church and state.

The world of nature that had become one of the main concerns of the period from the pre-renaissance till post reformation, coupled with the interest in social institutions gradually supplanted linguistic, literary interests in education. The 15th century was essentially personal and cultural with literary and aesthetic interests. The 16th century was moral and reformatory with, therefore, religious and social interests as the focal...
points. The moral and reformatory attitude was still strong in the 17th century, but its core of interests and peripheral activities had altered to a philosophical, scientific and rather more impersonal nature.

There were abroad in the 17th century many episodical and many established procedures. Humanistic realism with its origin in the Greek liberal studies was a main field and somewhat disdainful of the growing realism that adopted literary studies.

Rabelais, who influenced Montaigne, Rousseau and Locke, was actively promoting an education of social, moral, religious and physical elements. Milton astounded the world of his day and (apparently) ever since by his idea of a curriculum - Latin, arithmetic, geometry, moral training, agriculture, physiology, architecture, natural philosophy, geography, medicine, poets and poetry, Greek, ethics, economics, politics, history, theology, church history, logic, rhetoric, composition, oratory. All these by studies from the source and the master, in the English and Latin tongues. Hebrew, Chaldee, Syriac were to be extra languages and Italian was to be fitted in in the odd hours left; all this between the ages of 12 and 20.

Nearest to the spirit of the new world was, perhaps, Montaigne. Chief of his ideas for our notice were his belief that books and literature had only secondary value; sense training was basic to education; studies of practical use were essential; lessons were to be practised not learned; "the best of all arts, that of living well, they followed in their lives, rather than in their learning."

Although in many ways Locke revives the formalism of the medieval scholastics he lived late enough to be tinged with the newer concepts. Unwittingly, as he trumped up his defence of a tottering system (so effectively that with his and others' help, its influence still remains), he wrote a new page into educational psychology.

Humanistic education had come to have very little functional or social value. The argument Locke established in its favour relied upon the greater relative import of the processes by which education took place than the thing that was learned. Select the activities carefully and not only can the number of subjects in the curriculum be lowered but also the powers these disciplines generate are applicable to any problems. This was broader in concept than the Schoolmasters' idea of discipline. Its emphasis on processes is modern. Its influence one will recognize immediately is not as yet finished in the secondary schools of New Zealand.

Locke ranks in English educational writings among the most important. His influence far exceeds his fame, as Adams once said. No other writer supports so many contradictions, paradoxes, negations in his writings. Of some, he, like Rousseau of some of his, seems to have been aware.
Locke decided there were three aspects of education - the influence of Plato seems obvious - physical (Mens sana in corpore sano); moral; and, intellectual. The aim of education was virtue. The basis of virtue was self denial. The secret of self-denial was to control and thwart natural desires and instincts from the earliest days. He further admonished the controllers, mainly the parents, to avoid corporal punishment and to make educational processes as pleasurable as possible. The last two, we are still endeavouring to implement.

Locke denied the state any rights in education, mainly because he committed himself to the "men by nature are free, equal and independent," doctrine elaborated by himself and later naturalists, especially Rousseau. Education if not the state's concern then became the parents'. We can anticipate the results; a limited amount of education taking little heed of social needs, and, more important to us, of individual needs or individual capacities.

This disciplinary theory was based on the theory of knowledge, was empirical. All knowledge came "from the perception of the senses and of the intellect," came that is from experience. The child's mental state at birth could be likened to that of a white paper void of all characters, or to wax, a tabula rasa, to be moulded and fashioned as one pleased - the germ of Behaviourism. Ideas as they existed in an individual mind were the consequence of that mind's individual history. Experience covered the white sheet or moulded the blank wax. Our observations of external sensible objects or internal operations of our minds perceived and reflected on by ourselves, supplied our understandings with all the materials for thinking.

Locke's psychology was a Faculty one. The two faculties referred to particularly in his writings were memory and reasoning. Pestalozzi entertained the same emphasis.

While advocating, "restrain him from the many things he has a mind to, and draw him to things that are uneasy to him," Locke also urged that in education it was necessary to find "a way to keep up a child's spirit, easy active and free." "Learning anything that should be taught might be made as much a recreation to play as play is to learning." And, further, he was adamant on the educational function of play - "playthings children should have and of all sorts... they (playthings) should not be bought but contrived by the children themselves." Both Locke and Montaigne suggested the way for modern educational psychology, "children's games are not games; we ought to regard them as their most serious occupations."

Locke's ideas extended at length to refer to - rules for children, the place of practice, disposition, companionship, curiosity, on the more personal side; and, reading, writing, latin, grammar, on the curriculum; and, rote, recreation, travel, example, principles, in the method of education.
Psychological thought behind education since the renaissance as typified by Locke was closely related to the attitude of society in these same years.

Children were looked upon as adults in miniature. Until children possessed the social graces, the accoutrements of their elders, they were to be seen as little as possible and certainly little heard. There was something faintly animal or barbaric about them. Children were dressed as adults, adults through the wrong end of a telescope, spoke as an adult and, so most adults seemed to believe, thought as an adult. This organism required education that an adult understood. He needed to be able to speak. More than one language was necessary, several were an accomplishment. He learned because he had a natural endowment to master the disciplines set him. The faculty he used was memory. This faculty was one of a bundle that he possessed and which, like reasoning, he must develop by exercise at appropriate tasks assisted by a mentor. The important disciplines varied according to the mentor. Sometimes mathematics, sometimes languages, sometimes rhetoric, oratory, but whatever the specific, it was used to discipline memory. The disciplines were separate: This was because the faculties had no apparent connexions. Different disciplines developed the various faculties.

Locke was a part of his time. He promoted the zeitgeist, but it was his contribution to send out thought tentacles beyond his time, and to his name belongs the first book on education that dealt primarily with the child. He was, unwittingly, the precursor of the child centred education of the 20th century. Indeed, much of Locke's extensive writings had a modern flavour despite the fact that his educational concept was of a formal, disciplinary nature not closely related to living, in fact, in his day rapidly becoming detached from living.

Criticism burst with the Naturalism of Rousseau. In his Emile, he wrote, "God makes all things good; man muddles them and they become evil... man confuses and confounds time, place and natural conditions." Rousseau used the term 'nature' in at least three different contexts. We are concerned with the psychological significance with which he embalmed the term. Man should trust his "first impression" or his "instinctive judgment," and rely on his "natural instincts" and "primitive emotions" as a basis of action. These were more reliable than reflection or behaviour based on conformity with that of others. Intuitive behaviour revealed our true 'nature'. The outcome was a vehement attack on habits. "The only habit which the child should be allowed to form is to contract no habit whatsoever."

Here we have a Greek concept, Learning by Doing, rather than the later, Training by Instruction. "The first education should be purely negative... it consists... in guarding the heart against vice and the mind against error." "We are born weak... we need aid... we need the gift of education. This education comes to us from nature, from men, from things. The inner growth of our organs and faculties is the education of nature."
"I call a positive education one that tends to form a mind prematurely... a negative education one that tends to perfect the organs that are the instruments of knowledge before giving this knowledge directly; and that endeavours to prepare the way for reason by the proper exercise of the senses."

Some of Rousseau's writings came full face in opposition to Locke's thwarting principles, "far from being too strong, children are not strong enough for the claims of nature. Give them full use of such strength as they have; they will not abuse it." Implicit here, too, is the plea he makes later for physical education. "All wickedness comes from weakness. A child is bad only because he is weak; make him strong and he will be good. He who can do everything does nothing bad." Intellectual training proceeded when children followed their natural interests. Curiosity was a motivator and "Let it be a guide." Moral training came through allowing children to suffer the natural consequences of their actions.

From the first movements of the heart, arose the first utterances of the conscience, and from the first feelings of love and hate sprang the first notions of good and evil.

And yet, the difference between Rousseau and his critics was one of emphasis rather than one of all embracing opposition. Rousseau emphasised the doctrine of interest; and education of process, but so had Locke. Rousseau's attitude was more clear cut and developed at a time when the minds of men, if not the acts of men, were more ready to absorb the approach.

Rousseau added these additional significant matters, "Let the senses always be the guides. Let there be no books but the world and no other instruction than facts." The plea was for a direct study of nature and for object teaching. Rousseau, too, stressed the importance of early home training and study.

What Rousseau did show us clearly was the need for education to be child centred. A major qualification for a teacher, for all educational work was a sympathy with children. The practical application of this view unfolded itself in the work and life of Pestalozzi. The practice of modern educational psychology can, whenever it wishes, find its theoretical basis in the writings of J.J. Rousseau.

Rousseau's influence upon Basedow, Kant, Pestalozzi, Herbart, Froebel, Montessori, McMillans, Dewey, has been a dynamic, surging influence that instead resolving itself in words has, atomically speaking, piled. As with all sound principles, the effect is not to be located only in educational psychology. Mention of Kant leads Rousellian doctrine into philosophy. It could also be traced in sociology, anthropology, any of the social sciences. Rousseau is probably most important, however, as the herald of an age, as a product of the zeitgeist, than as an individual. Had Rousseau not lived, his writings would conceivably have been forthcoming from the hands of others. It is the spread of the ideas and the practical use they were put to in the work of certain psychological education-
ists of the 19th century to which we shortly refer.

There was no sudden craze in the educational classroom to implement the ideas of Rousseau. His ideas needed time before they could be assimilated, understood and sifted. And during the same age great stirrings were abroad. There was the growth of the national state, which, depending upon point of view largely, paralleled or gave evidence of the feeling for the rights of the individual, especially the rights of children. Kant epitomises the view, "Be a person and reverence all others as persons." Rulers, governments, philanthropists, humanitarians reflected the principles gradually.

Naturalism did not enter the schools. Indeed, it has still to enter them. Schools were, rather, concerned during the 19th century to attempt a reconciliation between the older concept of discipline and the newer facts of naturalism. The reconciliation was never smooth. Man, ever an ego-centric being, was bestirred to start afresh his search for a concept on which to support his ego-centricity. Nature became synonymous with the mind of man. Knowledge of the activities and the development of the human mind was avidly sought. But the new principles were abroad and for the first time education was studied as education. Education became a movement in its own right.

The study had two aspects, the practical workings of education and the infiltration of principles of thought, coupled with the reconciliation in education of the new thoughts of Kant, Fichte, Schelling, Schleser-macher, Hegel, Mill, Bentham and others upon the educationists. All this in times that bristled with psychological atmosphere.

Did Rousseau or Pestalozzi (1746 - 1827) exert the greater influence on educational psychology? In so far as Pestalozzi's example was exerted through his methods of teaching perhaps he shaded Rousseau. Rousseau's Emile influenced Pestalozzi sufficiently to have him attempt to rear his own son according to Rousseau's principles.

For Pestalozzi, the ideal educational medium was the home. The influence of his own mother's appeal to her children's feelings; his belief that family life stimulated constructive powers; developed sociability; personal relations, led him to declare, "There must be no gulf between the home and the school." It follows naturally that Pestalozzi stressed the dignity and preciousness of each man's personality. All genuine reform he considered must begin with the individual and not with society. Ripened since the reformation and launched in vintage by Rousseau, this principle of Pestalozzi's places him in that band of great educators who have struck in favour of the individual. When we consider the influence Fichte, and through Fichte, Kant had upon Pestalozzi, and how Fichte, Kant, Hegel, Schelling's views led to a significant stress upon the importance of subordinating the individual to the greater need of society, the concept of individuality for Pestalozzi acquires a profound significance.

The ultimate end of education for Pestalozzi was to ensure a happier and more vir-
tuous life for every individual. In Fichte, his best interpreter's, words, "The art of training the whole man completely for manhood." For Pestalozzi, training meant self-training, elevating himself. Only now are educators beginning to see the real meaning of this statement. As Pestalozzi intended it, society rendered its greatest service when it taught man to help and respect himself.

There was a deeper implied significance, however. Society, or the state, must act on the grounds that a man can and wants to help and respect himself. It is not enough to set up institutions or state facilities to provide the wherewithal, man must be an integral part of those institutions. Few more profound psychological concepts can ever be arrived at in educational processes and institutions as run by the state.

Another fundamental principle upon which Pestalozzi built his reforms was to attain his educational aim through the process of development. Latent in every child and awaiting an opportunity to unfold were the seeds of independent action. Pestalozzi, as we repeatedly note in his writings, was rarely profound enough to trace to its depths the implications of his basic statements. He was content to suggest that his statement referred to the presence of an inner impulse and add that it was the educator's task to furnish the opportunity for its unfolding. It was not until the second quarter of this century that sufficient evidence in embryological and infant behavioural studies had accumulated to suggest that, "critical periods occur in the growth of any phenomenon when it is most susceptible to definite kinds of stimulation." Had the 150 years between Pestalozzi and today concentrated its thinking around this fundamental principle, less time would have been needed on structuring the preliminaries to an understanding of learning, attention, maturation, and other such concepts.

Emphasis upon the importance of the individual led Pestalozzi to his principle of anschauungsunterricht. Difficult to translate a anschauung is, its intention has nevertheless been reiterated by many modern writers. Whitehead spoke of face to face knowledge; Sanderson of Oundle and Dewey, of first hand experience; Kilpatrick of the first impressions of objects. Indeed, so thoroughly has the principle of anschauung been advocated that, like many profound ideas, so long has been spent examining and propounding it that the foundation has come to be taken by some as the completed structure.

Pestalozzi's analysis of anschauung was his criterion for introducing speech training and vocabulary building before reading was taught; to encourage drawing before a child began writing; to base number work on practical work rather than beginning number work in the abstract. These are the tenets of any object lesson and to Pestalozzi must go the honour of establishing a stage prior to the introduction of formal school subjects.

In deeper analysis, however, his anschauung is not valid. Number is a concept not a percept; form is alterable; merely to be able to name, adds nothing necessarily to the know-
Pestalozzi's love of analogy is cryptic on another basic issue, "Man formed from the
dust of the earth, grows and ripens like a plant rooted in the soil." Pestalozzi considered
a child to be a natural organism that unfolded its inner life according to definite orderly
laws. He was not the first, e.g., La Mettrie, but his emphasis invested it with greater
meaning. He set out to determine the laws governing human growth. Comenius had appreciated
the need for such study.

Comenius, too, had given great emphasis to natural growth processes. The order
should be and could be borrowed from no other source but the operations of nature. In
support he quoted Cicero, "If we take nature as our guide she will never lead us astray."
The true basis of scientific education must be the process of natural growth of the child.

Ratke (1571 - 1635) had sought the natural order in which the mind of the child
develops and set out to organise methods and the curriculum to harmonize with the order
of this development.

It was the nature of the 19th century that it gave rise to an increasing number of
increasingly scientific observations on child development. Today, tremendous effort is being
absorbed in furthering such knowledge.

The growing organism, Pestalozzi believed, had intellectual, physical and moral and
religious aspects. All three normally functioned together, each capacity being an essential
part of an harmonious unit that was human nature. Lack of unity caused the individual to
suffer disturbances that prevented him adapting to the demands of civilization. Practical
work was the only one way to employ head, heart and hands, therefore, the executive aspect
of educational tasks must be ever kept in mind. Of the three elements, the ethical was the
most focal. It correlated and unified the other powers of the organism with itself.

The quality of Pestalozzi's emphasis was directly connected with his emphatic hostility
towards traditional dependence in education upon memory; and, one sided educational methods
of teaching. He also recognized that each individual was possessed of a different nature and
that his development would differ from all others according to this nature. In this matter,
however, he can scarcely be said to have moved as far as J.L. Vives (1492 - 1540), who
applied himself to a study of psychology (in his De Anima) "with a view to making the
principles of the mind's operations the basis of teaching practice." (Cubberley). Vives
would have had the individual education of each pupil planned by masters who studied each
child individually and adapted the course each one was to pursue to his particular bent and
ability. A child would enter school a month or two early and have his capacities thoroughly
studied. Four times a year the masters would confer regarding the progress and ability of
their pupils. Each pupil would be taught what he was most capable of learning.
In Pestalozzi we can notice the summation of the strivings of many who preceded him. Comenius had striven to democratize education. His fate was neglect. Pestalozzi compelled, in von Raumer's words, the scholastic world to revise the whole of their task. He, Pestalozzi, "democratized education by proclaiming that it is the absolute right of every child to have his God-given powers fully developed." (quoted in Cubberly). The greatness of Pestalozzi was that he did what he believed needed doing. Little success attended the immediate doing, to be sure. Nevertheless, his enthusiastic influence over his students, Herbart, Froebel, Stael, Mayo, among others, as well as his influence over Kings and Princes meant that, unlike Comenius, he was not neglected for several centuries.

It was as an assistant at Burgdorf that Pestalozzi first worked out the significance of the object lesson. It was there also that he announced his aim, "I wish to Psychologize education." Whilst there was still no science of psychology, while notions of child development were still entirely biographical discourses, Pestalozzi moved towards establishing educational practice and theory upon a psychological basis. Like many early great educators he stressed the deep significance of individual activity. Unlike others he made systematic observations of the growth of children. Unless Comenius's descriptions of human growth analogous to vegetable development are considered as observations of child development, we of necessity have to go to the buffoonery and bawdiness of Rabelais to find someone writing to exhibit childhood and youth as growing when they express natural exuberant activities spontaneously in play in the open air. Rabelais's influence on Rousseau could scarcely be unnoticed by Pestalozzi.

Pestalozzi, the practical psychologizer of education, emphasised education for the masses; elementary education; the need to individualize education; even more, to trace the origin of every human capacity.

Perhaps in few other cases does a brief description do as great an injustice to a man as it does to Pestalozzi. His teaching, his educational psychology, can only be seen and understood in his life and work. For our purposes we note three trends he initiated and attained, at least in part. First he showed it necessary and possible to consider education from the point of view of child development. That his examination of development as gradual building up of power was inadequate and inaccurate and that it has led to many rigid curricula synchronizations and classifications, does not detract from the fundamental value of the contention. Second, he established in practice an attitude of experimentation in educational work to replace the customary traditional basis. All text books were excluded, discipline was based on mutual pupil-teacher sympathy; the concrete always preceded the abstract. Just how great a revolution this was in geography Ritter suggested forty years later, "It was from Pestalozzi that I gained my chief knowledge of geography, for it was in listening to him that I first conceived the idea of the natural method. It was he who opened the way to me, and I take pleasure in attributing whatever value my work may possess
Third, his concept of education as science, with psychological science embedded within it, his work at Yverdun, his influences, led to the establishment of a movement of profound significance for educational psychology - the normal school in teacher training. His concepts, tentative, indefinite, lacking accuracy, inconsistent, often unsuccessful in practice, but fired by his enthusiasm, stimulated a line of investigation into the science of education.

J.H. Herbart, 30 years junior to, and, a student of Pestalozzi's, built on the work Pestalozzi had started. Herbart's contribution was as a philosopher as much as an educator. Thus was he able to construct a system of psychology where Pestalozzi had managed only to reject the old. Herbart was first a skilled teacher concerned with the problems of education. He possessed the intellectual ability to resolve these problems philosophically, and, greater still, trained his students to apply the principles they had discussed in his theoretical lectures and seminars.

Herbart's ultimate aim of education was a steady dependable moral character, the production of a man of culture whose inner purposefulness would cause him to devote himself to the highest of life's ethical ideals. "The one and whole work of education may be summed up in the concept of morality." "Moral man controls himself. Education controls the process of growth or assimilation and thereby determines character or morality - also intelligence." Later he expanded this view to include the virtue of many sidedness of interest. To have many sided interests guaranteed sound choices in all the multifarious (moral) life situations.

Herbart's psychology ran counter to the currently popular Aristotelean faculty psychology. Like Pestalozzi, Herbart viewed the growing organism as essentially an harmonious unit. The soul, blank at birth, was a unity related to the outside world through the nervous system. Sense perceptions were presented via the nervous system. Interaction of presentations gave rise to conceptions, reason, judgment. Instead of the mental units being faculties they were for Herbart, ideas. Ideas - which included the percepts and non-perceptual ideas in modern psychology - were dynamic entities and their interaction was according to mathematically quantitative principles. His ideas were centres of force within the mind. Ideas arose originally from a collision between reals. All things were or were composed of reals.

A real was an independent element, like Leibniz's monads, save that was not necessarily conscious. The human soul was a real and impressions arose in it when it reacted upon the external world, also made up of reals. Here there existed some confusion in Herbart's thought in so far as he appeared to forget about the nature of mind in his later descriptions and explained all mental states from an interaction of ideas. Ideas were always in mind and determined mind by the energies they themselves possessed.
He distinguished two kinds of interaction between ideas. Ideas capable of so doing might combine into harmonious wholes. When such ideas belonged to the same continuities, modalities or sense departments, they produced a fusion, e.g., two sounds, when related to different continuities, sound, colour. The unity was complicated.

Second, ideas in opposition could never combine but only tended to inhibit one another. Where they were of equal strength, the inhibition was complete; where of unequal strength, the resultant came into consciousness.

Since consciousness was to him describable in terms of ideas not themselves present in consciousness, or at any rate not wholly so, Herbart's psychology extended to the realm of the unconscious. He posited three degrees of consciousness - focal, which was apperceived or clearly apprehended; marginal, dimly and unclearly present; and ideas forced out of the conscious.

Sensations or ideas, once they came to mind through the senses, were never lost; there was no real forgetting. They continued forever and each contributed to the control of all the others. Even when an individual was not aware of the presence of an idea, it was still an active influence in directing the course of consciousness. Each idea was assumed to have a certain force either positive or negative to which a numerical value was assigned. Ideas acted with these forces very much as heavenly bodies did in gravitation, or as the electrons and protons do in an atom.

Consciousness also was divided into two parts, consciousness proper and the subconscious. Ideas that seemed to be forgotten were merely forced below the threshold of consciousness, because at the moment ideas with signs opposed to their own were too strong for them. When the opposing forces weakened they reappeared and were appreciated.

To picture ideas as determining consciousness by their mutual interaction was new, and constituted a valuable means of presenting many psychological facts. Thus attention was explained as due to the action of the ideas in mind upon the sensations that sought to enter. When they were of a character to favour the entrance of sensations of one sort, anything of that class would be noted immediately; all else would be kept out.

Entering consciousness meant becoming clear and distinct. Herbart adopted Leibniz's old word, 'apperception' for the process. To stand out clearly was to be apperceived, and the group of ideas that favoured the clearness was called the apperceiving mass. This was one of the first definite recognitions of the influences of earlier experience in determining what would be noticed, and has been made much of in educational theory from that time to this.

Other mental processes resulted from other interactions between ideas. Pleasure was felt when there was a mutual co-operation between the separate elements; when there was conflict between them, pain resulted. Pleasure, when attached to a specific object, became
a desire. If desire developed at a moment when all else favoured movement, action followed. Apperception was thus the determining influence in feeling and will as well as for the more strictly intellectual operations. This treatment derived all mental activities from one set of principles and did away with the necessity for separate faculties. Herbart devoted much space to disproving faculties and to showing that they really did not constitute an explanation of mental processes. This, with its general doctrine of apperception, comprised his most important contribution to psychology.

Herbart's apperception mass was the name for all those past experiences which we use when we perceive something new. Apperception was an assimilative function or ability of the soul to see or understand all it experienced in terms of previous experience. Growth and maturation of the individual proceeded through the acquisition of a content of ideas assimilated through a growingly rich body of apperceived experience instead of through the maturing and modification of a complex set of capacities.

This application of the notion of apperception, like the name itself, was the keystone of educational theory for several generations and is revived in most systems still.

In psychology, as in education, Herbart was an outstanding figure, and probably had more influence than any one else from the beginning of the 19th century to the rise of the experimental psychology under Wundt.

A clear recognition of the connexion between psychology and education was established once and for all by Herbart. His educational doctrines constituted the first clear example of applied psychology, and for this alone, apart from his many other contributions, his name will always be illustrious in the field of pedagogy as of psychology itself.

He had a most profound influence upon educational theory and practice. His early acquaintance with Pestalozzi in Switzerland, his two years' practical tutoring, his combined chairs of philosophy and pedagogy, his practice school at Konigsberg, where he applied his doctrines as he developed them, all helped him realize that Pestalozzi and Froebel were right in stressing the importance of observation and spontaneous interest instead of formal instruction. He, himself, took a further step in emphasizing the significance of background, and by means of his doctrine of apperception provided a theoretical foundation for his precepts.

We must make sure, he said, that each new fact is presented to the child only when the child has so co-ordinated his past observations as to be ready to assimilate it. Consider the case of a child learning the meaning of numbers. If he has observed his fingers often enough, and has learned a group of words which apply to one, two and three fingers and so on with other objects, and if we now attempt to teach him the general idea that one plus two equals three, he can assimilate this idea because he has observed it in specific cases. This background of ideas constituted apperception mass. The process of
apperception was a combination of a number of sensory activities into a unity. But, instead of emphasizing an innate unifying power, as did Kant (the term borrows also from Kant), Herbart presupposed that a background already in our mind made possible the assimilation of a new idea which could never otherwise be learned.

Emphasis upon careful order of presentation led naturally to the devising of scientifically ordered curricula, so arranged that the pupil should pass steadily from the familiar to closely related unfamiliar elements of study. In its insistence upon order, interests and correlation, Herbart's doctrine has exercised immense influence upon education in the last 100 years. Herbart provided a general principle the detailed application of which had to be completed by laborious specialized investigation—still going on.

Herbart, too, made the child the centre of educational endeavour and pedagogical theory. Instead of the empirical, imaginative, emotional attempts of earlier educators, Herbart's was a scientific attempt. By organizing the child's experiences a teacher builds up masses of ideas.

Herbart was part of a revolution in educational theory and practice that was taking place in the closing years of the 18th and the opening years of the 19th centuries. It came mainly in the form of a protest against the mechanical implanting of information. It emphasised the newer idea of developing the child's inherent capacities. Rousseau in his time, had done much the same to disseminate this doctrine in speaking of the natural as opposed to the artificial. The aim of education should be to bring out the natural responses of the child. But no one knew just what was natural. It remained for Pestalozzi and Froebel to clarify the idea. Pestalozzi developed an experimental school in which he departed radically from the educational system of his day and undertook to bring out the native powers of observation in the child. He was interested in the systematic inter-relation of all parts of self-development. He was far from being a mere student of the sense-organs for their own sake; he believed one must start by developing the child's ability to observe. He did not confine this doctrine to classroom instruction, but applied it to work on the farm, in the garden and in the home. The implanting of information in the child's mind was reduced to a very subordinate position. Froebel borrowed much from Pestalozzi, and carried the idea further.

He emphasised the use of vivid stimuli, bright colours, toys, as means of attracting and holding attention, and exercising the child's capacities for dealing with things. He made much of the educational value of play and founded the Kindergarten as a means of making use of the easy or natural in the child's development.

Herbart made good use of these contributions. He realized in the first place the great importance of this emphasis upon observation. He saw that there were all kinds of ways of reacting to stimuli, depending upon how much background we had. He saw that Pestalozzi was right in emphasising objects of observation in which the child was interested and relating
them to his activities. He felt that education could make use of this principle throughout
the whole course of life, starting with physical stimuli, gradually reaching more and more
complicated forms of experience. He believed that systematic use could be made of his
doctrine of apperception. Just as counting the fingers might lead to a general knowledge
of numbers, so each contact with the world gave a background for the handling of more and
more complex situations. These ideas were epoch making.

Educational method became an empirical study. Herbart established an experimental
school; he conducted classes for teacher training, and made comparison of different
methods of presenting school material. And although the mathematical aspirations of
Herbart's work were destined to receive no great fulfilment, being rejected as though by
common consent, his general conception of mental organisation was the basis for educational
theory and experiments for many decades - and remains widely influential today. He hoped
to make psychology and exact and an empirical science; he failed in the former, but did
much to advance the latter purpose.

Except in the case of his theory of apperception, it is difficult to appraise today. the
historical significance of his system. The theory of the threshold and the doctrine of
conflict keep reappearing in 19th century psychology; but the threshold in Herbart's sense
was obscured and frequently forgotten through the different use of the concept in the
writings of Weber and Fechner, while modern emphasis on conflict and struggle seems to owe
more to Darwinism and to psychiatric experience.

Herbart's relation to the history of Associationism is unique. He was the only Associ-
ationist for whom the elements of experience were measurable entities; on the other hand,
his interest in the soul constituted a direct rejection of the method of most of the Eng-
lish empiricists. He had but little influence on subsequent associationism, which continued
its course in Great Britain; his influence consisted rather in helping to overthrow the
faculty psychology; in the emphasis upon psychological factors outside of clear conscious-
ness; and in the advancement of educational theory and method.

Faculty psychology accepted an aggregation of different, separate, infusible, powe-
to. Courses of study were designed to affect and mature these separate abilities; the senses
were trained; the memory strengthened, the reason disciplined, and so on. And since results
of comparable value could be achieved as well by one subject as another, a debate waged
about the relative appropriateness of competing subjects for the curriculum. Herbart found
this attitude untenable.

Psychology, Herbart believed, was based on three different but interrelated foundations,
metaphysics, mathematics, experience. This was a fruitful combination. One may trace the
mathematical suggestions through the German experimentalists down to the present day tests
and measurements with Thorndike as the mediating link between purely laboratory studies and
their concrete application in the schoolroom. One may trace the metaphysical strain through successive forms and find emerging with James and Thorndike, the concept of original nature. The experience side becomes more and more exact and concrete, the technique of scientific procedure entering more and more into the analysis of child life until there emerges a large body of verifiable information.

Aristotelian well being and well doing found a counterpart in Herbart. Herbart opposed any distinction between behaviour and thought. Right thinking presupposed that right action would follow. Thus he reconciled the tendency of Locke, Rousseau and others to disparage instruction and exalt discipline and training. Herbart contended that there was no real discipline without the awareness that instruction encourages. This was in keeping with his law of unity of mind. Instruction could be made educational by arousing in the child's mind a many-sided interest. Interest was an inner force and resided in the ideas of experiences. The teacher, therefore, should bring constantly before the awareness of his pupils the ideas he wished them to experience and select the materials for this experience carefully.

Feeling, desire, will (not a faculty) had their origin in the activity of ideas. To this activity Herbart gave the name 'circle of thought', which was to be understood as containing "the store of that which by degrees can mount by the steps of interest to desire and then by means of action to volition." (Herbart, The Science of Education). Education worked through and with ideas to make the centre of thought, for out of thoughts came feelings and from them principles and modes of action. How did new creative thought break into the circle? It would appear that it did not. Nor could contradictory thoughts break the circle. As we noted above, the irreconcilable is relegated to the unconscious.

In so far as an absolutely new experience was an impossibility, we are not surprised to find Herbart placing emphasis upon the importance of the past history of the race. He accepted the literary and philosophical theory of Culture-epoch as a psychological guide in understanding the child and as a basis for his curriculum. This scientifically-never-demonstrated hypothesis, possessing, as it does, some suggestive educational practice is incidental to the idea of correlation. Culture epochs help determine selection and arrangements of subjects in the curriculum. In the curriculum the subject matter should be so related that its presentation causes it to be apperceived by the student. For Herbart, correlation was the handmaiden of many sided interests. Correlation was best served by concentrated studies upon one central core study. In opposition to Pestalozzi who sought to emphasise geography, arithmetic, nature study, Herbart emphasised as the core study, literature with or without a combined history core.

The method of instruction further systematized educational practice. Herbart and his followers recognized five steps as essential in all well planned instruction. Well known
now, these five steps, preparation, presentation, association, generalization or system, and application, so systematized instruction that it must, automatically perform its function. "Instruction," Herbart said, "will form the circle of thought and education the character. The last is nothing without the first. Herein is contained the whole sum of my pedagogy."

The more we examine Herbart's work the more mechanical and systematic it appears. True, it is logical and philosophical in character. True, the educational world required analysis and systematizing. His systematizing, however, was based upon inadequate knowledge for it to last. His psychological bases have been largely discredited.

He played, however, a noble part and has had a profound influence upon educational psychology, theory and practice. Possibly his most striking theoretical contribution was to show that what a child will attend to depends upon what he already knows and that he can be prepared to be interested in anything, provided only that he has the preliminary knowledge required. His most lasting influence would appear to have been his emphasis upon instructional methods. These led to methodical classroom techniques. In turn there grew up a more scientific approach to education which in its turn yielded concrete evidence that has crystallized in the form of present day educational psychology. The formation in 1895 of the National Herbartian Society for the Scientific Study of Education is a landmark in the development, especially as the earlier more abstract papers read at the Society were rapidly dropped for more concrete and pragmatic interests and researches.

If J.J. Rousseau was the prodigious influence in modern education; if Pestalozzi was the altruistic universalizer of modern education; if Herbart was the arch systematizer of modern education, then Friedrich Froebel (1782 - 1852) was the most comprehensive and vitalizing reformer of modern education.

Suffering like Comenius from cold indifference towards his democratic leanings, accused of being doctrinaire, a symbolist, eccentric, pantheistic, mystical, nevertheless his followers revered him as an inspired writer and perfect man.

We are interested in the influence of post-Kantian philosophy upon his keenly scientific mind and the strong influence of the great philosophical harmonizer, K.C.F. Krause. Froebel, like Herbart and Pestalozzi, was possessed of the notion of all-sided unity; and he found that Krause's Panentheism fully expressed in philosophic form the unification of the subjective and objective in all the phenomena of the world. The educational influences in Froebel's life seem to have been mainly Arndt, Comenius, Rousseau, Basedow, Heusinger, Pestalozzi.

He was, however, original. When he combined ideas from without with those of his own it was to construct. "The chief educational principles of Froebel are to a large extent assignable to his direct observations of the natural activities of children. Especially
in his mature years was Froebel strongly intent upon the observation and accumulation of facts concerning children's development and activities; and upon the interpretation of these facts in a rational genetic theory...Froebel is the most original and scientific reformer who has yet arisen in the pedagogical world." (Cubberley)

"Man's development should proceed continuously from one point and this continuous progress should be seen and ever guarded. Sharp limits and definite subdivisions within the continuous series of the years of development are highly pernicious. For the full realization of this development it is necessary to consider childhood as the most important stage of the total development of man and all humanity." (Froebel) Education began with the spontaneous activity of the child, with living for the mere sake of living, with making the internal external. This phase led to boyhood, predominantly the period for making the external internal, to ideas and permanently formed volitional interests. Education was more emotional and volitional than an intellectual training. This volitional character, in contradistinction to Herbart's intellectual, was fundamental. To achieve success in education, select materials of instruction from life as it is now to the child and relate directly to life as it is now.

Education was much more than passing on knowledge, more than inculcating habits, more even than the development of capacities, it was a "process by which the individual develops into self-conscious manhood," the process that lifted man above the animals. (Froebel). The purpose of education was to expand the life of the individual until he should comprehend this existence. This was his original fundamental doctrine - unity. At every point he found unity - in the mental life of the child; between subjects of study; and, as noted above, the stages of development. Natural phenomena were the most satisfactory studies to reveal the nature of God, the unifier. Nature study and biological sciences, even suggestions of organic evolution were extolled. The individual and the race formed a unity and the school should epitomize this unity enabling the child to discover in a simple ideal form all the relations of society.

Other implications of the concept of unity showed up first in opposition to Rousseau's saltatory theory; second in the way in which Froebel considered that the individual repeated racial development, not in a way of dead imitation or mere copying but in the way of living spontaneous activity. This latter emphasis on the dynamic, productive quality of human beings rather than the purely receptive, was a most enlightening opinion. It found its fullest realisation in recognizing that an individual not only possessed activity but was active, was, indeed, activity. Through its activity it realised. Lamarck had indicated the development or atrophy that occurred in an organ due to use or lack of use. Froebel applied this idea to educational methods. "Self-activity of the mind is the first law of instruction," he said. It was the process of self-realization through the union of nature and of humanity. Instruction, the educational process, was geared to directing self-activity and
was based on the interest and activity of the child. Activities followed a genetic order in their budding and development, diversifying into a variety of activities and integrating into a more profound unity. In so far as the activities did diversify and integrate, development of the present and hence of the future was secure. To make the issue clearer Froebel placed instruction as the middle stage of a process and aim. First came spontaneous activities and native desires; second instruction; then followed some result, creative, tangible, from the imported knowledge. Education supplemented nature.

Infancy till 3, childhood till 6 and boyhood till 9 or 10, were the consecutive stages through which each child developed. The family was the centre of all functional endeavour, biological, industrial, religious, educational, social. The family was a living organism, a unity within which the child's powers and natural gifts were awakened. The needs of the home aroused the many sided life activities. In infancy the child recapitulated the history of the race. Sensory and motor activities unfolded in organic relation to each other. Childhood was when real education began, when language and play unfolded. To meet the need, then, he ceased his teacher training proclivities to establish the institution that is indelibly linked with his name, the Kindergarten.

In this medium he developed his ideas on the true function of play. He can be considered the first to delineate the basic importance of play. "Play is the highest phase of child development...the purest, most spiritual activity of man at this stage...a child that plays thoroughly with self-active determination, will be a thorough determined man...the plays of childhood are the germinal leaves of all later life." (Froebel). Drawing was as innate in man as speech; rhythm was the basis of language. His constructive apparatus was designed to promote growth through constructive activity.

Boyhood, he felt, was the age of learning. What a child did for the sake of activity the boy did for the result. But play, constructive activities still predominated and if anything had, he considered, a richer significance. Stories and study of nature abounded. So far as possible these media were to be co-ordinated and correlated.

Perhaps because of his nature, the democratic tinge of his ideas, the apparent meaninglessness of some of his ideas - his law of evolution, the advanced nature of his opinions, his mysticism, any one or all or some factor, Froebel's theory and practice has been much criticised.

The contributions he made to educational psychology are quite remarkable. First, "If you come with help too late...if you come too soon, alas,...oh mother, mother, and all you who take her place, do not forget this, rear your child in harmony with life's interdependence and according to its simple laws." Education must follow the natural course of the evolution of the child's activities.

Second, "the impressions assimilated in infancy are scarcely ever eradicated." The conflicts of adulthood as psychiatry realises today can have their genesis in childhood.
Third, all processes of development originated with and depended upon inner self-activity, the force felt within man’s own nature.

Fourth, play was a serious occupation and had deep significance. Constructional and creative activity had a profound value.

Fifth, the family had a far reaching significance.

Sixth, at each stage of development particular interests and activities were uppermost. All education, its methods, curriculum had to be based on those which belonged at that stage.

Seventh, school should be the epitome of society, an organism in which developing organisms found their perfection.

Eighth, manual activities took a place of importance for the first time.

Ninth, dynamic qualities were emphasised.

Tenth, the importance of the years from 3 to 6 and Kindergarten instruction were established.

We have concentrated around the names of Pestalozzi, Herbart and Froebel, outlining their main contributions to practical educational psychology, as in an earlier chapter we referred to the philosophical origins of educational psychology. Little, apart from emphasis, was new in what these men wrote.

In closing this chapter we note the work of some men and, for the first time in this account, a group of women, whose writings have further emphasized what earlier writers believed. Many of these persons live or lived so recently that to evaluate their role is presumptuous.

G.S. Hall’s (1846 - 1924) comprehensive training brought to education an eclecticism that savoured at times of the dilettante. He, like Herbart, was as many other things, principally a psychologist, as he was an educationist. In fact Pestalozzi and Froebel were perhaps the only two outstanding names who were strictly educationists in the galaxy of all who have contributed to educational theory and practice.

Hall’s thinking returned him to the importance of race perpetuation, thereby subordinating the role of the individual. As with Herbart, Hall was considerably concerned with the adolescent period; was profoundly absorbed in a recapitulation theory, the biological resultant in the later 19th century of the earlier culture epoch theory. The procedures of education had to be governed by the simpler, and fundamental, rather than the complex, and accessory - not a point of view that modern psychology necessarily supports in full.

Hall propounded the importance of emotional rather than intellectual life. Emotion motiivated the development of the intellect. He supported Froebel and others in the con-
tention that education must be based on the development of the child's own nature.

Herbart's paradoxical - "knowledge of, yet decrival of the significance of physiology in psychology" - comes to mind when we note the contribution Montessori (1872 - 1952) made to educational psychology. It has been claimed for Montessori that she "devised a method in closer accord with the biological principles of child development than any previously known - a method that unites the physiological and psychological laws." (Culverdon).

Founded on the idea of liberty, Montessori's methods fulfilled a requirement of democracy.

Like Herbart and Hall, Montessori brought a well trained intellect to the realm of education. Unlike them but like Froebel, she appreciated the essential need for sympathy. This sympathy she developed under the guidance of her mentor, Seguin. It might have been said by Montessori, as it was by Seguin, "To make the child feel that he is loved, and to made him eager to love in his turn, is the end of our teaching, as it has been its beginning." (Culverdon)

Whereas Seguin and Itard worked in the medical field, Montessori soon reached the conviction that making the child feel that he is loved (especially with idiots) was educational rather than medical. Her mind worked on one great question - if idiots could be brought to the standard of normal children in reading and writing, why did the normal child not far surpass the well taught idiots?

The physiological training that Montessori carried into education was fundamental to the development of her principles. Unlike a great number of educationists and philosophers of her time who accepted the centuries' old belief that the only way to educate the mind to think was to practise it in thinking, Montessori knew that in the early stages the nervous matter of the brain can be trained and organised by muscular exercises even better than it can by thinking. The view, as so often it is, can be traced to the Platonic, a fair mind in a fair body which ministers to the fair mind. It can also be traced to Rousseau, and in his case possibly the influence of Pinel and Pereira were not inconsiderable. Pereira, Itard and Seguin's influences were auxillaries for Montessori.

Montessori's contribution was to restate the problems of education in physiological terms. How does the new born develop into the adult. Food, clothing, the growth of the bones are not directly the concern of the teacher. The teacher's concern is with the nervous system. Montessori, then, stressed as fundamental the importance of the spontaneous manifestations of the child. The skill of Montessori was her striking ability to observe and utilise these spontaneous tendencies. In her work with subnormal children she had to rely upon their spontaneous activity. This led, in work with the normal child, to her belief in limiting the intervention of the teacher. Of all those who preceded her many had advocated full range of play, climaxing in Froebel's belief that play was fundamental to development. None had, even including Froebel, ever had the temerity to lay down the revolutionary principle that the teacher must not correct the pupil. With very young
children education should be confined to encouraging the spontaneous manifestations as they developed. Tendencies that belonged to the later history of mankind (the social instincts) belonged to the later stages of the pupil's life and we meet with no response if we appeal to them in the earlier stages.

It is worthy of passing note that Montessori stressed a saving sense of humour. With it, and with wholesome children not too much repressed to reveal their desires we need not greatly fear about their wholesome development. Equally wise was the admonition that there were dangers far more obscure than those of turning children into prigs and hypocrites. What appeared as an enormity to the anxious parent was no doubt but a passing phase in the child.

As great enlightenment showed in Montessori's concept of the school, educational systems, teaching, the curriculum, time table and classroom. All revolved around the principle of spontaneity, e.g. the teacher was to secure for the child the opportunity of satisfying his spontaneous tendency towards well-ordered activities. Whereas Herbart would have controlled the growth, Froebel and Montessori supplied the healthy conditions for natural growth. Such generalities became specific with Montessori whose detailed intellectual and physical apparatus allowed her to manipulate the environment and leave the child unmanipulated.

When we note her attitude to the moral development of the child, however, we can be as flabbergasted at her restrictions upon the child's thought and behaviour as we can at her doubts about the value and quality of children's play.

Montessori's special apparatus consisted of material for practical activities, sensory training, didactic exercises. The practical activity and sense training material have been the centre of considerable discussion for quarter of a century. The success of the didactic exercises as applied to writing and reading and number has stemmed the flow of criticism. One can but wonder why, and hope that it is not because the formalists are in the vocal majority so that only those activities that lead obviously to subject learning are acceptable.

In fine view Montessori's efforts to establish special apparatus has been another step forward in the establishment of the science of psychological education. When the errors have been eliminated the residue and the experience gained will leave us the richer. We shall have, I believe, a greater variety of intellectual, solitary, incidental equipment. We shall still need to work out our psychology of experimental - manipulative or manipulative - constructional equipment. We shall still need to search for the best approach to imaginative, constructive, creative play in a changing world with changing children of diverse characteristics so that not only will the play itself be meaningful to the child but the meaning so related to living in his society that he will relate
himself securely in the world he is coming to know, or at least to experience.

Montessori, too, believed that there was a psychological moment when it was necessary to offer those exercises which corresponded to the need of development felt by an organism; and that if the child's stage of development had carried him past a certain need — remembering possibly Itard's attempts to educate the wild boy of Aveyron — it was never possible to attain in its fullness a development which missed its proper moment.

Montessori's social institution, The House of Childhood, allows us to link her name here with a brief reference to the McMillans. Both McMillans indicated the importance of environment for sound development. The McMillans stressed the need for nurture throughout childhood and particularly in the early years. Just how right she was and they were is born out in the psychiatric field in general and by Bowlby in particular, "Direct studies make it plain that when deprived of maternal care the child's development is almost always retarded — physically, intellectually and socially."

The McMillan sisters continued to demonstrate their belief in the need for care in the "most fateful years of all, the first 7 years of childhood." In particular they stressed the value of natural environment — a shelter in a garden with the children living an outdoor life with the children in close communication with nature. Apparatus to them became secondary to the real things of nature. Particularly they stressed the leisureliness of perception and that by waiting for maturation before giving instruction, the child would achieve more in the end and experience joy in achievement. Free play with access to varied material provided opportunities the child needed and also the adult an opportunity for learning about children. Engrossed in their play they showed their true nature.

Their greatest single contribution was perhaps to practical education in their demonstration of the nursery school as a requirement for every child of every civilization.

The reference to Pragmatism in an earlier chapter made no specific comment about the man who from early in this century exercised a profound influence upon education. Mentioned now, shortly after his death, as a great philosopher from the new world, will it be that the future will see him as a determined, radical educator who applied philosophical thought to his educational practice?

In his 'My Pedagogical Creed,' Dewey explained that education must begin with a psychological insight into the child's capacities, interests and habits. But he was quick to point out that the human individual could not exist if there were no society. Human capacities, interests and habits developed into a real character only as they were exercised in social activity. Society was an organic union of individuals. Education's organic life activities and purposes reproduced themselves in individuals. Social intercourse and interactions were the central factors in the evolution of the activities of the individual.
It was to the family particularly that Dewey turned to find the social situation that first awakened into activity the powers of the child. To develop individuals so that they would attempt to realize the ends and purposes of society Dewey would organise schools for co-operative action. This central theme was probably one of Dewey's greatest contributions. In essence it was not new, being traceable in Comenius, and Herbart, and having very considerable relation to Froebel. It drew its influence, too, from Hegel; and, very decidedly, from the social trend of his time—individualism in an industrializing western world.

Concrete, meaningful, direct, specific, experimental situations were also stressed by Dewey more than any other writer than perhaps Rousseau. Learning followed action, naturally resulted from those situations which caused reflection. All learning was a by-product of action. Hence Dewey saw concentration arising out of genuine interest. This in turn led to a new feeling for the doctrine of motivation.

The instrumental or experimental procedure so strongly advocated by Dewey and his followers and which had, because of the disciples' indiscriminate application of it to all realms of thought, discredited pragmatism, nevertheless yielded in educational practice the project method. An end which is the child's own, carried him on to possess the means of its accomplishment. Skills acquired as the child carried out a self-chosen purposeful job which needed those skills, became permanent possessions provided his maturation was adequate.

Two additional names can be noted in the 20th century, those of Susan Isaacs and Arnold Gesell. Dr. Isaacs' contribution to educational psychology followed the psychological rather than the educational. Like Montessori and the McMillans she concentrated on the pre-school child and combined as the years passed, a measure of biological, psychoanalytical and educational theory in her practice. Perhaps as much as any one, Isaacs will be remembered in educational psychology as the practical educationist whose theoretical studies showed us how complex the real nature of the child is. Once the complexity of human behaviour becomes absorbed by the minds of teachers educational psychology will be nearer to receiving the status it merits. In her words, "The teacher of children under eleven needs knowledge of psychology, biology and physical hygiene in addition to a highly technical training. It is highly desirable that she have sufficient understanding of the psychological processes underlying the difficulties of behaviour to be able to exercise patience and to understand that time and growth under favourable general conditions will do much to relieve difficulties."

Gesell's contribution has been the scientific observation of the individual child in his growth from prenatal to puberal days; the charting of objective statements about this growth. He has done much by implication to overcome the rigidity of early training and the scientific purity of an antiseptic neglect of children that we saw in the first third of this century.
Isaacs advocated feeding a child every four hours, "so far from trusting the mere affection and natural knowledge of the nursing mother, we feed him by the clock." Gesell maintains and goes on to demonstrate, that "it is a relatively simple matter to initiate a self-demand schedule and to keep it in operation. The schedule would seem to be the very essence of hygienic science and good will. In actual application the culture often proves to be so inept."

Infants are individuals. Infancy is a period of genesis and growth; infancy is a product of racial evolution. Each individual normally comes into the world with potencies of growth which serve to perpetuate the essential traits of the species. Each is endowed with a margin of modifiability which makes both for conformance and for innovations. Capacity to grow is part and parcel of the instinct to survive. The tendency for all growth is towards optimal realization. As representatives of the species infants are much alike. As individuals each has a distinctive pattern of growth. The pattern of growth is so intrinsic that it cannot be transcended with impunity. The spirit of liberty has its deepest roots in the biological compulsion towards optimal growth. A democratic way of life alone conserves the potencies of individual growth which each new generation brings into the world. In these 10 theorems we can perhaps epitomize the dynamic, genetic, emphasis Gesell places on human growth.

Ruth Griffiths, Agatha Bowley, Bridges are others who have seen the value of a similar approach to the study of children.

The teacher has for periods at a time to spend his working hours in a group. The functions, purposes and relationships of the group and its members are constantly changing. Recognition of the special nature of this interchange is only now being undertaken. One of the tasks that it appears will fall to the lot of the educational psychologist of the future is that of determining for the school the influences of the classroom or school group upon all the individuals in the class and school. Group dynamics and educational psychology can gradually be expected to take a greater interest in each other's findings.

Earlier, group functions concentrated on the therapeutic process of group activity, "Exploration of the dynamic factors of the group-as-a-whole (factors which might or might not be characteristic of all face to face groups) has been relatively neglected."

Most are aware that in addition to the personalities of the individuals in the group and the effects of such elements as transference, catharsis or resistance, group psychological and sociological factors are at work. Freud implied that belonging to a group necessarily involved each individual in some loss of independence and personal identity. Regressive phenomena were facilitated under certain circumstances and there was a continuous
interplay of positive forces strengthening group solidarity and negative forces ranging from antipathies and apathy to hatred and aggression, centrifugal in operation. Factors of dependency, superiority, inferiority, disapproval probably influence the group. Early relation of the child in the family constellation probably needs consideration. Mutual support among group members appears to lower resistances and intensify transference reactions. Size of groups, relation of the leader to the group, the length of time the group meets together are a glimpse at the vastness and importance of this field.

Another slant is given to the field of group operations from the work of permissively orientated psychological institutions. They note the laws by which groups develop attitudes, help individuals control aggressions, provide incentives to action and routine, assist individuals overcome resistances to social conformity, act as restraining and socializing influences, as sources of security, provide empathic help, are a source of support and a target for aggression.

Group therapy, one aspect of group dynamics is a major link with another field of thought that educational psychology can expect gradually to become not only involved in but also dependent upon and a subscriber to, the field of orthopsychiatry.

In so far as the state in New Zealand interprets its task as including that of assuming responsibility for all children we are already involved in orthopsychiatry. "The educator has not done too well in his efforts to educate Mr. and Mrs. Citizen about the need for keeping schools for their children as up to date as their kitchen or their car. Psychology is alright for industry and animals but careful watch is kept on its getting into the schools. Orthopsychiatry needs to educate the community!" The very defence, however, attests the influence of psychology in education today. Particularly is this so in early education where growth, development, emotional needs, mental health, parent-child relations, early signs of maladjustment, methods of observing and appraising behaviour are practised. In fact, the pre-school and infant teachers' understanding of children's behaviour, their ability to deal with children in groups while promoting the welfare of individual children would be a credit to any clinician.

Orthopsychiatric influence in mental testing techniques has restored some essence of balance and pointed re-emphases. Less attention is applied to quotients; group tests are more survey instruments now than clinical tools; unstructured test situations are more stressed than objectivity; judgment than a score; total function and inter-relationships of functions rather than single functions are relied on. We are less adamant about personality appraisal and more realistic in allowing and assisting personality to unfold over a period of time in a variety of situations. Educators' attitudes towards discipline have become more mental hygiene orientated; condemnation is minimized; behaviour is approached causally rather than symptomatically; clinical assistance, study and treatment are invited. Delin-
frequency, reading and other subject disabilities, truancy, school phobias, guidance, classification, grouping, readiness, personal and social adjustment are all fields in which educational psychology can and does borrow from orthopsychiatry.

Educational practice is the germinating and testing ground for educational psychology. As educational psychology has undergone a metamorphosis in its own right, so it has inspired and been inspired by certain fundamental principles. These as they show out in the lives and works of a succession of educators are the principle that the human individual is a dynamic personality. Herbart's dynamics of the soul incorporated the conceptions of both force and activity. Dewey's dynamic thought reached broadly into motivation and interest. Today, dynamic thought involves the individual and the group. Every facet is the concern of educational psychology.

Particularly in child development as propounded by Gesell and others do we see the summation of the genetic approach to human behaviour in all its aspects, intellectual, social, emotional, physical, spiritual, physiological, among others.

The doctrine of individual differences has gradually established itself from Comenius to the present day although one would wish that a few more than Thorndike's "experts writing on psychology" believed in the full force of the doctrine.

Whereas until the 19th century, education changed mainly under its own inherent forces, and whereas in the 19th century it changed under these and under social, economic, technological and scientific progress, to these forces in the 20th century must be added the direct and indirect influences of psychiatry, psychology, social work, orthopsychiatry and their related fields. They all emphasise individual differences.

Deviations, too devious to attribute to experimental error solely, kept recurring in the results from the experimental psychological laboratories. The way was paved for an acceptance of individual differences. In the educational field differentiated curricula, electives, and greater and greater attention to the individual child's development, increased.

There has been an increased emphasis on activity or play, typified by Froebel and substantiated by Dewey, Gesell, Isaacs, McMillans, Bridges, Bowley, Boyce, Gardner, Buhler, Cover-Jones, and a host of others. There was, in addition, the central theme of dynamic growth.

But the two great fields in which educational psychology can expect to draw increasing strength over and above its present acclaim are in preventive and supportive work. This century has seen the furtherance of scientific attitudes. Such attitudes have required specialists. Specialists have tended to lift the authority of the parent and educator in the school on to the shoulder of another more removed from the home and the school. Educational psychology can replace the authority where it belongs and instead of being content to remedy faulty reading, cure diseased children, restore parent-child relations, can
actively assist in providing a preventive approach to living. Careful analysis to avoid scholastic backwardness unnecessarily; prevention of disease; parental education and knowledge to avoid broken relations unnecessarily; in short, educational psychology firmly linked with mental hygiene.

There is, too, the possibility of extending within the educational psychology orbit the supportive approach. Any teacher can teach better when supported by his headmaster and other teachers; educators can go further in ideals, confidence, practice, theory, if supported within and without their work. Any teacher, any child can produce a greater effort if supported in what he seeks to do. Educational psychology can assist the teacher realise how complex human behaviour is and, therefore, that no one person can be expected to be knowledgeable in more than a few aspects of his field. Knowing this it will be easier for him to seek support without worrying that by seeking he is admitting he does not know and is therefore incompetent. The educational psychologist can develop a relationship between his co-workers and himself which will be supportive to them and enable him to help them become a team. He can link them with others in the field. He can ensure that they participate not only in the school activities but that they help plan and carry them out.

This is with the teacher. His task lies, too, with helping the teacher appreciate the children and the group of children he works with. He can support the teacher in teacher dealings with the parents - work towards face to face parent-teacher partnership.

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Herbartian Psychology
John Locke's Educational Writings.
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Education's Debt to Orthopsychiatry - in Am. J. Orthopsychiatry, July '53
Briefe Text in the History of Education
In a galaxy of educators it is easy to neglect the work of the practising teacher both during his lifetime and posthumously. And yet it is this great body of persons, sometime selected because they could be bought cheapest on the slave labour market, at other times, because they could be paid the lowest remuneration, yet again, because their habitat was the more convenient in which young children could learn, still again, because some wanted to teach, - it is to this body of persons that educational psychology owes its greatest debt. They who believed in teaching never saw it as an expedient to keep, "infants of humbler busy wives who pay some trifling price for freedom through the day," while the mothers did something more important, such as earn money. They saw education as a major means of emancipating mankind.

A few there have been who recognized that the best results in teaching derived when a teacher had been trained for his profession. Given much lip service, this principle of teacher training still exists as perhaps the least developed aspect of every educational system, primary but especially secondary, in every country of the modern world. Indeed, in qualification of recruits, length and quality of training, the attendant status of teachers in the community and the mental hygiene of the children they teach, the most that can be claimed for programmes of teacher training throughout the world is that they are extremely varied.

The establishment of any teacher training at all, let alone the consideration of the content of the training programmes, calls for notice. The way was long and tortuous.

The Jesuit order, begun in 1540, and working from 1599 till 1832 upon its original constitution, possessing the advantages of continued teaching experience, experiments and observation, promoted one of its main functions, namely to train prospective teachers. Somewhat earlier Luther had stressed the need for diligent devoted teachers who with the highest virtue would perform a labour few parents were prepared to undertake for their children. Melanchthon, too, considered that a teacher must have special aptitude, study much from youth up and "have great practice."

The embryo of teacher training may be traced to the licences of Pope Gregory IX, issued in 1231 to professors to teach; in Pope Nicholas IV establishing in 1292 the right to grant licences to teach; in the Lincoln Cathedral licence to teach song, 1305. These licences and the forms of appointment known to have been required - e.g., Northallerton 1385 or earlier, that of a Cambridge Grammar School appointee to a master's position in 1276 - indicate that heads in the community recognized at times some responsibility for the quality of person and quality of moral characteristics of that person who taught. In the case of the Cambridge master, the authority was the Archdeacon of Ely.
Elementary teachers' licences and university licences to teach were in vogue by 1599. Also in Elizabeth I's reign, thought was given to the supervision (which was strict) of the manners, morals, religious teaching and beliefs of the teachers in the schools. In 1603, all schoolmasters in the realm were subject to license by the Bishop as a condition precedent to teaching.

Wurtemburg in South Western Germany had by 1559 moved considerably further educationally than any other state. In that year a complete system of schools was organized a move later to be copied throughout the German states and approved in 1565.

Efforts to improve the generally badly taught, isolated and poorly supported Charity and Parochial elementary schools in France led to two teacher training movements, those of Father Demia and Abbe de la Salle. Demia's order was devoted to the education of the poor in Lyons. His greatest innovation was the introduction of a teacher training movement or seminary. This was followed within 15 years by the founding, in 1685 at Rheims by the Brothers of the Christian Schools under Jean Baptiste de la Salle, the first normal school for the training of teachers.

A Guild of Teachers, the Brotherhood of San Casiano, formed in 1642 and from this date teachers in the elementary school had to be examined by the Brotherhood until in 1791 the Real Academia de Primera Education absorbed this part of the Brotherhood's activities.

Leading out of Francke's 1692 Halle group of educational and charitable institutions, again with a constituency drawn from the lower and middle classes - arose another seminary for training teachers. This seminary was part of the general nature of Francke's ideas and the influence in Prussia of realistic principles according to Comenian ideals was spread by the teachers trained herein. The rise of the seminary as with the use of Francke's other institutions was symbolic of the man.

He made available free meals for poor university students. In return for meals they instructed. This group by 1710 had developed into the Teachers' Seminar - das Seminarium Praeceptorum - a training class for those who were to teach in the common schools and the Select Seminar - das Seminarium Selectum - for those who were to teach in the Latin schools. So far as Protestant Germany was concerned these seminars were the establishment of teacher training.

Early teacher training in America followed lines of apprenticeship in England. In New York city there was a reference to the "learning of the trade of schoolmaster," in 1722. In this covenant George Bromwell did "promise to teach and instruct or cause the said apprentice, John Campbell, to be taught and instructed in the art, trade or calling of a schoolmaster by the best way or means he or his wife may or can."

Evidence as to the concern of the public may be estimated from a circular in 1741
from the Consistory of Gotha, that proud educational home of Duke Ernest the Pious, recording the great displeasure with which they perceived that a great many persons made teaching their profession without sufficient cultivation of their faculties. "Our most Gracious Duke dost decree that the superintendents select teachers from young men of ability." Four later decrees up till 1760 suggested that there was little intention or power to enforce the requirement and "the chairs of the teachers remained occupied by the poorest pupils of the gymnasium, discharged corporals, bankrupt tradesmen, and above all by servants of the household of the county patrol of a school, who had outlived their usefulness in the family." (Cubberley).

Krusi, who later became assistant to Pestalozzi, recorded in 1793 a conversation between himself and a relative that is enlightening as a commentary upon the attitude of people in general towards teaching as a profession. Krusi had been earning his living as a day labourer and errand man when Gruber suggested a vacancy in teaching would give him a chance to earn his bread a little more easily, advising that he needed no knowledge because "what a schoolmaster among us needs to know, you at your age can very soon learn." (Richter notes somewhere of Pestalozzi that he knew less geography than his pupils). Krusi passed the examination. The other candidate bettered him in reading, he the other in writing. The other, however, being over 40 and Krusi only 18, the committee decided he would learn what was necessary sooner and moreover Krusi's dwelling house would be easier to adapt as a school house. Krusi's fellow candidate 8 days later took a situation as a policeman and received 3 gulden weekly, while Krusi received 2½ gulden and had to furnish his own school room.

By 1709 in England Charity school masters' qualifications comprised:

*Belong to the Church of England and partake Holy Communion.
*Be sober; 25 years of age or over.
*Be able to govern himself and his passions
*Necessity of temper; humble behaviour *Good genius for teaching
*Understanding of the Christian Religion.
*Be able to write well and understand arithmetic.
*Be able to keep good order in his family.
*Be approved by the ministers of the parish.

Probably the first State Training scheme was that created in 1794 by the French National Convention whose Ecole Normale Superieure opened - and closed - in 1795 to train professors. In 1808 Napoleon's Imperial University recreated (in 1810 it began) the normal school for 300 students over 17 years to receive 2 years' training upon a 10 years' guarantee to remain in teaching. Conduct, progress, aptitude for governing and instructing were all considered.
Subscriptions for the British and Foreign School Society in the Borough Road, London were made on the grounds of the training of schoolmasters in 1805. This model school and teachers' class were considered by Henry Barnard in 1854 as the germ of all the institutions for training teachers for elementary schools in England. Its normal school accommodation was inadequate. The National Society had a similar plan in its model school at Westminster.

The necessity of teacher training was the purpose of considerable parliamentary debate, newspaper and pamphlet review. Lord Brougham in the House of Lords, 1835, advocated normal schools in London, York, Liverpool, Durham, Exeter. No national system arose but mainly as the result of the Committee of Council of Education first appointed in 1839, there were by 1854, "36 normal schools in England and Wales, 4 in Scotland, and one in Ireland in successful operation." The cost was well over £350,000 to which the government contributed half approximately. There were 1,000 males and 700 females in residence. 27 of the 40 training colleges in England and Scotland were connected with the Church of England, 2 with the established Church of Scotland, 2 with the Free Church of Scotland, one with the Roman Catholic, one with the Wesleyans, one with the Congregational and in 6 others the Church of England had the virtual ascendancy.

Infant School teachers were trained in women's training colleges and although the terms were unwise in that by decreasing the length of training from 2 to one year to enable it to take place, these institutions, led by the Home and Colonial Infant School Society, provided a separate and special course of training, by 1854, for infant school work.

The period following the introduction of training establishments was arid of major developments. Gradual improvements took place without there being, however, any apparent real understanding of what men like Spencer, Darwin, Galton, Froebel were trying or had tried to say. Manuals of the time, Gill's "School Management", and Landon's by the same title, show that the Pestalozzi-Froebel object lessons were regarded as an early sense training as a preparation to the real and necessary instruments of culture; punishment was routine in school events; a good gallery was indispensable although it ought not accommodate more than 30 infants. Pacify, keep occupied seemed the theme.

As Raymont points out, "The criticism in the 1880's should have been pointed not at teachers but the training colleges. At that time the nice mannered and naturally intelligent teacher was preferable to a student from a training college, who, however nice mannered and intelligent, and, however fond of small children, had been quite inappropriately trained for the management of children. No girl ignorant of child hygiene and child psychology is fit to be made responsible for the education of young children." Such a statement indicates in a telling manner that till then there had been no educational psychology in name or principle in English training colleges. The best we can turn to is the enlightenment of a few educators. Only indirectly did the views of Bain, Ward,
Stout, Sully, enter the teaching world and their texts were not available until the last five years of the 19th century. A few beacons shone, Ebbinghaus, Galton, Cattell, Charcot, James, on the Continent, America and in England.

State systems of training teachers became the vogue in the 19th century to endeavour to meet the spread of free and almost universal primary education. Before such conditions pertained, the numbers of teachers required were fewer in quantity and less regularly in demand. In the transition from the older to the newer the expedient of "mutual instruction" as resorted to by France, England (Bell and Lancaster) and America.

Gradually mutual instruction gave way to the recurrence in France and Prussia of teacher licensing, with or without any normal school training, and in Holland and England of the much vaunted pupil-teacher system. Along side pupil teaching grew up normal school training and certification. In Holland, where the pupil teacher plan developed first, the first normal school for training teachers opened in 1816.

From Holland, Kay Shuttleworth gained the idea which, in 1846, the Committee of Council allowed him to introduce, namely, the training and use of pupil teachers in Charity schools. This scheme, eulogised by Matthew Arnold as the sinews of English Public Instruction, was in vogue until about 1900. It began in 1840 at Battersea where at 18 years boys and girls concluded their 5 year apprenticeship by competing for the Queen's Scholarship. Still there was no compulsion to train as a teacher. Anybody at all was free to teach anything at all in England and America. The 1870 Act brought teachers' "centres" where pupil teachers gained additional (secondary) education. Gradual improvement in the secondary education level of teachers in training dissipated the pupil teacher scheme.

A more rational approach, despite the heavy odds of general disinterest, low educational level and, of course, the vast effort needed to attain a minimum acceptable level of education for trainees, was employed on the Continent. Probably the most logical — and most complete — teacher training system was that of Guizot. Cousin, in 1831, reported on normal schools advising a primary normal school in each department, each to be more or less considerable according to the resources of the department. Guizot followed this up in 1833 with his dictum that "the master makes the school." He was influenced by the 1794 National Convention's attempts to ensure that no schoolmaster should be appointed who had not been a pupil at the school which instructed in the art of teaching and who was not certified to have profited by the opportunities. In 1834 Guizot introduced Normal Schools for primary school certificates. By 1856, there were 70 lay normal schools and in addition religious societies and bodies sponsored their own.

A plan for the education of teachers was developed in Spain in 1834 that led to the 1839 normal school in Madrid. In 1847 at Pamplona, the first Normal School for women
opened, followed in 1858 by a central institution in Madrid. The year before, 1857, a
normal school had been opened for men in each capital in the 59 Provinces. In the 1914
and 1931 reorganizations of these normal schools there was provision in the first group
of studies for general and applied psychology and in the third course, experimental psy-
chology.

France, Holland, Prussia, America, Spain, England, all had publicly controlled normal
schools for the training of elementary teachers by 1850. The first three had theirs by
1835, America 1838, England 1846. In Holland, England and America purely subject teaching
had added to it a growing proportion of educational theory, although in England, rule of
thumb teaching techniques long took the place of pedagogics. In France and Prussia no
high degree of culture was expected of the teacher. If a man comprehended elementary
grammar and number and could get it taught, that was what his country wanted of him.
Indeed, the man who did more might have subversive tendencies. An elementary school edu-
cation, two years' training in elementary subjects, a year of pedagogy and they were
equipped to teach an elementary school class.

In New York in 1827 Governor Clinton recommended the establishment of academies in
the various New York State counties, largely to train teachers. He estimated the school
population as 430,000; the number of schools, 8,000 and went on to say, "there is no
provision made for the education of competent instructors.

From 1825 onwards in American efforts had been made to get state normal schools. In
Massachusetts, Carter had been active. Publicly provided normal schools began to increase
after 1838. Private training academies for teachers had begun long before. In the public
field, as elsewhere, the influence of Horace Mann was considerable. As Secretary of the
Education Board in Massachusetts he used a loan of $10,000 to obtain a $ for $ subsidy
from the legislature. In the course of study, a minimum of one year, listed number six
was Mental Philosophy and number twelve, The Science and Art of Teaching, with reference
to all the studies in the curriculum.

In 1843, Mann reported on the Prussian Elementary Teacher and His Training. Germane
to our purpose are these of his comments: careful selection - their eligibility to become
eligible; their content reading on the subject of education together with a more general
course; lectures, discussions, compositions on such subjects as - modes of teaching the
different subjects, motive powers to be applied to the minds of children, the different
natural dispositions of children, the different ways of addressing children, securing
confidence, affection and winning them to a love of learning and a sense of duty; and,
he referred to model and experimental schools in which much of the students' time was spent
first to observe, then to teach under an accomplished teacher, finally alone. To normal
schools, Mann gave full blooded support "and helped them to weather legislative storms for
a decade until they became firmly established as parts of the school system of the State. Probably nowhere else in the Union could the Normal School have been established at so early a date." (Cubberley). In the same year that Kay Shuttleworth managed official sanction for normal schools in England, Mann declared his belief in the normal schools as a new instrumentality in the advancement of the race.

Bache reporting in 1839 on his visit to Europe was won by Pestalozzian methods in the Seminaries of Teachers. At the seminary, students, he believed, acquired in the course of two or three years an experience equivalent to many years unguided efforts. The plan was yielding appropriate results in Holland, Switzerland, France and Saxony, while Austrian schools lagged who were not working along Pestalozzian lines. The best he saw, Weissenfels, Saxony, consisted of a normal school, or seminary for teachers, a preparatory, burgher, elementary school for poor, a school for the deaf and dumb, all except the preparatory school being practice schools for students. The courses of instruction included pedagogy, both the science and the art of teaching, taken by the Director. Pedagogy, Bache noted was also a study in French teacher training normal schools, thanks to Guizot.

As if earlier the 19th century had been a consolidation era, there broke on the world in the last two decades a speight of talk and activity that flowed over into the 20th century and which led directly to educational psychology. From 1850 till 1900 or 1910 there grew up as it were an awareness of the meaning of the last century's thought, but more particularly there grew up an increasing awareness of where this thought could lead. For four or five thousand years teachers had proceeded - with exceptions increasing in number after Montaigne and with the growth of humanitarianism - to break down the subject they were teaching into what they considered to be the elements and proceeded to have the child learn by heart. For four or five thousand years a few privileged people received this education to a secondary school level, a few of the few having an intelligence adequate enough to enable them to tolerate, enjoy, absorb and eventually use the matter taught. For the larger number of the few motives had to be found. It was empirically recognized that motives were needed before Herbart's time. The motives used were adult sanction wherein the child was encouraged to learn to please the teacher or his parents, or, the mode resorted to by most teachers, corporal punishment. The better teachers concentrated on finding different improved motives. The Jesuit concept of 'rivals' was so successful in achieving results they sought, that it exists till today, as a major external means of arousing interest in learning. Its appendages, "dux" and "dunce" we are quite familiar with, as we are with a "marks" system, though less so with "merit money". Social leaders arose out of those who reached the final years of classical learning. In turn they advocated a system in which they had succeeded. Those who failed appropriated a measure of vicarious joy from being one of the few who ran the course. Time obliterated the unpleasanteries. Anyway, the socio-theological opinion of the day advocated deriving satisfaction
from the effort applied to unpleasant processes. Education was preparation for life. In everyday living much has to be done that is unpleasant. Doing these tasks brings external, eternal rewards, or avoids penalties, so it is as well to train the mind—early—to unpleasant processes.

Early we noted the importance of universal education, humanitarianism, of social developments. Universal education grew up and helped to explode the age-old views just referred to above, at a time when it was possible for the altered views of philosophical thought to combine in the classroom with the elementary attempts to eliminate the illiterate Dame school type of teacher.

In England the first attempt at general education of the masses was carried out under Bell and Lancaster's monitorial system of the 1820's. Pupil teacher training of the 1850's was still based on the traditional methods of teaching the subject matter of the lessons. The art of teaching, the nature of the child were still to arrive in teacher training.

Quick in his Essays on Educational Reformers 1868 complained that all books on the History of Education were in German or some other foreign language. The irony was that his own essays only reached a second edition in 1890 in England by which time they had seen three pirated editions in America. The cycle was turning full tilt. America gained her impetus from Germany and England hers from America. This inter-flow of influence we have noted many times. The strong growth of Pestalozzian and Froebelian ideas in U.S.A. returned, for example, reinforced to Germany as shown in the founding of the Pestalozzi-Froebel Institute in Leipzig before the first world war.

Educational reform theory and technique traced their origins in Pestalozzi, Herbart and Froebel. The world which was ready for these three men had not been ready for Locke and Montaigne. Being ready for Pestalozzi, the Continent soon abandoned Bell's system. Jacotot in France carried little conviction. Pestalozzi succeeded. What Pestalozzi said—it had been said before—was met with attention. Pestalozzi and his system survived to give its direction to the following century, not because it was profoundly original, but because it was restating the ancient truths, and because through his own devotion he made it work, attracting at the same time by the beauty of his own character, disciples who saw it working.

Unfortunately, as training establishments took over the tenets of Pestalozzi and Froebel there occurred in another educational field a Ciceronian era. True, early texts such as Colburn's "First Lessons in Arithmetic on the Plan of Pestalozzi," 1821, contained vitality that led to popularity in America, even if they did not reach England, unless it was at Dotheby Hall where it is reported Nicholas learnt by doing. But the reaction set in, in Germany in 1848 where until 1862 Froebelian establishments were forbidden. A worse kind
of reaction occurred when after 1862 Pestalozzian ideas were systematized and formalized into the arid 'object lesson' that Spencer attacked as well conceived but ill-conducted. Even the famous Oswego movement begun in 1860, the ideas underlying which came indirectly from the Mayos in England and directly from Pestalozzi and whose feats became the "basis of actual teaching methods in all the more advance schools" in America, suffered the formal degeneration of believing it was following Pestalozzian practice. Good has come through, too, though. Educational psychologists have a special concern today for the handicapped child. Pestalozzian methods introduced a new basis for the care of handicapped children. In a broader field Pestalozzi's influence spread to that of vocational guidance, children's courts and amelioration of the lives of the poor.

The attempts Herbart made to establish education upon logically, mathematically conceived psychology and the influence he had in so doing had two marked effects within the realm of teacher training. Teachers became painstakingly aware of the importance of method. This, like so many Herbartian ideas has been as much a hindrance as a help. At a time when psychology possessed so little that applied directly to education, educators were avid for any systematic material, hence to teacher training in the mid-19th century, Herbartian psychology was a great help. It was a help, too, in so far as Herbart's emphasis upon the child's mind being a blank, into which ideas rose above the threshold of consciousness to form apperception masses, led to a decided emphasis upon the fundamental need for teachers. The argument was timely and appears likely to become timeless. The greatest hindrance lay in the stereotypes and jargon that accumulated - correlation, apperception - and the rigidity of the method that overlooked the individual who was being educated.

Having said this, however, the mistake must not be made of under-rating the very profoundly significant place of Herbartian psychology in the teacher training establishments of Germany, America and England well on into the 20th century. Herbartian influence upon Fechner and Wundt penetrated into physiological and hence experimental psychology. We have noted that trend earlier. What we now note is the influence of Herbart upon University courses relating psychology to education.

Herbart established pedagogical seminaries and experimental and practice schools, the most famous to adopt his measures being, Jena, Leipzig and Halle. Jena provided the great stimulus to the elaboration of general and special methods for elementary schools. The influence travelled to America. From Jena and Leipzig reputable teachers in the normal schools and the university faculty spread their influence widely. In Berlin in 1910 arrangements were made to hold in the winter semester, experimental psychology in the Psychological Institute - 3 hours a week; recent research in experimental psychology - 2 hours a week. At Bonn, in the Herbart Seminary, experimental psychology practice was held. At Breslau there is record of a course in the psychology of adolescence and at
Freiburg, of educational psychology.

A committee of 10 and another of 15 reported on secondary and elementary education in America in 1890 and 1895 respectively. These committees were inspired by Herbartian principles. A National Herbart Society was formed in America later to be known - as a result of Dewey's antagonism - as the National Society for the Study of Education. The influence in England was later - as we have come to expect by now. In 1904, Sir J. Adams, that scion of early 20th century English education published Herbartian Psychology Applied to Education, a masterly rendering of the professor's pedagogical views and particularly adaptable to teacher training programmes.

Another relevant trend in the development of educational psychology through the teacher training movement was of English origin. Sir F. Galton in 1883 published his Enquiries into Human Faculty. In it he applied statistical methods to information collected in tests under controlled conditions. Galton pointed the co-ordinating finger at an amorphous mass of interesting material about human behaviour. Conclusions previously attenuated were now reputedly proven. Faculties and transfer of training were two hardy annuals to go. With them went the arguments favouring the old type curricula. Most positively, though, science entered education from another angle - the proponent of heredity met the proponent for environment in the statistical isolation of mental activity processes.

Of particular value to more recent developments in teacher training schedules has been the systematizing of information on the development of children. Prior to Galton's time there had been several sporadic attempts to investigate the development of children. One can go back and recall occasional experiences, keen intuitions and the wide range of pre-conceived ideas of Plato, Comenius, the writer of Mother Goose, Rousseau, Pestalozzi, among others. Pestalozzi's 3 weeks' record of Tiedemann's son noted by Tiedemann in 1787 began a long line of increasingly significant works. Movements relating to child study, too, owe much to Pestalozzi and to Froebel, undoubtedly the giants among teachers who worked according to their knowledge of child nature in advance of the days of child psychology. The biologists and medical men were the first to attempt the educationists' requirements, though in too isolated a fashion to be of use to educationists for a long time. Indeed, the remarkable intuitive diary records of Darwin (cf. Darwin Reflex) had to await the searchings of Gesell and his Yale colleagues before their significance was appreciated.

A list of the more important works leading to a library of works on child study would include the names of Sigismund 1856; Kussmaul 1859; Taine 1876; Darwin 1877; Preyer 1881. Preyer's "Soul of the Child" was a systematic study of a child from birth, day by day till the end of the third year. Preyer's work was followed, but not in his own country, by the writings of Shinn 1893; Moore 1896; Major; Chamberlain, in America; Perey, Egger, Compayre, in France; Sully 1895; Stern 1904, in Germany.
Significant works that related to pedagogy appeared in 1876, in the Boletin de la Institucion Libre de Ensenanza. Earlier Waitz's "General Psychology," 1852, and Ziller's "Introduction to General Pedagogy," 1856, had appeared. In the same year W.F. Volkmann wrote his "Lehrbuch der Psychologie," which remained as the up-to-date text until Wundt's, "Physiologische Psychologie," 1874. Volkmann is the Herbartian who had perhaps the most influence upon modern psychology. A special influence was felt through the pedagogical seminars at the Universities of Jena, Leipzig and Gottingen. At the same time at Leipzig there was associated with, yet really independent of the University a Lehrer-Verein founded and supported by Elementary School Teachers with their own Psychological Institute, an early home for Educational Psychology. As early as 1911, at Leipzig, there was an Institute of Experimental Pedagogy under Brahm - this in addition to Wundt's Psychological Institute.

There was published in Germany in 1878, an Encyclopedia of Pedagogy. The National Educational Association in America formed a section for Child Study in 1880. A National Museum of Pedagogy was founded at Madrid in 1882. Germany's Allgemeiner Deutscher Verein fur Schul Reform came in 1889. In 1891, Hall founded the Pedagogical Seminary a new journal to meet the requirements of a new scientific approach to education. Later its lesser title became the greater when the journal became known as the Journal of Genetic Psychology. It was Hall's vitality that materially influenced the calling of the Chicago Exposition in 1893, where a group of educators whose concern was with the educational implications of the psychology of the child met. This conference added unity and purpose to the movement. It was directly followed when Sully founded the British Association for Child Study. In France, the Child Study movement was related to the classroom through the work of Binet, Simon, from 1894 until 1904, with their attempts to devise intelligence tests applicable first to young children but ultimately to people of all ages. This emphasis on mental testing has swept the American field and even English educators have been won over wholeheartedly to such testing - if recent Times Educational Supplement correspondence is any indication.

Galton's 1880 influence on Cattell and Thorndike led to an upsurge of Sociometric devices. Binet-Simon's testing techniques added to these easily applied statistical methods gave Educational Psychology its tools, "by 1910... Whipple could publish a Manual of Mental and Physical Tests which included discussions of 54 tests and precise directions for their administration. By then, Educational Psychology had become the general psychology of learning, motivation, emotions, heredity and environment, personality and individual differences - some of it derived from the use of tests and the rest of it
taken over bodily from the experimental laboratories. Intelligence was its special discovery." (Boring Page 569) In the field of intelligence names such as Spearman and Thurstone stand out.

The child study movement spread throughout Belgium, the Netherlands, Scandinavia, Switzerland, Italy. In Germany, Neumann established the movement in the school room, studying in addition to mental tests, the influence of the classroom situation upon the child's capacity for study.

There is strength in the child study movement for educational psychology. The breadth and depth of the findings in the field of child study relate directly to the work of educational psychology, to the training of the teacher and to the classroom and school. And in the child study movement concerned as it is with pre-natal and post-natal development and the whole child, the work of the biologist, the medical man, the physiologist, the psychologist, the psychiatrist, find greater and greater interplay. Studies related to the prenatal period have been the work of a celebrated team including, Artrom, Bolaffio, Carmichael, Coghill, Kuo, Weiss, Lashley, Cannon, Windle. General studies of the, mainly, post-natal field by Bowley, Bridges, Buhler, Anna Freud (and collaborators), Gesell, Isaacs, Watson and specific studies by many of these as well as Piaget, Bettleheim, Mowrer, Spitz, Spock, Gruenberg, Cohen, Ribble to mention few of a very long list, suggest the vast amount of energy that has been accumulated in the name of child study this century. In so far as this list is not selective and representative, but rather fleeting and cursory it may serve to suggest how valuable the contribution to educational psychology the child study movement has been.

Above it was suggested that the 1880's were almost as it were an introduction to a new era for educational psychology. There was a group of reputable psychologists and near-psychologists in Britain. Bain's Education as a Science 1878 was available; Ward had by then begun to lose the dominating influence of psychology, although his article on Psychology for the Encyclopedia Britannica was written for 1886. Two years before Sully's Outlines of Psychology and in the same year 1886, his Teachers Handbook of Psychology. Galton was writing about the same time. Darwin and Spencer had written. Stout was writing his texts, the 2 volumes entitled Analytical Psychology in 1896 and the Manual that was to run to its 10th impression in 1924, came out in 1899. His Groundwork of Psychology came out in 1903. Lloyd Morgan's Introduction to Comparative Psychology, 1894, Habit and Instinct, 1896 were followed by his Psychology for Teachers 1905. American had three psychologists of repute, James whose important Psychological books, Principles of Psychology, Briefer Course Textbook of Psychology, and Talks to Teachers on Psychology were published in 1890, 1892 and 1899 respectively; Hall, whose The Contents of Children's Minds, 1883, makes him a pioneer in Child Psychology, as do his 1893 Boston Lectures to Teachers. His influence on his long list of pupils and his standard work for a long time Adolescence; Its Psychology, and its Relation to Physiology, Anthropology, Sociology, Sex,
Crime, Religion and Education 1904, brought Hall into vogue; Ladd's Primer of Psychology dates from 1894. Cattell, Titchener, Thorndike had yet to arrive.

Germany had Brentano, Wundt, Volkmann and, after the turn of the century, Munsterberg. Significant of the times is Boring's report that "James in his Harvard courses used Spencer, Sully, Bain and Ladd."

French work lay mainly in the physiological, psychological and psychopathological fields. Ribot interpreted England, 1870, and Germany, 1879 to France and Binet contributed in 1886 with his Psychology of Reasoning.

The threads leading to the development of educational psychology were profuse and the interactions and forces operating to develop it as a science inextricable. The zeitgeist was working towards educational psychology. The situation that appeared to crystallize the establishment was appropriately enough in the hands of Dewey, that persistent philosopher of social change, equally appropriately in the year 1900. In that year Dewey's Presidential Address to the American Psychological Association, "Psychology and Social Practice" was a plea and a programme for educational psychology. Dewey as Director of Chicago's School of Education 1902 - 1904 and at Columbia 1904 - 1930, actively propagated for the establishment of functionalism, of, that is, educational psychology. Six years after Dewey, James R. Angell speaking at the same Association for the same purpose, selected "The Province of Functional Psychology". In his paper he argued for a psychology of mental operations in contrast to the psychology of mental elements. It was Carr, exemplifying Angell, who added the significance of motivating factors in the workings of a Functional Psychology. Functional and dynamic psychology drew closer together; the role of perception and action intensified as the studies developed, as time passed.

Hall promoted child study in his lectures to teachers on current educational problems, his use of questionnaires to obtain information, his papers on children's lies, the child's mind, adolescence, his editorship of the Pedagogical Seminary.

By 1895 new courses in pedagogy, or courses in the new pedagogy were available at Yale, Harvard, Princeton, Pennsylvania, where Witmer in 1896 founded the Psychological Clinic. In 1899 the New York Teachers' Training College came under the aegis of Columbia University and the guidance of Thorndike. "It was at this time that educational psychology became distinct from pedagogy and from child study." (Boring). In a recent communication (JULY, 1954) from Wm. C. Trow, Professor of Educational Psychology, University of Michigan he comments, "Presumably E.C. Thorndike was the first professor of Educational Psychology - at Teachers' College Columbia, I believe in 1911, though I am not sure of this date, and the authenticity of this statement has been questioned." Thorndike wrote a small Educational Psychology in 1903. His three volume work by the same title appeared in 1914. In 1910 Teachers' College Columbia had one course on General and Educational Psychology. This
included - the application of experimental and physiological psychology to education; readings in educational psychology; the psychology of childhood; the psychology and education of exceptional children; educational psychology; the psychology of elementary school subjects; the application of psychology and statistical method to education.

Chicago University course offered Educational Psychology and Mental Hygiene that same year. Educational psychology could be taken to advanced degree and there was offering Individual Psychology, elementary Genetic Psychology, Child Study, Experimental Education, the psychology of reading, and writing; educational tests.

England showed a similar tendency to absorb the newer mode of thinking. By 1910, there showed a considerable advance on the days when the study of education under the title of Didactics of Pedagogy could be dispensed with in one or two books such as Potter and Emerson, 'The School and the Schoolmaster; 1842, or Page's, 'Theory and Practice of Teaching,' 1847. In 1911 began the Journal of Experimental Pedagogy which in 1923 became the Forum of Education and by 1931, the British Journal of Educational Psychology. Manchester's Training College Record which later became the Journal of Experimental Psychology and Training College Record as early as 1910, devoted space to Experimental Pedagogy. By 1930, all the Universities, except Oxford, had recognized that a division was needed between psychology and philosophy. The Paidologist, the official journal of the British Child Study Association which links the names of Hall and Lloyd Morgan, in 1908 became Child Study - the journal of the Child Study Society. In 1919, the educational section of the British Psychological Society was formed and flourished so that in 1923 a standing committee including Susan Isaacs, Percy Nunn, Cyril Burt, supplemented the work of the section and published lists of research work in progress at the various educational institutions in Great Britain.

The National Institute of Industrial Psychology contributed to educational development through the use of mental tests. Mental and aptitude tests suitable for vocational guidance were examined, thereby stimulating research into problems of a wide educational significance. The Medical Research Council showed its awareness of a responsibility to broad issues and encouraged a wide field of contributors. From 1917, special reports have appeared periodically on topics vital to teachers, - childhood mortality, 1917; science of ventilation 1919; rickets, 1918 and 1921; teeth and structure and dental disease, 1922; the relation between home conditions and the intelligence of school children, 1923. These led on, till in 1935 there appeared studies on incentives, 1935; the acquisition of skill, a study of learning curves, and the prognostic value of psychological tests; and in 1938 P.E. Vernon reported on the Assessment of Psychological Qualities by Verbal Methods.

The Board of Education in 1924 published a report on Psychological Tests which contained a useful summary of available evidence on types of psychological tests and their application to educational issues. 1928 saw the formation of the Scottish Council for
Educational Research.

The Ministry of Education in Germany, through Hillebrand, have advised that "in teacher training the idea of pedagogical psychology was operative before the institution of Teacher-University-Colleges (1926). Evidence for this is seen in the use by Training Colleges of textbooks by E. Zuhladorff (1905), L. Habrich (1908), A. Stossmer (1908). In the new academic teacher education pedagogical psychology really forms the kernel of the psychological training of the teacher. The idea of an educational psychology or pedagogical psychology was first conceived by Herbart. However, the term pedagogical psychology seems first to have emerged, as the name of a new branch of study, in 1899 - in the title of the Zeitschrift fur pedagogische psychologie, founded by Kemsies, and later produced by O. Scheibner, W. Stern, A. Fischer. Since then we have had an abundance of writings, textbooks and articles, in this domain. The University took over research and teaching in pedagogical psychology - beginning with Meumann's "Course of Lectures on the Introduction to Experimental Pedagogy and its Psychological Foundation." (1907 - 1920) - up to the first systematic presentation of a pedagogical psychology, which appeared in the 'between wars' period, by G. Grunewald 1921, W. O. Doring 1929, O. Tumlirz 1930, A. Busemann 1932, O. Klemm 1933. The 16th Congress of the German Psychological Society devoted itself, in connexion with the problem of character, especially to the problem of education.

Up to the present pedagogical psychology is represented only to a small extent in special projects of the Universities. Naturally it is taught; at times it represents an examination objective for the Diploma in Psychological Testing. During University training psychology work is left to the discretion of the student. During the practical training of the teacher after the University period, it is obligatory.

In Teacher Education, pedagogical psychology has been constantly carried forward, in some form or other, ever since the days of Herbart. At the Teacher-University-Colleges (since 1926) it is included as a fixed constituent in the lecture courses and practice of the general plan for psychological training. On the other hand no official course is laid down. Pedagogical psychology has been dealt with in the preparation of post-primary teachers since 1930. Since 1950 special attention has been given to the questions of psychology of development, of learning, of character (Human Psychology)." (Hillebrand)

Within the professional training of teachers the National Society for the Study of Education in its 28th Year Book reported (page 408) scholars registered in courses in Child Development and related fields in several American pre-school institutions. It reported, "professional training in child development with a center of interest in the pre-school child is a new movement in education." It also reported that it was about 1916 that "the first center for the scientific study of normal and superior children at a University was established." The training given by these Universities was most frequently
orientated around psychology as the major field. Eleven training establishments in 1928 required the students to undertake at least one course in child psychology, five required more than one course of not less than 2 hours a week for 18 weeks. Mental Hygiene, educational measurement featured on some programmes. The prescription for Psychology of Childhood would be drawn from this field; mental growth and development, and contemporary research, ontogenetic psychology, infancy, early childhood, activities of young children, testing, exceptional children, adolescence. Courses in general psychology were available to discuss the topics: nature and varieties of human nature; psycho-educational clinics; mental adjustment, personality traits, psychology of learning, social psychology, mental and educational measurements.

In the 1951 Unesco publication of the International Bureau of Education number 117 there was this report, "Advances in child psychology and teaching methods call for higher levels of training than was generally the case between the two world wars." Question 5 of the 10 addressed to the Ministries of Education, 59 of whom replied, was worded, "5. Kindly describe in detail by what methods the following is given:

a. Pedagogical preparation (History of education, etc.)

b. Psychological preparation (general psychology, experimental psychology, child psychology, adolescent psychology, etc.)."}

Some Teacher Training establishments, 21 in number, have courses that do not extend beyond the age limit for secondary schooling. As a rule these institutions give general and professional education. Some of the Teachers' Training Colleges have many points of resemblance with the University courses, in the respective countries but are at a level that is still that of general education. University collaboration in primary teacher training varies from the one extreme where normal institutions are responsible for the entire training course and the other where a University faculty is responsible for the entire course.

The report noted that in certain countries different systems of teacher training exist side by side and believed this may be due to transition, regional differences, social differences, endeavours to adapt to primary teaching needs, and to allow several means of access to the profession. Training courses are different for men and women only in Catholic Quebec, India, Pakistan and Scotland, although in some other countries the sexes are segregated for training. Certain subjects are taken by men and by women only, in a larger number of countries.

Psychology comes into the training curriculum of all but seven of the countries replying to the enquiry, and the study of it in the majority of these countries finds expression in very many ways in the training course. After general psychology, it is child and educational psychology which appear most often in the time tables. Adolescent psychology is frequently added to the study of child psychology and, in some countries the two are studied together under the heading of Genetic psychology. Students are quite often given
an introduction to school psychometry, psychological statistics, and diagnosis of psychological abnormality. Methods vary from lecture courses to direct observation and practical work undertaken by the students.

In New Zealand, each Training College includes courses on elementary psychology. The Report of the 1948 Consultative Committee on the Recruitment, Education and Training of Teachers recommended that preparation for work in the Lower Primary School as well as in the upper Primary and Intermediate School include Child Study. The prescription recommended was to cover physical, social emotional and intellectual development from infancy to adolescence. Emphasis, it warned, would naturally be placed on those topics of most importance to the teacher and these in their opinion include: the child's basic psychological needs, individual differences, maturation and learning, the growth of personality, and the child's relations with his parents, adults generally and other children. One Training College at least meets these requirements in detail during the course of 72 hours of lectures, plus practical work and observations. At this College stress is placed upon parent participation in education, and on sound partnership among teacher, parent and child. Constant reference is made, as the report recommends, to the New Zealand environment as a formative agency and particularly to the varying patterns of family life and to current practices in bringing up children. Again as the report recommended, there is awareness of matters pertaining to Maori and European children.

Some general psychology is required as a background to the course, for example, an understanding of what the psychologists intend by intelligence.

The report took space to advise that prospective teachers of young children needed to be made aware of how much there is to know about children, to learn to look for causes behind symptoms, to understand how their attitudes and behaviour affect their pupils, to acquire a certain quiet detachment. Yet, the report realized, if this training tended to inhibit warmly spontaneous relationships with children the gain would be doubtful. The main emphasis recommended was to be on normal development, deviations from it (emotional maladjustment, behaviour problems, intellectual backwardness and brightness, special talents, and defects) receiving careful attention. Case study methods should be part of the training, as should the use of mental and scholastic tests, remedial procedures.

The teacher, the report reminded, is not a clinician; but (s)he should be sensitive to the existence of problems of development, should be able to deal reasonably with the commoner and simpler ones, and should know enough to co-operate intelligently with experts on the handling of those that are more difficult or abnormal.

Currently in New Zealand Universities courses are available for teachers and others in educational psychology. General psychology is at one University suggested as a valuable pre-requisite to a study of education. The educational psychology course commences in the
second year, continues in the third year and is one paper in the Master's Degree. The prescription is worded as having particular reference to learning and adjustment in normal children. This course is preceded in the first year by a general introduction to the chief physiological, psychological and moral characteristics of the infant, child, adolescent and adult. In the second year the course comprises a general consideration of the learning process and its relation to intellectual and emotional development, as well as the psychology of learning and teaching selected school subjects. The third year has particular reference to exceptional children and includes a course of practical observational work in educational psychology. At the M.A. and Honours stage, an advanced treatment of current research in educational psychology is undertaken, and, in at least one college with particular reference to the psychological aspects of contemporary problems in the field of education.

The pictures of England, Scotland, U.S.A. in broad course outline, are very similar, namely considerable latitude of choice by the lecturers, regular courses in education and in psychology with emphasis particularly on physical, emotional, intellectual and social development of children. In France, the syllabus is more centrally determined, but the emphasis is on child and adolescent psychology rather than on general or experimental. In Austria, the emphasis is on educational psychology; whereas Switzerland covers instruction in general, child, experimental and character psychology.

For the teacher who trains in New Zealand at a Teachers' (Training) College, and this applies largely to the Normal Schools of U.K. and U.S.A., the training that he receives today emphasises the need for knowledge of the child. The advancement upon conditions at the beginning of the century can be seen by comparing a current educational psychology textbook, say, Valentine, Skinner, Cronbach, or a child psychology text, say Breckenbridge and Vincent, Morgan or Carmichael with Lloyd Morgan's Psychology for the Teacher, or even the more teacher orientated Munsterberg's Psychology and the Teacher. Lloyd Morgan's chapter headings - States of consciousness; association; experience; perception; analysis and generalization; description and explanation, mental development; language and thought; literature, character and conduct - read somewhat differently from, say, Cole's Psychology of Adolescence chapter headings - adolescence as a period of human growth; bodily growth, health and hygiene, emotional growth, emotions and the school, emotional deviates, social growth, the social life of the school, the adolescent and his home, delinquency, moral growth, community influence, intellectual-cultural interests, intellectual deviates, choice of vocation, the High School curriculum, the end of adolescence. Any teacher seeking the knowledge that Lloyd Morgan imparted would needs follow a University course in a faculty of Psychology - or Philosophy where the two fields have not yet separated.

The 1948 Consultative Committee made clear one distinction we must now notice. It said, (Page 52), "The teacher is not a clinician... she should know enough to co-operate intelligently with experts in the handling of these (children) that are more abnormal or more
difficult." The teacher in training is given an introductory course, a knowledge of 'normal' behaviour. Gradually it is becoming realized that this course does not fit him or her to handle all types of behaviour; that when remedial work is called for, specialist training is essential.

Despite this desirable limiting of responsibility and the consequent support that a teacher can obtain from inspectors and experts, it is too early yet to claim that a teacher's role is clearly envisaged by the majority of teachers as being mainly a preventive one. What can, perhaps, be claimed is that the awareness is growing. One symptom of its growth is the formation of the Child Care Council under the chairmanship of the senior inspector; another is the consideration of the desirability to have a committee that would facilitate the passage of information and literature to the practising teacher on child development and mental hygiene. The major symptom is the greater preparedness of teachers, parents and schools to consult with the educational psychologists.

Quite inadequate in size as is this team for a population the size and scatter of New Zealand, nevertheless a start has been made, and appointments are proceeding. These psychologists and their assistants work closely with issues involving teachers in the practical field. Together with university faculties of education and psychology or philosophy and lecturers in psychology, child development and the psychology of education at Teachers' Colleges, they represent the full blooded educational psychology of this country. In Australia, U.K., and U.S.A., as elsewhere, psychologists attached to clinics, child guidance, vocational guidance, psychiatric, may supplement the work in their own countries of psychiatrists. Psychologists, too, are on the staff of medical establishments overseas.

When we look at these developments we are led to wonder whether educational psychology has continued as Sir J. Adams once maintained it had, to capture education. There is still a remoteness between educational psychology and education that one can deprecate, on the grounds that the more intimately the two work the more scientific, the more humane, will education continue to grow, if mainly because the educational psychologist will be more able to know more about the needs of teachers the closer he knows teachers.

That there has been something of a gap between educational psychology and education; that educational psychology has been relegated more to narrowed fields of intelligence testing, the determination of remedial techniques, the restoration of a greater degree of normalcy to the abnormal, is descriptive rather than clinical, is apparent in some four directions.

In New Zealand, the work of the educational psychologist is primarily that of interviewing children who are not competing for age and ability with other children, who present behaviour difficulties, reading or other specific subject backwardness. The positive aspects of his work, are, because of this emphasis, severely curtailed, or at least
show out in restorative rather than in preventive directions. Whether this emphasis must always remain depends upon the personnel employed, regional circumstances, Education Department (and other, including Health) policy; and the introduction of more advanced clinical facilities in extension of the already existing University clinics, or Guidance clinics of the Health Department. In U.K. and U.S.A as in France both University and State Health Department clinics promote the extension of educational psychological facilities; as do Home Science of Home Economic Departments, privately endowed and other institutions in U.S.A. and Canada.

In Scotland, where the training of teachers was placed on a National basis in 1920, a child psychologist was appointed in 1923 to the Glasgow Training College Staff. He was also psychological adviser to the Glasgow Education Committee. As psychology became a study of human behaviour, Scotland naturally thought of it as related to education. The teacher was a recognized authority on childhood and was consulted. He in turn accepted behaviour difficulties and ethical problems as being within his province. In the 1920's the Departments of Psychology and Education at the four Universities created a higher degree in education and psychology, the B.E., or Bachelor of Education. Only trained teacher graduates could enrol. Wilkie and Knight in 1932 established a clinic for school children in which Training College staff assisted.

Second, the field that has gained tremendously from U.S.A., U.K., France, Switzerland, and psychological practice in those countries has been that of Individual Differences. Present educational practice, short as it may be of the desirable, reflects a greatly increased knowledge of children as individuals and is a contrast to the older prevailing practices of the first decade of this century. Then, classes, the class, might have 90 pupils, graded according to their age or whether they had passed the annual examination. They were heterogeneous, standard one having, perhaps, 15 year olds in it. There was all too little creative, expression work in a system that emphasised the intellectual value of instruction. The change for the better, taking notice of individual differences, is attributable in part to advances in educational and in part to psychological research. At the same time, a variety of other forces were instrumental in the change, not the least being educators themselves and social humanitarianism.

Knowledge about child development, for example, has led to striking improvements in the education of children up to 7 years. We have come to appreciate the need for security, to relate to things as well as people, to test reality, to play, for companionship, for developmental equipment, for warm continuous relationships with peers and parents, a manipulated environment to stimulate the child to attempt for himself; to express feelings of hostility, jealousy, destructiveness, if creativity, personality are to flourish. All this knowledge is basic to the teacher's art. In the older age group, the continued development of reasoning power, imaginative application, sense and ability of achievement, intellectual
curiosity, the importance of rhythm, collecting, as part of satisfying emotional responses in school and out of it, have gathered an increasing emphasis.

The measurement of intelligence remains largely, despite the spread among lay persons, the perquisite of the specially trained educational psychologist. Teachers themselves receive little instruction in administering such tests, so that the intelligence, many educational and diagnostic as well as most remedial, tests are subject to some neglect and at times mishandling. The use of one test on which to base a judgment; administering procedures altered because the teacher considered the original official procedure inadequate or poorly stated; lack of rapporte between tester and tested; inadequate interpretation of the intelligence quotient both in rigid use of a figure to mean too much as well as in acquainting children or parents with the figure; deciding to set aside the norms if they do not suit our overt purpose, are a few of the all too common indicators that testing needs still to be cautiously controlled.

Significant though the intelligence test - to select a main group of tests for mention - is for educational practice and planning, it might be suggested that unless a teacher has had special training in the whole field of intelligence testing, he ought not to enter the results on an official card. Use of the mark he obtains for his own purposes could be encouraged, but not its entry on a record that will pass on to others. To the untrained, an intelligence quotient is vague in meaning. The proposal to limit the use of the intelligence test should be off-set by a search for other objective estimates to replace and supplement test results. Perhaps the determining of an Organismic Age based on observations recorded of children's natural activities not in a test situation offers a fruitful field.

Use of the Organismic age might avoid the risk of error based on claiming that a child is necessarily backward in reading because his reading age is lower than his mental age. Only if the reading age is lower than the organismic age would there be reading backwardness.

Mental testing is a field of educational psychology wherein the division separating the expert from the lay teacher may be at its greatest.

Finally, the trend in educational psychological research has veered. Investigations into testing procedures, teaching methods, types of examination, transfer of training, the disciplinary value of school subjects, raised new problems. Unsolved problems kept recurring and suggesting the need for new thinking, or changed emphases. As in school the trend was from Latin to John, so the trend in educational psychology was to mental, personality, attitude testing. The influence of social psychology, psychiatry, of the interplay of many related fields of work has thrown heavy emphasis on to the importance of the child's socio-emotional life. What are still needed are extensive longitudinal studies
to penetrate the depths of present findings. But, as has been indicated, only a gradual shift towards absorbing this newer emphasis has occurred within the field of educational psychology. An analysis of the index to all articles in the British Journal of Educational Psychology, 1941 - 1950, shows that 40 out of 156 papers, articles, reviews, addresses could be classified as showing an awareness of the emotional, personality, child development, behavioural concepts.

In the U.K., State Department appointees in educational psychology must reach a given standard such as "degree with first or second class honours in psychology or degree of B. Ed. of a Scottish or any other British University, with first or second class honours in psychology or with distinction or with an approved equivalent qualification." However, the open market there as in New Zealand calls for no such qualifications. This is one major reason why psychology in general has remained relegated to a minor field.

Another reason is the emphasis placed, in educational psychology, upon remedial rather than on preventive work. The restoration of the unwell absorbs much of the energies of the psychologist. In the past, the field of the unwell has been the prerogative of the medical practitioner. Inevitably in medicine the practitioner must thoroughly examine to ensure that abnormalities are not aggravating or are not resulting in psychological disturbances. Therefore, we require the psychiatrist, a specialist in medical, neurological and psychologically fields. Such a person is qualified to attend to any unwell cases presenting themselves. Gradually we must develop the realisation that only one part of the educational psychologist's task is to restore. We must work towards the idea that the bulk of his work is to prevent illness occurring. Once the preventive approach is stressed the educational psychologist will gain the status he deserves. He might well be accorded opportunities of seeing children before they reached the stage of needing remedial treatment. One way in which the awareness of the need for educational psychologists could be developed is in teacher training. Teachers encouraged to advise their headmasters of children manifesting persistent and excessive symptoms could be the fountain head of preventing maladjustments reaching acute stages.

With the position as it is there is a strong feeling amounting to conviction that the work of the psychologist is of necessity subordinate to that of a psychiatrist. Polatin and Philitine, in "How Psychiatry Helps" suggest, "The psychologist is an invaluable aid to the psychiatrist, in the same way that the laboratory technician is indispensable to any physician. During the course of treatment the psychologist may help with tests to determine special aptitudes. But just as the laboratory technician... so, the psychologist has certain limitations." (Page 21). A more thorough going examination of the relationship between the psychiatrist and the psychologist appeared in the 1948 Privy Council Report of an Expert
Committee on "The Work of Psychologists and Psychiatrists in the Services." The authors of the report recognized that "for more than 30 years psychology has been applied in many countries in education and child welfare" and that "it is now established for practical purposes that psychological tests and other selection procedures can discriminate individual aptitudes and predict suitability for various occupational groups." They also recognized that "developments have taken place in schools and colleges where the assessment of educability and the study of teaching and training methods have made substantial progress." The report did not consider "that the aid of a professional psychologist is necessary in every problem which can be termed psychological. The plain man's experience of life will often serve..." We consider it highly important that there should be fostered a widespread awareness of psychological considerations, a readiness to seek psychological advice and to encourage psychologists to undertake research on new problems."

Merrill-Palmer Institute operates so that there is no one person more significant than the others, psychiatrist, psychologist, sociologist. All share in making the decisions had the psychological world a few more Sister Marie Hilde's (Lecturer in Psychology on the staff of Notre Dame Teachers' Training College for Catholic women till she died in 1951, and Director of the Notre Dame Child Guidance Clinic), the Merrill-Palmer pattern might evolve naturally.

Beaglehole's suggestion in his Mental Health in New Zealand, 1950, (Page 128), section 2, suggested a step worthy of consideration. A Division of Psychological Services he envisaged as having four functions, clinical, diagnostic and treatment for all forms of abnormality in children through to adolescence, remedial service for retarded children, advisory vocational guidance.

In its 105th publication, School Psychologists, the International Bureau of Education stated, "It appears,... that psychology will occupy a more and more important place in the programme of studies of future teachers. It is undeniable that the knowledge of child and adolescent development and the general characteristics of pupils assist in the carrying out of the different tasks entrusted to the teacher." Then the report referred to the maladjusted pupils, a thorough study of whose difficulties and their causes, the report insisted must be undertaken. The report indicated that "the present psychological training of teachers is not sufficient for the solution of such problems. In such cases it is necessary to seek the help of specialists, of, that is, educational psychologists." The report also referred to the overlapping, some of which was particularly noticeable, due to the "simultaneous development of different applications of psychology."

It is pertinent to interpolate here a paraphrase of Knight Dunlap's commentary in 1925. "An examination of the courses offered under the name of educational psychology in colleges and universities throughout the United States showed some courses containing one group of psychological topics, some another. Frequently when two courses were compared
neither contained anything the other did. Altogether the courses scattered over the entire field of psychology, although since the introduction of intelligence tests the courses in educational psychology tended to that topic more and more and many courses contained nothing but a routine training in the scoring of intelligence tests. Practically all the research articles in the journals and monographs of educational psychology were in their scope and their topics such as were common in general and individual psychology." Dunlap concluded "a real educational psychology will be developed." (J. Genetic Psych. 1925).

The importance that the writers of Unesco report 105 accorded to mental testing appeared in the opening remarks of their general summary. "The successful work undertaken in France at the beginning of the century by Binet and Simon has stimulated the interest of a number of educationalists all over the world, who have tried to extend the field of psychology applied to education. Thus was educational psychology introduced and developed." According to the information received, from different countries, the aims of educational psychology can be divided into three main groups:

a. detection of backward children, which is often the beginning of diagnosis, and treatment of various difficulties in adaptation.
b. educational guidance involving the testing and adaptation of educational methods.
c. pre-vocational guidance.

Detection of backward children was the first and most important preoccupation. Something of the breadth of this concept can be seen on Page 11, "some of the most important duties assigned to educational psychology are to place each child in the class best suited for him, to adapt this class to the most varied types of children, keeping in mind the type of difficulties or aptitudes belonging to each group, and the establishment in some way of individual treatment in school. Twenty of the 44 replies to the questionnaire mentioned this aim. In 10 were they directly concerned with vocational or pre-vocational guidance.

In many countries specialized psychologists are trained to attend to the particular needs of schools and pupils. A large number of teachers, also, show interest in educational psychology. However, in no country is educational psychology practised in all schools under the charge of a body of specialists. All the 44 countries had in 1948, some psychological services.

Educational psychologists usually have a university training in education and psychology. Sometimes psychological training is basic, in others educational training. Some countries require their educational psychologists to have spent several years teaching. Sometimes the psychological services are in the hands of the school doctors.

Teachers who, in addition to teaching in schools, are mainly in charge of the practice of educational psychology, are often very hurriedly trained. In the majority of countries
it is the members of the teaching profession who are chiefly interested in the practice of educational psychology - some of them on their own initiative (Ecuador) spend a large part of their time in this work.

The services of educational psychology and the supervision of the work of the psychologists are in the majority of cases organised by the central or local school authority. The salaries of educational psychologists is sometimes better and sometimes the same as that of equivalent members of the teaching profession.

In the plans for development lie the real hopes. Replies "have shown the real need for educational psychological services and how their usage is always appreciated." Extension of present services, creation of new institutions, are encompassed in three principal directions:

a. establishment of research institutions for the main purpose of carrying out supervision of school achievement and the elaboration of new teaching methods.

b. establishment of educational and vocational guidance on a psychological basis.

c. training of educational psychologists.

Item (b) is, in some countries, to apply to all children.

In its concluding chapters the report says, "In spite of its recent establishment and the obstacles of all kinds with which its pioneers have had to deal, educational psychology seems to have out-grown the stage of infancy and entered the period of practical application in many countries. To apply psychology to the diagnosis of backward children and to guidance, is, in any case considered a necessity. The present problems are chiefly concerned with the formation and generalization of services.

The immense interest which educational psychology has awakened in educationalists and educational authorities alike encourages hope for the future."

In retrospect, despite the valuable contributions from a variety of disciplines, despite a desire to see educational psychology more adequately considered and more adequately catering for educational theory and practice, the verdict must be that the practising teacher and his training have played a fundamental part in the life flow of educational psychology.

What have been the main forces leading to the present circumstances? Primarily the resultant of the zeitgeist, the interaction of a series of events, nevertheless, there have been within the teaching world several matters affecting improvements. Until the 1850's and nearer to the 1880's and 1900's, teacher training and certification was arriving. Once it had arrived there continued to be the problems of supply to meet an increased demand. The significant point was a demand for able persons. These persons re-
quired improved conditions of work, not only financial but also educational. Gradually improved methods of certification and higher standards of training were expected and we arrived gradually at the development of a professional attitude among teachers.

Then, too, every change in education and in educational practice has a bearing on the teachers' training. Hence, there grew up a demand for increased pre-service education including professional accomplishments. Teachers were admitted after selection. Once in training, guidance educational and social, became a feature of their courses; and as they completed their training, placement and follow up plans were slowly inaugurated. A growing use of the teacher's knowledge once he was practising developed, and this in turn led to refresher courses, and other means of in-service training, as well as exchanges within and beyond his own country.

Those responsible in the training institution for the teachers' certification have been increasingly required to reach higher standards of scholarship and professional responsibility.

In this century, as well as the development of psychology, we have witnessed the development of education as a science. Herbart's systematizing was desperately grappled only to lead to a too formal approach to techniques. However, Dewey's philosophy of education as growth and Thorndike's emphasis on individual differences threw doubt on the Herbartian ideas of formal discipline and technique selection. The individualized teaching and pupil-motivated-projects were submitted to mathematical analysis and verified satisfyingly to a developing educational science.

More changes were to be rung, however, influenced among other factors, by biological developments; the importance of genetic studies of the child, by the Behaviourists; by improving knowledge of physiology; knowledge about repressions, personality integration and identification; about Gestalten; and, a dynamic approach to living.

Techniques of curricular demonstration; methods of measuring educational procedures; methods of teaching closely akin to the needs of special subjects; teaching skills; diagnostic teaching; auditory and visual aids, all these were also part of that improvement.

And, too, educational theories were formulated. Their conclusions confirmed psychological thought; definitions were sharpened and issues were clarified. Within educational practice there grew up a need for educational psychology having to do with some biological factors, some individual factors, some sociological factors, something, indeed, of everything pertaining to practical education. The educational psychology field carved its own niche, not adequately, by no means tidily, but certainly persistently.
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"Some Pathological Processes Set in Train by Early Mother-Child Separation."- Bowlby.

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PRIVATE CORRESPONDENCE

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This century has seen the conquest of forest and plain, the spanning of the seas and skies, the harnessing of the inaccessible vibrations, the consummation of man on the globe. The end of an epoch is the beginning of an era. This era sees man sure of his powers of delving into matter, determined to delve beyond human consciousness, bent on the road to release and realize human potential.

From astrology to astronomy, from medicine man to medical man, from awareness of being human to awareness of being humane, from physiology to the psyche, from the superstitious to the scientific, this has been the broad sweep of the growth of man's thought. All disciplines have played a part, including education, education as a science and educational psychology.

It is as though educational psychology has funnelled all the interweaving threads of men's thoughts towards itself and having further interwoven them, sent them on their way afresh, in the course of time for them to unravel once obscure thought. Amorphous philosophical thought has been gradually crystallized. The process of analysis continues as each thread is made more specific. And yet as comprehension dawns, the specificity is reabsorbed into the total picture. From the flasks of the alchemist arose the science of chemistry. The chemists' tool, the atom, achieved by rugged analysis gave impetus to a method used in the biological and psychological study of man, atomising. Man was atomised with a view to establishing those parts which, when re-assembled, would make man. Having attempted to atomise man, the present journey involves integrating him.

In this perpetual interplay there is no cause and no effect. Educational Psychology lies close to psychology, close also to biology, close to physiology, close to medicine, closest of all to education.

When, therefore, we speak of educational psychology, we speak of virtually the whole field of psychology. Here is posed a problem. Psychological theory changes psychological experiments. But in the process of change theory itself is changed. There is constant interplay. The educationist may so easily become outdated and be applying in education that which the psychologist no longer maintains.

Again, Educational Psychology is concerned with the whole field of education. And, although educational theory and practice are not dependent upon nor bounded by educational psychology, nevertheless, changes in any part, change the whole, the part that gives rise to the change being itself changed.

Because it relates to the whole field of both psychology and of education, educational psychology may appear as a somewhat undiscriminating, pragmatic field of thought. Pragmatic it may be, as the educators in constant touch with active beings, are impressed
with the need for functional studies. It is for this reason that "Act" psychology, functional psychology, empirical and eventually experimental methods in psychology and philosophy were so important in the development of educational psychology.

Undiscriminating, is, on the other hand, not apposite. The educational psychologist has rather, to be able to discriminate painstakingly what is pertinent to him and his work and decide unerringly what and how much he shall use. He uses the tests that psychology devises; he accepts the methods of the Behaviourists, its objectivity, but is still prepared to employ introspective methods. He will accept the Behaviourists' basic emotional pattern but prefers a more causative, dynamic, genetic approach, to a much larger field of emotions than a true Behaviourist would allow. That is, each educational psychologist discriminates among the current views. Each takes what he believes he can use and reconcile to his own understanding so that he can help the process of teaching either as a practising teacher or as a specialist to the practising teacher. A few there have been who have struck their own course.

Educational Psychology has arrived. It could only arrive when the pure, general psychology had weaned itself from philosophy. This weaning process took till nearly 1900, and suffered or enjoyed many vicissitudes. The lineage can be taken back to Plato and Aristotle, thence to Descartes, whose dualism between a free soul and a determined body is the root of modern, even present day, mentalism. Locke's empiricism and associationism and the close relation of the latter to psychological hedonism, have a line of development through Hartley, Bentham, the Mills and show in Freud's Pleasure Principle, Thorndike's Law of Effect. Locke, through to Berkeley, Wundt, Titchener, Brentano, Kulpe, believed in consciousness. Opposed to this point of view are the data of behaviour as studied by Bechterev, Pavlov, Watson, Weiss, Holt. In educational psychology, use is made of all available techniques, introspection, verbal, behaviour studies, and less notice accorded epistemology.

Psychology has reference early to physiology. The early physiological findings that gave rise to isolated psychological facts gave way through various stages to a physiological psychology which James introduced into America from the German experimental physiological psychology. Here the galaxy of great names, Helmholtz, Hering, Muller, Wundt only serves to eclipse a longer list of important names.

Astronomy's concern with personal errors links that science with psychology, a link that develops with the interests both share in reaction time, attitude and motivation (as James and Lange conceived it).

"Scientific educational research has become much more powerful in recent years by copying the methods which R.A. Fisher developed in the field of agriculture. His principles of experimental design and analysis of variance apply not only to the effects of
different manures on the growth of crops or of different diets on farm animals, but also
to the factors that assist the growth of children's minds. Yet this analogy carries with
it a moral. Each child shows unique characteristics to a far greater extent than do indi-
vidual plants of wheat; and a class of children with its teacher is a separate organism,
differing from other similar organisms much more than do different litters of pigs." (Vernon).

Animal psychology, statistics, biology, medicine, psychiatry, have all given to the
development of educational psychology, as we can see from two of them. The educational
psychologist's procedures resemble more closely those of the doctor than the engineer who
studies physical materials. "Neither the educational psychologist nor the doctor is a sci-
entist in the strictest sense - even an applied scientist - though both rely as far as possible
on scientific research. Mental tests, factor analysis, experiments in laboratories
and schools are to the one as epidemiology, anatomy, biochemistry and physiology are to the
other. But the doctor often has to treat his patients by methods which lack full scientific
validity; he uses what evidence there is, together with such descriptive generalisations
as have been collected by his colleagues and himself, and he judges from this what is best
for each individual case. Similarly the psychologist applies his experimentally established
principles and his general knowledge of the minds and behaviour of children and adults to
each particular educational problem. The doctor's judgments tend to be the less controver-
sial of the two, partly because of his greater prestige, partly because he is less likely
to be influenced by unconscious emotional biases. "usually however the psychologist is the
more cautious scientist; his training should make him more aware of the paucity of valid
information, and of the likelihood that many unknown factors are involved. He cannot afford
therefore to make dogmatic statements and must always qualify his conclusions."(Vernon, Page
13).

Psychiatric assistance is considerable at present, especially to learning theory.
"Responses learnt under stress are far more resistant to extinction than those learnt
when the organism is relaxed," reported by Bowlby in 1952, might suggest that the current
criticism of standards in formal subjects are explainable and may continue with some degree
of truth until teaching moves more towards learning through understanding by meeting indi-
vidual needs. The changed emphasis Bowlby indicates, " We find ourselves confronted with
the laws governing initial learning by immature organisms in conditions of stress. unfor-
tunately the overwhelming majority of experiments in the field of learning study exactly
the opposite state of affairs - the laws governing later learning in mature organisms, not
in conditions of stress. It is evident, therefore, that if learning theory is to help us
it will need to be extended"to initial, immature learning. (Bowlby).

In different countries, the zeitgeist being different, the contributions varied. From
Germany, psycho-physics, physiology, philosophical thought. From France, naturalism, psycho-
pathology and the origins of mental testing. From America, pragmatism, functionalism,
behaviourism and child psychology. From Switzerland, practical educators and students of child development. From Russia, the physiological primarily. From England, evolution, statistics - psychometry, factor analysis, intelligence theory.

In the twentieth century the influences from within psychology proper relate closely to various emphases. Particularly important is the emphasis which Kulpe's Warzburg group initiated, the origin of motives. The genius of Freud developed this emphasis and the repercussions reverberate loudly in educational psychology today. So much is this so, that gradually the concept of the field of educational psychology, can be expected to expand from that of a diagnostic, remedial, rehabilitation, guidance realm to include as well a preventive, supportive, more individualistic approach to educational theory and practice. The blend of the older and newer, and the suggested field for the future is captured by Vernon, "We are more aware nowadays of the variations of results in different schools, which suggest that the personality of the particular teacher and the morale of his or her class are often more important than the methods of teaching he or she adopts. Hence also laboratory experiments on memory such as Ebbinghaus's classic work of last century, may have very little application to classroom problems." (Page 27).

This change is inescapable if educational practice is to receive from educational psychology not only what it wants now but also what it needs. Every science has its headquarters, experimental psychology the laboratory, animal psychology too; psychiatry the consulting room. Educational psychology has the classroom and the attached clinic. The special instrument for disseminating educational psychology is the normal school, the teachers' (training) college. Now that, after a long hesitant start, teacher training has become established a more positive attempt to introduce what are specifically educational psychology courses could be attempted. This would involve less of the techniques of teaching and learning and more of how children grow and adjust. The teacher who would successfully guide a child's growth, learning and adjustment must possess a technique for studying the individual child in order to determine which principles explain his behaviour in a given situation and that teacher must possess a working knowledge of the psychological principles which explain human behaviour.

From teacher training the realm of educational psychology could then spread to the school. "Fortunes are spent on educating the brain and body, but only a pittance is reserved for the mind, the greatest single cause of sickness. It might very well be an act of wisdom to include a teacher of social and personal growth on the staff of the primary schools. Such a teacher could grow up with the children, be a part of them, and serve in a liaison capacity between the school and the home." (Hinsie Page 242). Services at present operating in the four main cities and soon to include Hamilton could be spread till there are educational psychologists for each large school or group of schools to work to support
the teachers, in their personal relations as a staff; to act as chief counsellor and guide; counsellor to teachers in their teacher-parent, teacher-pupil relations; to oversee the testing of all the children in the school or schools; to assist in vocational guidance and selection in secondary schools; to conduct his or her own research; to promote child studies; to develop group techniques, group dynamics. Teachers' Colleges need their own expert and a medical psychologist or psychiatrist attached to them.

Something of the truth of the present position of educational psychology is captured by Vernon, "Educational psychology is in many respects an advanced and highly technical form of applied science. Owing to the nature of the material with which it deals, it is more comparable to medicine than, say, to physical engineering. Hence also its present status in education is a humble one; it cannot by itself give definite answers to questions about the art of teaching. Still less can it affirm the soundness of educational policies or ideals; perhaps it is more often useful in a negative way, that is in indicating what principles are unsound. Though, it has established a number of important conclusions regarding mental qualities and attainments, their measurement, inter-relations, their distributions, etc., about selection, guidance, teaching materials and methods, these conclusions, are essentially actuarial. Their application to any individual child or educational problem depends on other things being equal, and therefore usually necessitates non-scientific or clinical judgment. The psychologist, when asked for the answer to any educational problem, should admit this, and should realise that his own judgment is often no better or even poorer than that of the parent, the teacher or the administrator who may have consulted him. In the absence of good scientific evidence, his reply should be: here are the most relevant previous researches, and these are the tools of my trade; your problem can best be investigated in such and such a manner; but until this is done, I must confess ignorance." (Page 30).

To this may be added the plea for recognition of the educational psychologist as having a preventive, supporting role, and being more closely in touch with the practising teacher.

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