A CRITICAL EXAMINATION OF PLATO'S THEORY OF

CHILD MATURITY.

A THESIS FOR THE DEGREE OF B.A.

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This thesis represents an attempt to explain and interpret the theory of the mind as set forth in Plato's dialogues, with particular reference to the concept of the "golden mean" and its implications for education and human development.
This thesis represents an attempt to examine critically the theory of child mentality put forward by Professor Jean Piaget of Geneva. By experiment and observation Piaget has collected much valuable data from the children attending the Maison des Petits de l'Institut Rousseau; his results together with a somewhat novel theory to explain them are contained in his four volumes "The Language and Thought of the Child," "Judgment and Reasoning in the Child," "The Child's Conception of the World" and "The Child's Conception of Causality." The most noteworthy critic of Piaget's work has been Susan Isaacs, who has stated her objections to his theory in "Mind" (Vols. 38, 40) and in the "Pedagogical Seminary" (Vol. 36). While this thesis was being written there reached New Zealand her recent book "Intellectual Growth in Young Children" (1930) in which her former criticism of Piaget is supported by a great deal of observational evidence. Piaget has since replied to this criticism in "Mind" (Vol. 40) and in the "British Journal of Educational Psychology" (Vol. 1.), though it is doubtful whether he has satisfactorily met the difficulties raised. As his theory differs so fundamentally from the psychology underlying our present method of education it is one which demands a careful study before it is accepted...
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as sound by parents and educators. The writer has therefore attempted not only to examine the theory which Piaget advances to explain his results, but also to determine how far these results themselves can be confirmed by further investigation. To this end between fifty and sixty New Zealand children were submitted to observation and experiment along lines suggested by Piaget. The results of these experiments are contained in this thesis, together with a discussion of the adequacy of Piaget's theory as an explanation of the child mind:

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1. INTRODUCTION.

(i) IN THE PAGE.

It is a well-known fact that the primitive conception of the nature of the physical environment is very different from our own. Many writers have noticed and commented upon the remarkable similarity which exists between ideas held by the child and those of primitive peoples. This resemblance is most marked in the attitude which the child takes towards the outer world. He has a very close parallel in those found in primitive societies. The peculiarities of the thought of the savage have given rise to the doctrine of the prelogicality of the primitive mind; strange and seemingly irrational characteristics are explained by the possession of a different type of mentality. As Piaget, aware of the similarity between childish and primitive thought, has put forward a doctrine essentially similar to this, emphasising a difference in kind between children's and adults' thinking, it is proposed, therefore, as an introduction to the study of Piaget's own theory, to examine briefly this question of the existence of a primitive mentality.

In the first place, primitive thought is governed by the law of participation.
It is a well-known fact that the primitive conception of the nature of the physical environment is very different from that of modern civilised man. The physical world of the primitive is peopled with spiritual entities to whom he attributes consciousness, will and purpose similar to his own. Each material object whether living or dead has a "double" which feels and thinks and desires in the same way as he himself does. This world of doubles constitutes an immaterial counterpart of the world of physical reality. It offers a complete and satisfying explanation of the common processes of nature, while the unexpected is explained also by the intervention of those spirits for good or ill.

Such characteristics of primitive peoples as animism and magic have given rise to the view that the primitive mind is irrational, illogical. The emotions or passions that call forth these ideas and most distinguished representative of such a trend of images or which are engendered by them... Not only thought is Lévy-Bruhl who holds that the mind of the primitive is of quite a different order from that of a civilised man, that it is, to use his own term, "prelogical" a specific activity emanates from it and is exercised upon it. (1) Primitive mentality, unlike that are, according to Lévy-Bruhl, two. In the first place primitive thought is governed by the law of participation.
which implies a belief in the existence of a relation between two objective facts which, to our way of thinking are in no way causally connected.

It is held, for example, that there exists an intimate connection between a man and his hair, so that by obt

taining a cut-off portion of an enemy's hair one has a certain power over him. In the same way to know a person's name is to have an influence over that person.

Secondly, savage thought is indifferent to the principle of contradiction. This, of course, implies that the laws of logic as we understand them do not apply to primitive thought. The mind of the savage is "pre-logical." The cause and effect relation does not exist, its place being taken by the category of magic.

For the savage, then, reality is essentially mystical, governed by occult forces and spirits. He is not capable of separating ideas or images of objects from the sentiments emotions or passions that call forth these ideas and images or which are engendered by them.... Not only has he an image of the object which he believes to be real but he expects something from it and fears it.... a specific activity emanates from it and is exercised upon it." (1) Primitive mentality, unlike that of the civilised adult "avoids and ignores logical...
thought, refrains from reasoning and reflecting ....

It is not subject to the same logical exigencies as
our own." (2).

Levy-Bruhl's theory of the mystical and
"prelogical" character of primitive mentality is widely
discredited today. Modern Anthropologists tend to
regard the mind of the savage as of essentially the
same nature as that of civilized man, though it is fully
recognised that the data with which it deals and the
conclusions it reaches are very different. There
seems, however, no reason to postulate a different type
of mentality to explain the conceptions of the natural
world or of physical causality which are held by the
savage.

The idea that the savage is a different
being from ourselves with a mind which is incapable
of functioning logically has arisen through our very
inadequate knowledge of the conditions of primitive
life, or perhaps through an error in our own reasoning.

It is, as Driberg points out, because we judge specific
cases in isolation from their context and view savage
customs from the standpoint of our own local culture
instead of as part of the general pattern of their own
society that we have failed completely to relaise that
savage logic is not so foreign to our own after all.
"We have weighed the savage in the scale of our own culture and found him wanting. We have weighed his morals and tabulated his vices by a standard not his but ours. Through misunderstanding and ignorance the simple fact has often escaped us that the savage is not really very different from ourselves." (3). Given their true significance and examined in relation to his system of belief the practices and magical rites with which the life of the savage abounds are thoroughly rational and meaningful. An event which we would consider out of harmony with the rest of experience is not so for the savage. Such would be placed in the category of magic which has an explanation for everything. If, for example a white man shoots an invulnerable fetish bird the primitive mind suffers no shock. (4) This is a type of case which would no doubt be considered by Lévy-Bruhl as illustrative of the savage indifference to the principle of contradiction. Yet if we take a reasonable view of the case we must deny that it has any such significance. The primitive simply infers that a different kind of magic operates for the white man, so that the matter does not assume problem form at all.

One of the greatest differences between the thought of primitive and that of civilised man lies in
relations which are conceived to exist between the trad-
objective world and the fate of man. For the savage,
the natural world is not indifferent to man but exerts an
influence helpful or otherwise over his efforts. Here
attributes consciousness, will and purpose to things in-
animate, and believes that it is possible for him to for
influence the spirits whose activities may concern his al
welfare — hence the number of rites and ceremonies
which find a place in primitive life. But it does not
seem necessary to assume that these concepts develop
through mental processes different from our own, for the
experiences of every day life teach the existence of living
forces that cannot be overcome and that lead by the
ordinary processes of conceptualisation to the opposites of
normal and supernormal, that is, supernatural powers.
Their influence on human activities is constantly held
in mind .... It is not necessary to assume that primitive
man has a type of mind different from that of civilised
man. His intellect deals with phenomena of the world as
ours does but with a different knowledge which admits
what we should call supernatural interference with the
laws of nature." (5) The difference between primitive and
civilised thinking is explained today entirely in terms of
the cultural environment. In the case of the
civilised man accumulated experience (which is traditional for us in precisely the same way as his limited knowledge is for the savage) teaches us to regard objective phenomena as the result of definite objective causation. The great difference between our thought and that of the savage is thus accounted for wholly by the type of environment in which the mental functioning takes place.

It is significant that the writers who have most severely criticised Levy-Bruhl's theory are men who have lived in intimate contact with primitive peoples and have a first hand knowledge of their ways of living and their ways of thinking. They strongly repudiate any suggestion that the savage is in any way irrational or "prelogical," but assert that the primitive's ability to reason is just as keen as our own. The premises which form the basis of his reasoning may often be false owing to his limited knowledge but the reasoning itself is valid and logical. If a man is born into a society which considers it necessary to placate various powers which might otherwise exert an unfavourable influence over human effort it is just as rational for him to take a "mystical" and "magical" view of natural
part of the savage are regarded as such by us because of phenomena as it is for the ordinary civilised man basing his reasoning upon theories which have become traditional to regard nature as essentially uniform and objective events as the result of definite objective causation. He no more than the savage proves these theories for himself but simply accepts what is transmitted to him by the cultural environment.

Those who are entitled to speak with authority upon primitive modes of behaviour lay great emphasis upon the fact that the primitive resorts to magic as an explanation only when owing to his limited experience no other explanation is possible. Driberg (6) instances the Didinga tribe who had a fairly extensive knowledge of agriculture and prepared with great foresight for the work of the different seasons. But unable to comprehend the mysterious forces which sometimes send a bad season they do not risk offending these unknown powers but perform placatory rites to ensure their favour.

Magic is not the sign of a mentality different from our own but of a different attitude towards phenomena which are difficult of explanation.

Rivers points out that the categories of the primitive do not necessarily correspond exactly with our own, and that many cases of so called illogicality on the
part of the savage are regarded as such by us because of
our failure to realise that the savage's classification of
natural facts may differ somewhat from our own. In the
distinction between living and dead, for instance the di-
viding line is at a certain point for us and may be at a
different point for the savage. The connotation of the
term "dead" is not the same: hence when we speak of the
illogical practice of burying the "living" we are using the
word from our own category and are neglecting the fact that
for the primitive the term belongs to a different category.

This writer suggests that a "more exact and complete know-
ledge of primitive beliefs would almost certainly show that
many of the instances brought forward by Lévy-Bruhl as ex-
amples of prelogical mentality betray no real contradiction
at all and no failure of logic in our sense. They are
merely cases in which the facts of the universe have been
classified and arranged in categories different from our
fundamental ones from our own. It is not, of course,
denied that the savage's methods of thought and conclu-
sions are not adequate to their purposes of thought and conclu-
sions, only their processes of thought not their conclusions.
They are reasoning beings capable of inference, logical
thought, argument and speculation. They can adapt and
invent new systems of philosophy and
formulate them, but adequate to their
world from our own category and are neglecting the fact that
for the primitive the term belongs to a different category.

Here is the testimony of a man who knew from
first-hand experience the customs and ways of living and
thinking of a primitive people. His convictions are borne
out by others who have dwelt in close and sympathetic contact
with native peoples. "They think as we do, argue and
make deductions from ascertained premises. That these

deductions are often false is immaterial for we are considering only their processes of thought, not their conclusions. They are reasonable beings, capable of inference, logical thought, argument and speculation. They can adapt and invent, and have built up a system of philosophy, loosely formulated, it is true, but adequate to their needs. On analysis they prove to be rational, even when their customs appear most irrational." (8). Sutherland, a New Zealand psychologist who is devoting much time and effort to a first hand study of the Maori mind, has been led in like manner to discredit Lévy-Bruhl's theory, and instances the disconcerting logic with which the Maori quoted the Bible to those who represented Christian civilisation to him. (82).

There is, therefore, a large body of authoritative evidence in existence at the present day which seems to indicate that the mentality of the primitive differs in no fundamental way from our own. It is not, of course, denied that the savage interprets the world in terms of animism, and peoples it with invisible spirits, but this is no indication of an inferior mental capacity, nor of an inability to reason logically. The gulf between primitive and civilised thinker is not so great as Lévy-Bruhl would have us believe: the difference is one of social and cultural origin, and can be quite adequately explained in this
The dissimilarity, that is, is due not to a mind which functions differently, but to a mind which functions under very different circumstances and with very different material.

(ii) In the Child.

There have been various attempts to demonstrate and account for the existence of a primitive form of mentality in the child. The recapitulatory theory put forward in the main by German writers, together with the "culture epoch" theory, holds that individual growth recapitulates the development of the race. The early stages of the child's life are held to correspond to the early stages of the life of the race, and in his growth from infancy to adulthood he retraverses the stages through which the race has passed in its journey from savagery to civilisation. The theory claims to have a scientific basis from the discovery in embryology that biological development recapitulates the evolution of animal species. "Since ontogeny parallels phylogeny in the growth of the body it probably does so in the growth of behaviour" is a general statement of the theory. (9) "The child's development is only a condensed index of what took place on the larger plane of the race history." (10).
The application of this theory to education has been attempted in various forms. Some writers distinguish the different industrial activities typical at certain periods and endeavour to find a parallel in the psychical traits of childhood. Others find a similar development in child and race in the relations which exist between individual and society. In the early stages there is complete absorption in the group: next comes the stage when the individual rebels against the pressure of society: finally there is voluntary co-operation for the good of the whole. A third group of writers have found a correspondence in intellectual development. The first six years of the child's life, dominated by intuitive sense perceptions reveal the "predominance of emotional imagination, the mythical animistic phase of mind." During the next few years comes a transition period marking the beginnings of imagination and memory and the development of matter of fact interest. This period is characterised by the tendency to "observe, collect, make utilitarian constructions." The third and final period marks the emergence of the child into adulthood. It is a period of logical thinking and "conscious reflection characterised by interest in abstraction and generalisation." (11).
Though doubtless it contains a large element of truth the recapitulatory hypothesis has lost favour as a satisfactory guide to the child mind, in view of more recent knowledge. The analogy upon which it rests is valid only to a certain degree. "The biogenetic law is true only in a very vague and partial way .... The clearest cases of recapitulation are those where the chiway taken to produce a structure is a likely way apart by from any tendency to recapitulate for recapitulation's sake — the animal has to grow somehow." (12). Supporters of the theory assume that there is a very close analogy between the development of mind and that of body but there seems little support for such an assumption in view of the fact that the central nervous system itself develops the individual in a manner very unlike that by which it developed in the race. The theory appears to be far too inflexible to explain the mental life of the child. It ignores the demands of contemporary social life and the tremendous influence exerted upon the form which the intellect shall take. Moreover, it appears to be based upon now outgrown views of the characteristics of primitive peoples. This is not denied that there is a certain similarity between the primitive and the child which rests largely upon a
common limitation of experience, but in the case of the
child this condition is not static. There is constant
contact with and assimilation of adult knowledge and culture.
This theory, therefore, though it may be a guide to, can
never be a substitute for, direct child study of walking

(iii) Piaget's Position.

Piaget does not draw any parallel between the
analysis of the child's mental life reveals a dis-
child and the primitive nor attempt to explain the child mind
that tendency towards animism i.e. the tendency to en-
by reference to the development of the race. He goes to
incorporate objects with life and will and purpose. Thus
the child himself for his data. Nevertheless, armed with
his special technique, the "clinical" method, he proceeds to
being the sun and moon are alive and follow him as he
show that there are in the child's mind inherent tendencies
walks. A third characteristic of the child's thought
is "artificialism," the "tendency to confuse material causal-
which are also characteristic of primitive mentality.

These tendencies are not in any way systematised nor fixed
in the child's mind nor are they consciously formulated; they
are regarded as the result of human effort. Piaget is
careful to state that he does not believe these to be de-
exist rather as "subconscious motive influences" than as
finite systems of belief but rather "a preconscious trend
definite conceptions. By a series of questions designed
to reveal and make explicit the child's ideas of the world,
he shows that child thought (like primitive thought) cannot
distinguish between subjective and objective phenomena.
Confusions thus arise between the internal and the external
world between thought and the object of thought, between sign
and the thing signified. This "realistic" trend of mind
leads to "participation", belief in the existence of an influential relation between things which are otherwise connected, and to magic, the belief that by certain means objects cannot be judged by adult standards of logic be-effects in the objective world e.g. the practice of walking on every other stone on the pavement in order to obtain there is thus a very close parallel between the theory of the fulfilment of a wish. (13).

Analysis of the child's mental life reveals a distinct tendency towards animism i.e. the tendency to endow inanimate objects with life and will and purpose. Thus lakes, trees and clouds are regarded by the child as living beings, the sun and moon are alive and follow him as he walks. A third characteristic of the child's thought is "artificialism," the "tendency to confuse material causality and human creation." The sun, lakes, rivers etc., are regarded as the result of human effort. Piaget is gathered are predetermined in very large measure by his careful to state that he does not believe these to be de-careful admiration for Levy-Bruhl and his undoubted acceptance of systems of belief but rather "a preconscious trend of the latter's view of primitive mentality. He of mind which urges the child to invent a given solution." acknowledges his debt to Levy-Bruhl in the preface to "The child may never have reflected at all about the phenomena upon which he is questioned, yet under pressure he invents a solution which reveals these tendencies.

He expresses at the close of "Judgment and Reasoning in the Child" his belief that "the day will come
when child thought will be placed on the same level in
relation to Piaget, thus shows the great gulf which exists
to child and adult thought, a difference which can be
adequately expressed only in terms of equality. But child
thought cannot be judged by adult standards of logic be-in-
because it is of a different nature, on a different plane.
There is thus a very close parallel between the theory of
Lévy-Bruhl and that of Piaget. From the peculiarities of
primitive thought, Lévy-Bruhl postulates a difference going
driving between savage and civilised mentality, from
similar peculiarities in children's thinking, Piaget suggests
a qualitative difference between child and adult thought.
As has been said, Piaget does not explicitly attempt to make
a comparison between the child and the primitive. Never-
theless one feels that the interpretation which he puts upon his
data and even the method by which these data are
gathered are predetermined in very large measure by his
evident admiration for Lévy-Bruhl and his undoubted accept-
ance of the latter's views of primitive mentality. He
acknowledges this debt to Lévy-Bruhl in the preface to "The
Language and Thought of the Child", and by his frequent
laudatory references to the work of this psychologist, one
decided to feel that he draws much of his inspiration from
him. He expresses at the close of "Judgment and Reas-
oning in the Child" his belief that "the day will come
when child thought will be placed on the same level in rec

apculatory hypothesis gives one a further reason for
relation to adult normal and civilised thought, as 'primitive
refusing to accept uncritically a theory to which it
mentality' as defined by Levy-Bruhl...." (14) though he is

ears some resemblance.
clearly aware of the dangers which attend comparative
psychology if analogies are drawn without sufficient exami-
nation of the child himself.

One wonders whether Piaget is aware of the search-
ing criticism to which Levy-Bruhl's work has been subjected.
It seems clear that he has been seriously mistaken in placing
such emphasis upon the illogicality of the primitive, so
that it is relevant to raise the question whether Piaget,
too, is not in error in making a radical distinction in
kind between child and adult thought.

Piaget's theory bears a resemblance to certain
aspects of the culture epoch theory, particularly to that
view which draws a parallel between intellectual development
in the child and the race. The period of intuitive
sense perceptions, of myth and animism, would correspond to
Piaget's stage of "egocentricism" up to 7-8 years; the
transition stage would be recapitulated in the years 7-8 to
11-12; the final period for Piaget, too, is one in which
formal logic and abstract reasoning become possible.
Though Piaget nowhere suggests this parallel, it seems a
legitimate one to draw from his enunciation of the peculiar-
ities of childish thinking. The decline of the
recapitulatory hypothesis gives one a further reason for refusing to accept uncritically a theory to which it bears some resemblance.

Any attempt to reproduce in a few pages the main lines of the argument which Piaget develops in his four volumes "The Language and Thought of the Child," "Judgment and Reasoning in the Child," "The Child's Conception of the World," and "The Child's Conception of Causality" will necessarily be very inadequate. Nevertheless an attempt will be made to put forward at least a bare outline of the rich and varied contents of these books. Wherever the various points of his theory are concisely expressed Piaget's own words have been used, as in this way perhaps, the danger of distortion of meaning which can so easily occur in such a brief account may be minimised.

Piaget's interpretation of the intellectual world of the child is comparable to Freud's interpretation of the activities of the unconscious level of the human mind. Before the development of the Freudian theory it had been thought that slips of the tongue, errors, dreams and other manifestations of a subconscious irrational mental life were chance occurrences, inexplicable and unpredictable. Freud and his school proceeded to demonstrate that these are not meaningless happenings, but can be explained and accounted
Similarly Piaget proceeds to interpret the child's mental life. It is not directed by the child's conscious intellectual world, but can be explained and accounted for just as any other subjective mental phenomena. Similarly Piaget's interpretation of the intellectual world of the child is comparable to Freud's interpretation of the activities of the unconscious level of the human mind.

Before the development of the Freudian theory it had been rethought that slips of the tongue, errors, dreams and other manifestations of a subconscious irrational mental life were chance occurrences, inexplicable and unpredictable. Freud and his school proceeded to demonstrate that these are not meaningless happenings, but can be explained and accounted for just as any other subjective mental phenomena.
for just as any other phenomena.  Similarly Piaget deals are not present in consciousness. This type of proceeds to interpret the child's mental life. It is thinking "lacks the major idea and the feeling of direction not simply an imperfect form of adult mentality, subject which emanates from that. We no longer compel our to vagaries which are as irrational and inexplicable as thoughts along a definite track but let them float sink or many of the activities of the unconscious, but is also, mount according to their own gravity." (15). Directed like the latter, capable of explanation and comprehens thinking, on the other hand, is impelled in a certain.

direction by an aim or purpose which is in the foreground of consciousness. It is adapted to reality, is logic the child mind would appear to be a confused, incommunicable, social. "Thus we have two forms of think-coherent mass, whereas, if thoroughly understood, it ing, directed thinking, and dream or fantasy thinking, is seen to be a coherent whole with laws of its own. The first, working for communication with speech elements, To understand just the position which the child mind does occupy, one must first consider the two types of goes on without trouble, working spontaneously, so to speak thinking distinguished by psychoanalysts. Autistic with reminiscences. The first creates innovations, thinking occurs in dreams and in fantasy or when thought adaptations, imitates reality and seeks to act upon it. is not directed along a certain line by a definite con- The latter on the contrary turns away from reality, sets scious aim. Such thinking takes place mainly by free subjective wishes, and is in regard to adaptation general schemes of imagery rather than by verbal symbols wholly unproductive." (1c).

or other more definite types of images, and is for this reason incommunicable. Its immediate object is the typical of the intellectual activity of the civilized adult. satisfaction of desire which it achieves in a dream world The thought of the child occupies a position midway between of imagination, since it is not bound to conform to the this directed intelligence and autistic thinking. To actual world. In autistic thinking, therefore, the this type of thought is given the name "acautism," motives which impel it and the problems with which it
deals are not present in consciousness. This type of thinking "lacks the major idea and the feeling of direction which emanates from that. We no longer compel our thoughts along a definite track but let them float sink or mount according to their own gravity." (15). Directed thinking, on the other hand, is impelled in a certain direction by an aim or purpose which is in the foreground of consciousness. It is adapted to reality, is communicable, social. "Thus we have two forms of thinking: directed thinking, and dream or fantasy thinking. The first, working for communication with speech elements, is troublesome and exhausting: the latter, on the contrary, goes on without trouble, working spontaneously, so to speak with reminiscences. The first creates innovations, adaptations, imitates reality and seeks to act upon it. The latter on the contrary turns away from reality, sets free subjective wishes, and is in regard to adaptation wholly unproductive." (16).

Piaget appears to regard directed intelligence as typical of the intellectual activity of the civilised adult. The thought of the child occupies a position midway between this directed intelligence and autistic thinking. To this type of thought he gives the name "egocentrism." Let his own words describe his position with regard to child
mentality. "Experiment shows that the child's way of thinking occupies a place situated exactly between the autistic and the social. We have therefore given it the name of "egocentric," which indicates that this type of thought is still autistic in its structure but that its interests tend not merely towards organic or ludistic satisfaction as in pure autism but towards intellectual adaptation as in adult thought." (17) "Between autism and intelligence there are many degrees, varying with their capacity for being communicated. These intermediate varieties must therefore be subject to a special logic, intermediate too between the logic of autism and that of intelligence. The chief of these intermediate forms, i.e. the type of thought which like that exhibited by our children seeks to adapt itself to reality but does not communicate itself as such, we propose to call egocentric thought." (18).

Piaget's position with regard to the child mind represents a protest against the idea of regarding the child as a small grown up. It is an emphatic reassertion of Rousseau's doctrine that children must be children before they are men. "Childhood has its own ways of seeing, thinking and feeling." (19). Aware of the great gulf between the child and the adult mind, and of the error of treating the child as a miniature or undeveloped adult Piaget proposes to
explain the child mind as occupying a different plane
from that of the civilised adult. In his preface to "The Language andThoughts of the Child," Claparède admirably sums up Piaget's main argument. Speaking of Piaget's upper plane of 'logiality and directed intelligence' design, he says: "as soon as one overloads it, it bends, creaks, ex-collapses, and the elements of which it is composed fall on to the lower plane and become mixed up with those that properly belong there. (Other pieces remain halfway between heaven and earth.)"

One can imagine that an observer whose point of view were such that he did not observe this duality of planes but supposed the transition to be taking place on one plane would possibly have an impression of extreme confusion, because each of these planes has a logic of its own which protests loudly at being coupled with that of the other. And M. children Piaget in suggesting with confirmatory proofs that were per-thought in the child is intermediate between autistic thinking and the logical thought processes of the adult. This gives us a general perspective of child mentality which is, will singularly facilitate the interpretation of its various functions." (20) No attempt to produce any results in the social environment. The adult mind, though not subject to laws of logic in the adult sense, is thus shown by Piaget to behave, and carried on irrespective of the presence or absence of
coherent whole and to be subject to laws of its own which can be understood only by taking account of the two planes between which egocentric thought is intermediate. Piaget has devoted two volumes to the results of experiments designed to investigate child language and logic and to the exposition of theories suggested by these. It must be clearly understood that the word "egocentric" has here no merely the crash of contrary affirmations with no attempt on the part of the child to change his opponent's point of view by giving reasons for his point of view. Piaget records the language used by children when they are asked to describe or explain to other children what the experimenter has already explained to them. From experiments of this nature he discovers that when children take together the egocentric nature of their language, that is, are under the impression that they both understand and are understood, their reports reveal how much of the conversation of the child under seven is of an egocentric nature, that is, non social, concerned only with the self and its own point of view, making no attempt to produce any results in the social environment. In many cases it is merely an accompaniment to action, addressed to no one in particular, and carried on irrespective of the presence or absence of
other people. Other types of conversation are the result of the stimulus of the presence of others, but are not social in their nature nor do they attempt to communicate the thought of the child to his companions.

2. Observation shows that the socialised portion of the child's language passes through a number of different stages before it becomes a genuine interchange of ideas. Argument, for example, is first, i.e. before 7-8 years, merely the clash of contrary affirmations with no attempt on the part of the child to change his opponent's point of view by giving reasons for his own. 3. Piaget records the language used by children when they are asked to describe or explain to other children what the experimenter has already explained to them. From experiments of this nature he discovers that when children talk together, they do not understand each other any better than they understand adults, but that they have no suspicion of the egocentric nature of their language, and are under the impression that they both understand and are understood.

Because of his "egocentricism" the child has an absolute meaning to his world, till he is not even aware of another side of the body. He is unable to shift from another person's standpoint. He sees everything from his own personal viewpoint, unaware that there is any other possible. This tendency is years of age does he become capable of taking a reciprocal standpoint successfully, though at the stage prior to this,
well illustrated by an incident which I witnessed in a class of young children recently. The teacher during a noisy reading period told the class that adults and older children read with their lips closed. Douglas (6 years) remarked "Yes. Standard 2 (the class in the next room) don't read aloud. We can't hear them." Koffka relates an incident illustrative of the same point. A small boy who had just been put to bed remarked to his mother who sat beside him sewing, "But you can't see anything for I have my eyes closed" ideas results in the phenomenon of juxtaposition. (22)

The young child's judgments are always absolute, never relative. He is unable to deal with any situation which involves the idea of relation. Although he understands that he has a brother he cannot see the situation from another viewpoint, and does not understand that his brother also has a brother, himself. Piaget quotes numerous examples of this.

"Have you any brothers?" "One." "Has he got a brother?"

"No." "You are his brother aren't you?" "Yes." "Then he has a brother?"

"No." (23) The idea of right and left have an absolute meaning to the child, referring to a particular side of the body. He is unable to apply them from another person's standpoint. Experiment shows that the child sees things in terms of immediate perceptions: not until eleven years of age does he become capable of taking a reciprocal standpoint successfully, though at the stage prior to this,
i.e. at 7-8 years, he may be able to handle concrete sit-
ations which involve relations.
This constitutes the "phenomenon of synteresis." By reason of these schemes the child explains one feature by reference to another which has no causal or logical relation to the former but merely exists within the same scheme. When asked why the sun does not fall down the child says "because it is yellow," or "because it is hot." Synteresis is the expression of the absence of direction in the successive images and ideas results in the phenomenon of juxtaposition. (24)

Propositions and judgments are perceived as vaguely belonging together rather than as logically related within a definite hierarchy of ideas. Juxtaposition is illustrated by the use of the word "because" which does not to the young child indicate a causal relation but merely signifies that two features belong together. "I had a bath because afterwards I was clean." "I teased the dog because it bit me." Juxtaposition thus means an absence of implication or causal connection between ideas and judgments.

The child's ideas are not harmonised into a whole place according to adult ideas of logic. It does not move but show a complete absence of arrangement of detail so that his concepts are not clear like those of the adult but are indi
definite and confused. Phenomena which are perceived to-

certain are henceforth held together in the mind in a general

the character of logical necessity. (25).
schema and reference to one element will bring to mind the other elements which were perceived simultaneously with it. This constitutes the phenomenon of "syncretism." By reason of these schemas the child explains one feature by reference to another which has no causal or logical relation to the former but merely exists within the same schema. When asked why the sun does not fall down the child says "because it is yellow," or "because it is hot." Syncretism is closely related to and dependent upon egocentricism. The egocentric tendency causes the child "to be ignorant of logical relations in favour of subjective relations, to impose arbitrary schemas upon the world of external objects, to be constantly assimilating new experiences to ancient schemas, in a word, to replace adaptation to the external world by assimilation to the self. Syncretism is the expression of this perpetual assimilation of all things to subjective schemas and to schemas that are comprehensive because they are unadapted.

Syncretism therefore permeates the thought of the child." (25)

Reasoning in the young child does not take place according to adult laws of logic. It does not move from universal to particular as in deduction, nor from particular to universal as in induction, but from particular to particular by means of a reasoning process which never bears the character of logical necessity. (26). This process
Piaget calls by Stern's name "transduction." Transduction also follows from egocentricism. Since in the egocentric period the child feels no desire to socialise his thought, to give proof and demonstration, he makes no attempt to justify his judgments which are concerned only with isolated cases. Transduction implies an inability to generalise. To each object belongs a specific explanation and consequently specific relations which can only give rise to specific reasoning. There is no general law "because there is syncretism i.e. immediate fusion of the separate terms. This fusion is irreversible" because it "deforms what is acquired instead of respecting it as a genuine deduction would do. Thus whether there is juxtaposition of separate explanations or syncretistic fusion of separate cases, in both cases we have irreversibility and this irreversibility is what explains the absence of general laws." From the child's inability to generalise there follows an inability to understand discordance, for a discordance between cause and effect obviously implies a certain definite relation between them, and if the child does not understand that rules or constant relations between cause and effect do exist he will be unable to understand an exception to these rules. The unconscious nature of the child's thought process gives rise to his frequent violation of the law of contradiction and to his difficulty in introspection, while, as he does not
consciously realise the use which he makes of words and concepts he is incapable of logical definition.

Egocentrism is predominant until seven or eight years after which it rapidly declines. The change, Piaget shows, is due to the awakening of the child's social nature which brings about the beginnings of a desire for collaboration and interchange of thought which was not present before. There is now an effort to socialise speech so that others may understand, i.e. to think socially, and to adapt the self in order to understand others. "It is only from the age of seven or eight that there can be any talk of genuine understanding between children." "The child of seven is still egocentric and feels no desire to communicate with others or to understand them." "It is precisely at this stage (i.e. 7-8) that we can place the first period of reflection and logical unification as well as the first attempts to avoid contradiction." "From 7-8 onwards children try to improve upon their methods of exchanging ideas and upon their mutual understanding of one another." (29) Juxtaposition tends to disappear together with egocentrism. Formal reasoning, however, and the ability to handle reciprocal relations do not appear until about eleven years. In the intermediate period "children try to justify judgments as such yet without for that matter..."
being able to share the interlocutor's point of view or consequently to handle formal deduction." (20) Language must not be regarded as a mere system of notation. It creates for the child a new reality to which he must adjust himself just as he had had to adjust himself to the physical world. Ability to deal with verbal reality comes later than ability to deal with physical reality, and after a child is able to solve a problem concretely he will still for some time be unable to do so "mentally." Hence many of the difficulties which tend to disappear in concrete situations reappear upon the verbal plane. Syncretism of perception, for example, probably disappears at 7-8 but is replaced by verbal syncretism. The child may now be able to handle actual situations involving relations but he is still unable to deal with such problems verbally. These difficulties continue until about eleven years at which age the child apparently enters upon the adult plane of intellectual activity. Formal reasoning which presupposes the ability to reason from assumed premises now becomes possible, and no further difficulty is experienced in dealing with relations.

Egocentric thought is thus seen to be of the nature of autistic thought in so far as it lacks conscious direction, is subjective and not fully adapted to the actual world.

Piaget is perhaps open to misunderstanding in
period. The maturing of the "social impulse" about 7-8
his conception of social development. He uses the word
"social" in an unusual intellectual sense which makes him
liable to misinterpretation. When he speaks of the child's
social development he is referring to the effect upon the
mind of intellectual intercourse with others, and not to
emotional experiences such as sympathy which are usually
implied in the term "social." When he asserts that the
child's social nature does not awaken till 7-8 years he
evidently means that younger children are not concerned to
enter into intellectual relationships with each other. They
do not, for example, use language to communicate their
thoughts. "There is no real social life between children
of less than 7 or eight years" (31) is rather a startling
assertion if viewed apart from its context, but it is ob-
vious that he means by this that there is no genuine under-
standing (i.e. verbal or intellectual understanding) be-
tween children below 7-8. (32) In one sense, therefore,
Piaget may be said to place all the emphasis upon the social
factor in development for at 7-8 years, he says, when the
"social impulse" first begins to develop, then and therein is
only, intellectual development follows, and through the
clash with other minds the child becomes conscious of his
own thought processes. The effort to socialise thought
in order to be able to communicate with others renders it
dear more objective, and marks a transition from the egocentric
period. The maturing of the "social impulse" about 7-8
common to many children. Such phenomena as participation
and magic develop from the child's inability to distinguish
the subjective from the objective, which in turn rests on
egocentricism — the absolute nature of egocentric ignorance
and the ensuing unconsciousness of the thought process.

The consequences of egocentricism are seen not
only in the nature of the child's reasoning and judgment but
also in his conception of the world and his ideas of caus-
ality. A brief outline of the child's conception of the
world has already been given. The method used by Piaget
and his colleagues to investigate the child's ideas of
natural phenomena aims to discover and expose ideas which
have never been consciously formulated by the child and
of the child's mind can lead it to abandon animism which are merely implicit in his mind. This "clinical"
method pursues an idea, tracks it down by question after
question, and finally leads the child to reveal and make
explicit trends of thought which are "subconscious motive
influences" rather than definite conceptions. He may never
have considered how the sun began, for example, but when
questioned and forced to invent an answer the response he
gives reveals a tendency to think in a certain direction.

By this means Piaget discovers that the chief features in
the child's understanding of the world are realism, animism
and artificialism. Life, will and consciousness are
attributed to inanimate things, significant connections are
seen to exist between events which appear to us unrelated.

A deliberate use is made of these "participations" in order
to effect desired results — hence the magical practices
common to many children. Such phenomena as participation in various stages before becoming like those of the adult, and magic develop from the child's inability to distinguish the objective from the subjective, which in turn rests on the child's general tendency to identify with others and the ensuing unconsciousness of the thought process. 

"Artificialism" refers to the tendency to regard all creation and to regard characters and qualities not as having as a result of human effort.

Such tendencies do not disappear as the result of experience but endure until such time as the mind is ready to abandon them. "Only a qualitative development of the child's mind can lead it to abandon animism." (33)

This development arises from the socialisation of thought which begins to take place at 7-8. By contact with other minds, the mind becomes conscious of itself and begins to distinguish between the inner and the outer world. "It cannot be actually as the result of experience that the child comes to abandon his animism and his artificialism. No direct experience can prove to a mind inclined towards animism that the sun or the clouds are neither alive nor conscious nor can adult teaching undeceive him. As to artificialism it rests on tendencies of mind that no observations of things will eclipse until precisely such time as the child is ready to abandon all its preconceptions." (34).

Piaget next investigates the child's conception of causality and discovers that his ideas pass through
substantialism to magic and from magic to static explanations.

In the evolution of reality as understood by the child he
distinguishes three movements. The child gradually learns
to distinguish internal from external reality, to give the
same value to another person's point of view as to his own,
and to regard characters and qualities not as having an
absolute existence but as dependent upon others and relative
to them. A stone is first regarded as heavy. Later it
is understood to be heavy or light to us only in relation
to other things. The distinction between internal and
external reality is made only very gradually and many
"adherences" remain at every stage i.e. fragments of inner
experience are still confused with the objective world.

In tracing the evolution of the idea of causality Piaget
distinguishes seventeen different types of explanation
given by the child. The development of this idea falls
into three main stages. At first explanation is of a
psychological and magical nature, then it becomes artific-
ialist and animistic, and in the third period approaches
the rational explanation of the adult.

The child world is thus "not a fiction of
unpredictable imagination but a series of stages of ex-
planation logically reached by selecting and assimilating
new materials with old in accordance with laws inherent
in the developing thought process, proceeding from dynamic
substantialism to magic and from magic to static explanations. Quite independent of adult help or supervision the child assembles step by step the basis for the construction of his concepts appropriate to the stage of his mental structural development. (35).

It is thus seen that Piaget is pleading for a recognition of the individuality of the child. His mind is not to be regarded as a blank page upon which environment may write what it will, but has a form and structure of its own which must not be neglected. Social experience cannot work its will freely, but is hampered by the child's native endowment. Indeed, Piaget shows that the child is at first almost "impervious to experience" (36) and resists the pressure of environment: lives in a world of his own which is dictated by his own peculiar mental equipment—a structure more or less independent of external pressure: ignores the demands of the objective world, and assimilates it to his own subjective schemas. Later there comes a more perfect co-operation between the self and the social environment and a better adaptation to the adult world. We must regard the child "not as a being of pure imitation but as an organism which assimilates things to itself, selects them and digests them according to its own structure." (37) "The history of the child's intellectual development is largely
the history of the progressive socialisation of its individual thought, at first resisting adaptation to social conditions then becoming increasingly penetrated by surrounding adult influences." (38).

Though not wishing to be unappreciative of the value of Piaget's detailed analysis of the child's mental growth, one is aware on reading through his account, of a certain feeling of artificiality about the picture which he gives us of child life. Familiar childish sayings and errors are put forward in support of a theory which would place the processes of child thought in quite a different category from those of the adult. He is perfectly correct in maintaining that a vast gulf separates the child from the adult, but one feels he would have been nearer the truth if he had expressed this difference in terms of needs, impulses and interests, instead of postulating a different type of mentality. The child does live in a world very different from that of the adult, a world built up by him in accordance with his needs and interests — which Piaget completely ignores. It is not necessarily the simplest situations which are mastered first, it is those which are most closely related to the child's needs. Reason is a servant of these needs. It does not exist in its own right, and cannot be studied in isolation. If a true picture of child life is to be obtained. — Piaget,
EXAMINATION OF PIAGET'S THEORY.

Though not wishing to be unappreciative of the value of Piaget's detailed analysis of the child's mental growth, one is aware on reading through his account, of a certain feeling of artificiality about the picture which he gives us of child life. Familiar childish sayings and errors are put forward in support of a theory which would place the processes of child thought in quite a different category from those of the adult. He is perfectly correct in maintaining that a vast gulf separates the child from the adult, but one feels he would have been nearer the truth if he had expressed this difference in terms of needs, impulses and interests, instead of postulating a different type of mentality. of The child does live in a world very different from that of the adult, a world built up by him in accordance with his needs and interests - which Piaget completely ignores. It is not necessarily the simplest situations which are mastered first, it is those which are most closely related to the child's needs. Reason is a servant of those needs. It does not exist in its own right, and cannot be studied in isolation if a true picture of child life is to be obtained. Piaget,
thinking which takes place is frequently of a compensatory
however, appears to regard "Reason" as something
nature and consists in reliving past pleasures and reshaping
which exists apart from the material within which it
the future nears to present desires. Directed thinking
functions, and to measure the degree of rationality
is troublesome and exhausting, and when interest wanes or
reached in any thought process by the extent of its
fatigue causes lapses in attention thought loses its di-
conformity to certain formal rules. The child
reaction and slips into the easy pleasant paths of reverie.
cannot possibly attain to "Reason" in this sense since
James was probably nearer the truth when he described
his thought is not on the plane of objectivity and
thinking by free association as the most common form of
coherence at all. General observation, however,
mental activity. "Pure reason is only one out of a thousand
supported by modern psychological theory seems to in-
possibilities in the thinking of each of us.\(^{39}\) di-
cate that the gulf between child and adult thought
Dorey among many other writers draws attention to the
is not so great after all, and that the difference is
predominant of the emotional element over the rational,
quantitative rather than qualitative as Piaget thinks.
The discipline by which the logical habit of mind is made
to triumph over the caprice of fancy is foreign to human
nature, and achieved at no little cost. "It is over-

(1) Over estimation of adult logicality.
Piaget assumes that the normal mental activity
lacked that rationality and irrationality are largely
of the civilised adult is of the nature of directed in-
irrelevant and episodical in undisciplined human nature.
ience. One can agree with Susan Isaacs \(^{39}\) that men are governed by memory rather than thought, and
that Piaget is taking as his standard the mental life
that memory is not a remembering of actual facts but is
of the trained thinker, and, moreover, is considering
association, suggesting, artistic fancy.... Man save
only one phase of this activity. The majority of
in his occasional times of work and struggle lives in a
adults, even the most cultured, indulge in autistic
world of dreams that is organised about desires whose
thinking to a very great extent, pursuing a directed line
success and frustration form its stuff." \(^{41}\) of thought only when a definite need or interest arises.

When such is not present, the reverie or free associative.
thinking which takes place is frequently of a compensatory nature and consists in reliving past pleasures and reshaping the future nearer to present desire. Directed thinking is troublesome and exhausting, and when interest wanes or fatigue causes lapses in attention thought loses its direction and slips into the easy pleasant paths of reverie. James was probably nearer the truth when he described thinking by free association as the most common form of mental activity. "Pure reason is only one out of a thousand possibilities in the thinking of each of us." (40). Dewey among many other writers draws attention to the predominance of the emotional element over the rational. The discipline by which the logical habit of mind is made to triumph over the caprice of fancy is foreign to human nature, and achieved at no little cost. "It is overlooked that rationality and irrationality are largely irrelevant and episodical in undisciplined human nature: that men are governed by memory rather than thought, and that memory is not a remembering of actual facts but is association, suggestion, dramatic fancy . . . . Man save in his occasional times of work and struggle lives in a world of dreams that is organised about desires whose success and frustration form its stuff." (41).
Piaget's own extremely logical habits of mind, doubt upon Aristotle; or of the unwillingness of many which are no doubt the result of his scientific training, people to listen to argument upon certain topics, to have lead him to overestimate the logicality of the majority of his fellow men. Where he admits that features which he has shown to be peculiar to childhood are found in adults also, one feels that he regards these cases as of matter no more than he feels the difficulty of giving characteristic of a somewhat inferior minority, and fails to recognise that the logical objective thought which he describes as typical of the adult arises only as a result how much there is remaining of the child in the most of keen interest or the need to overcome a difficulty, to civilized adult, while the still common acceptance of remove a doubt, or to satisfy an urge which cannot find superstitious beliefs suggests that the adult is, after immediate expression.

The self-analysis necessary to detect the probability, very similar to the child in his mode of thought dominance of the emotional element in a seemingly purely and behaviour. Like, of course, does not deny man's rational process is found only in a few. Most individuals are fully convinced that they are reasoning logically and that their decisions are based upon a rational study of the facts of the case when analysis would probably reveal the working of a strong prejudice or feeling element which really led to the decision. Reason enters afterwards, and gives a rational justification for a decision which has been already formed on quite irrational grounds. One has only to think of the hostility and opposition which in the past new ideas have been received — or rejected — such, for instance, as Galileo aroused when he cast
and in the case of the child this material, acquired by the
doubt upon Aristotle, or of the unwillingness of many
adult partly through his own experience, largely through
people to listen to argument upon certain topics, to
his acquaintance with traditional experience, is very
feel justified in applying to many an adult words which
limited. He has not had time to acquire the social
Piaget speaks of the child "Just as he makes his own
heritage of his age, nor to assay experience on his own
truth so he makes his own reality; he feels the resistance
account. The illogicality of children would probably
of matter no more than he feels the difficulty of giving
be explained far more satisfactorily as due to ignorance
proofs. He states without proof and he commands without
and inexperience and lack of necessity for such logical
limit." (42) Psychoanalysis has shown very convincingly
thought than by the possession of a "prelogical" type of
how much there is remaining of the child in the most
mentality. Even if it be admitted that the child's
civilised adult, while the still common acceptance of
spontaneous attitude is often egocentric and absolute,
superstitious beliefs suggests that the adult is, after
I think it will be found that he is able under certain
all, except in fields where he is confident of his own
circumstances to take a more relative standpoint. It
ability, very similar to the child in his mode of thought
would be interesting to compare with this the adult's
and behaviour. This, of course, does not deny man's
typical first approach to any problem. It is not this
ability to reason logically, but indicates that he is not
likely to be just as egocentric as that of the child?
such a rational creature as he believes himself to be, and
suggests how closely the rational is bound up with other
aspects of the self, and how misleading is the attempt
to treat the intellect as a separate faculty of the mind.
been indicated. So-called rationality depends largely upon the
amount of experience or organised knowledge at the disposal
of the individual. One cannot reason logically unless
one has a certain amount of material with which to reason.
hinded in a certain situation and regard it as typical of
and in the case of the child this material, acquired by the adult partly through his own experience, largely through his acquaintance with traditional experience, is very limited. He has not had time to acquire the social heritage of his age, nor to amass experience on his own account. The illogicality of children could probably be explained far more satisfactorily as due to ignorance and inexperience and lack of necessity for much logical thought than by the possession of a "prelogical" type of mentality. Even if it be admitted that the child's spontaneous attitude is often egocentric and absolute, I think it will be found that he is able under certain circumstances to take a more relative standpoint. It would be interesting to compare with this the adult's typical first approach to any problem. Is not this likely to be just as egocentric as that of the child?

(ii) Thought a function of needs and interests.

The most logical adult in some circumstances falls into errors of subjectivity and irrationality as has been indicated, while the ordinary adult frequently errs in this way, though able to think and act just as much in accord with reason as his more highly trained fellows. It would be a mistake, therefore, to take a degree of logicality exhibited in a certain situation and regard it as typical of
error because he has failed to recognise that thinking and
the stage of mental development reached. There are
reasoning are so intimately bound up with other aspects of
many different stages of logicality in any one individual,
the self, and that their expression will be different or
according to the nature of the circumstances under which
different subject matter, according to interest and exper-
mental activity is evoked. An adult if faced with an
entirely new situation, or one in which his knowledge and
experience cannot aid him, is likely to exhibit just as
much irrationality as the child, particularly if the sit-
uation is one which arouses a strong emotional tone.
Yet Piaget is very ready to declare the child "prelogical"
or "interted," because under certain test conditions he behaves in a way
which adult logic does not approve. Because the child
is unable to perform various mental operations under cer-
tain circumstances he is judged as incapable of dealing
adequately with that type of situation. This seems
offer. He talks as if "children's questions show
an unjust criticism of the child's intellectual ability,
evidence neither of the search for the mechanism nor of the search for any logical justification
and presupposes a view of the intellect as a more or less
static structure, operating always on the same level at
any one time according to the stage of development reached.
..... In looking for the "why" of things the child is also
Before the age of seven or eight we can expect practically no
exploring the manner of their production. The how is
achievement on the level of adult reasoning, for though the
materials with which the mind deals are derived largely from
the adult world, the structure of the mind is at this stage
autistic, which implies that it is not subject to many of the
how the water from the spouting fountain does not get into
adult laws of logic. Piaget has probably fallen into this
error because he has failed to recognise that thinking and reasoning are so intimately bound up with other aspects of the self, and that their expression will be different for different subject matter, according to interest and experience. 

Thought is essentially a function of needs and interests, yet the situations in which Piaget carries out his investigations appear to be such as would have no reference to the child's needs nor any appeal to his impulses or interests. Any casual observation of children reveals their interest in concrete everyday matters, and I would suggest that, had Piaget tested their ability to reason logically in situations in which they were really interested, he would have had rather different results to offer. He tells us that "children's questions show evidence neither of the search for the mechanical cause of phenomena nor of the search for any logical justification of their judgment but point only to a search for motivation. .... In looking for the 'why' of things the child is also exploring the manner of their production. The 'how' is of no interest and arouses no problems." (43) Observation does not altogether bear out this statement. Julian, a little girl of four, was very interested in discovering how the water from the spouting round the house got into
the tank. Her interest was increased when she
value, as in illustrated by a conversation with Ruth, a
noticed an apparent break in the spouting and she did
little girl nearly three years old. She had been trying
not rest until she had evolved an explanation which was
for some time to attract attention to herself, and during a
a perfectly correct logical inference from the facts she
pause in the adult conversation succeeded. "Why are you
have observed. (C.S.5) Examples could be multiplied al-
seeing?" "Because I want to finish this dress." "Why
most indefinitely of reasoning in strict accord with:
do you want to finish this dress?" "Because I want to wear
adult logic in situations in which the child's interest
it tonight." "Why do you want to wear it tonight?" and so
is roused, (and, of course, where he has sufficient ex-
. She was not in the least disturbed when at last her-
perience), and also of interest in inanimate objects
question was left unanswered, and the conversation turned
which Piaget regards as feeble in children. Two
into other channels. (C.S.1) Such 'whys' have little
parents (44) found that when they asked Jim (5 years old)
significance from an intellectual standpoint, and may be
his own question "Why are the chimneys on boats bent?"
asked in connection with any topic merely from the desire to
he replied "Don't know," and showed no further interest.
establish a social relationship with another person, and in
A year earlier when he propounded the problem he was
the knowledge that the 'why' question is an excellent means of
able to provide himself with an answer. If Piaget
attracting adult attention. Nathan Isaacs in his careful
had used his clinical method to follow up this question
analysis of children's questions points out that many of the
he might have led Jim to give evidence of a "precausal"
child's 'whys' are of an "epistemic" nature i.e. they reflect
stage of development if his interest was not sufficiently
a state when the child is vaguely puzzled and aware of "some-
great to cause him to exert himself to reconsider the
thing wrong with knowledge" - when he experiences some
problem.
unexpected which does not fit in with his previously formed
ideas. He is conscious of a "gap, clash or disparity be-
of children do not signify a desire to know either psycho-
tween past experience and any present event." "Why,
logical motivation or true cause, but have simply a social
then, is an appeal for help of some sort which will remedy
the situation. Later, distinctions arise between the
different kinds of explanation 'why' calls for. "In a
value, as is illustrated by a conversation with Ruth, a little girl nearly three years old. She had been trying for some time to attract attention to herself, and during a pause in the adult conversation succeeded. "Why are you sewing?" "Because I want to finish this dress." "Why do you want to finish this dress?" "Because I want to wear it tonight." "Why do you want to wear it tonight?" and so on. She was not in the least disturbed when at last her question was left unanswered, and the conversation turned into other channels. (C.S.1.) Such 'whys' have little significance from an intellectual standpoint, and may be asked in connection with any topic merely from the desire to establish a social relationship with another person, and in the knowledge that the 'why' question is an excellent means of attracting adult attention. Nathan Isaacs in his careful analysis of children's questions points out that many of the child's 'whys' are of an "epistemic" nature i.e. they reflect a state when the child is vaguely puzzled and aware of "something wrong with knowledge" - when he experiences something unexpected which does not fit in with his previously formed ideas. He is conscious of a "gap, clash or disparity between past experience and any present event." "Why," then, is an appeal for help of some sort which will remedy the situation. Later, distinctions arise between the different kinds of explanation 'why' calls for. "In a
to a large number of cases he becomes able to ask at once for the right kind of explanation and this permits him to further answer an increasing proportion of his questions himself. But he also remains liable still to a sudden sharp breakdown at some point of his cognitive organisation up to date with at least temporary at-a-lossness and helplessness. In such cases he can still only resort to the original open in "why" and appeal for an explanation at large, whatever it may prove to be." (45) He assures us, for example, that "until The two parents to whom reference has been made point out (46) that when the child is dealing with concrete situations he is quite able to give true causal explanations, and that it is only when he is denied experience with material things that he resorts to animistic and "artificialist" explanations. Piaget, however, appears to consider the mental activity involved in the solution of concrete problems to be of a different type from that which functions when problems are presented verbally. In the latter case they have to be solved "mentally." Probably one reason why ability to deal with abstract situations appears later than ability to solve problems concretely is that the child is not as interested as the adult in thinking divorced from action. He is a very practical little person and his interests are concerned largely with actual doing. Owing
to his very much more limited experience he cannot readily call up the images with which to think, nor, if the problem is presented verbally, fix upon the exact meaning to be attached to it. The necessity for logical thought is not nearly so great for the child as for us: his actual bodily needs are supplied by his parents without effort on his part.

It is difficult to free oneself from the suggestion that Piaget, having invented an hypothesis sees his data in one way only — the way in which they fit in with his already-determined scheme of things. He assures us, for example, that "until the age of 11-12 children are incapable of reasoning from pure assumptions, of reasoning correctly from premises which they did not believe in." (47) He cites children unable to reason from the assumed hypothesis "if there were no air in the room" (49), yet later on he himself gives excellent examples of children of eight and nine years being able to handle these correctly. (49) After hearing Shirley (4 years 1 month) remark "Daddy, if you were a rooster and laid eggs, you'd be a rooster-cock, wouldn't you?" (C.S.2) I asked John (6 years 7 months) the question "If you were a chicken, what would your father be?" "A rooster, and a hen would be my mother." (C.S.3) Ruth (3 years 0 months), however, insisted over and over again, "But I'm not a chicken, I'm a little girl." "But if you were?" "But I'm not." and so on. (C.S.1.) Valentine (50) quotes examples of this...
detachment from the immediate point of view as early as 3 years 5 months and reminds us that errors similar to those of the child appear in adults also, quoting the case of students refusing to posit an incredible hypothesis in a test of formal reasoning. One has not to look far for similar examples. In a recent lecture several honours students refused to carry a certain doctrine to its logical conclusion even when they were asked to grant only its strictly logical consequences, and simply protested rather incoherently against the premises.

Observation shows that Piaget is somewhat in error in denying the existence of a relative standpoint during the period described as egocentric. Such remarks as Ruth's at 2 years 11 months seem to show the beginnings of this. "Auntie Kath's brush too big for me. Get my small wee one for my hair." (C.S.1.) It was more clearly demonstrated by Noeline at four years. She was heard to remark to an adult visitor, a friend of the family, who spoke to her of her Auntie Mary. "No. Mary to you. You may call her Mary." (C.S.4.) Shirley (4 years 1 month) after ignoring several questions addressed to her answered her mother's increasing annoyance with "I'm not Shirley, I'm Trevor (a cousin) and you're not my mother you're my Auntie Enid and Daddy's not my father, he's my Uncle Alec." To the question "Has Bill any
sisters?" Shirley answered correctly, "Only me." It is
(C.S.2) (i.e. an "Ruth also replied correctly to the question
"Has Joy any sisters?" or "Ruthie." (C.S.1) The schemas
of reasoning Piaget seems to regard placing oneself at the
other person's point of view as a purely intellectual
operation. Probably, however, it is closely connected
with sympathy, and the readiness to feel with another tally
person would be the beginning at least of ability to
appreciate another person's point of view. Investigation
has shown that children of three and four years can enter
into the joy and sorrow of other people. (51)

(iii). Two planes of thought constitutes another
realm to which Victoria Hazlitt (52) has criticised Piaget
on the ground that he identifies thought with verbal ex-
pressions. In examining this problem we must note the
two planes of thought which Piaget distinguishes, the plane
of action and the plane of language. On the lower
plane, according to Piaget, are activities of a concrete
nature such as the child meets in his outdoor games. Any
intellectual activity or problem solving which takes
place in this connection involves no "reasoning" in the
adult sense of the term, i.e. the child's judgments are imme-
diate and intuitive. The to become conscious of an operation
is to make it pass over from the plane of action to that of
7-8 and 11-12. He implies that the earlier period i.e.
language. On the lower practical plane, since it is egocentric and has no objective standard, thinking takes place by means of personal images and general schemes of reasoning which, though they may be effective from the practical point of view are incommunicable and cannot be regarded as reasoning proper. Childish thought is
"nearer to action than ours and consists simply of mentally pictured manual operations which, like the vagaries of movement follow each other without any necessary connection."
(53) These schemas of reasoning thus form a logic of action but not a logic of thought. is generally agreed that the language, verbal reality, constitutes another realm to which the child must adapt himself just as he had to adapt himself to the physical world. Difficulties which were faced and overcome on the plane of concrete reality reappear in verbal situations and have to be met and overcome here. There is now a conscious realisation of the thought process, hence this type of thought tends to be more subject to law, more communicable and objective.
When, therefore, Piaget concludes from a study of language that a child is incapable of a certain mental operation he means that he cannot yet handle words and ideas as he can actual objects. The process of verbal adaptation, Piaget considers, takes place during the period between 7-8 and 11-12. He implies that the earlier period i.e.
up to 7-8 is the period during which concrete reality is being mastered. But Victoria Hazlitt's experiments (54) seemed to show that quite young children are able on the concrete plane to make exceptions and to generalise, or at least perform the essential operations involved in generalisation, and some were even able to express in words the operations they had performed. It does not seem to follow that because the child is not conscious of his thought processes they are subject to no law. This would appear to be analogous to saying that because the child is not conscious of grammar his speech is ungrammatical. It is generally agreed that the ability to formulate verbally marks a development from the perceptual to the abstract stage; nevertheless we may question the validity of Piaget's suggestion that on the "lower plane" thought necessarily takes place only by general subjective schemes of imagery which are vague and illdefined and subject to no laws of logic in our sense. We must, of course, recognise the exceedingly close connection which exists between thought and language; yet Dr. Berg tells the story of a savage tribe who had no numerals above three, yet were able to play accurately and rapidly a game which involved arithmetical calculations of great complexity. (55) Apparently in this case the absence of verbal symbols did not prevent a completely logical process of thought which...
to one could not be adequately explained by a general schema of growth of imagery. Hazlitt's results seem to suggest that this same point probably not be uniform but will vary from point to point. Is there such a great difference between the two planes of thought? The solution of a problem in the concrete usually involves a certain amount of ideational activity. On the verbal plane objects are replaced by ideas and images. But are not these ideas handled by the mind in precisely the same way as the concrete objects, the only difference being that any in the ideational elements are much more elusive and ill-defined, and therefore more difficult to keep in mind and manipulate, when the actual objects are not there for reference. For adult as well as child we should expect abstract thought to be more difficult than that concerned with practical problems. Skill in manipulating ideas can come only through a certain familiarity with them which must be gained through experience. A child is bound to have more difficulty in thinking "verbally" unless the problem is related to a field with which during he is very familiar, for he will lack the necessary exclusivity images, or at least will be restricted by their paucity and lack of clarity. It seems, therefore, that in child instead of a sudden transition from one plane of thought only a very small number of remarks addressed to other children.
to another superimposed upon it, there is, rather, a gradual
growth in ability to deal successfully with images and ideas.
This growth will probably not be uniform but will vary from
point to point according to the amount of experience which
the child has in a particular field, which in turn will de-
pend largely upon his interests and his direct needs. The
processes involved seem to be of essentially the same nature,
differing only in complexity and range. C. Spearman, speaking
of the passage from concrete to abstract, says: "All cognitive
growth consists in a progressive clarification ... so soon as
any item of mental content has become sufficiently clear and
distinguishable, then and then only it admits of being abstract-
ed."

36. (iv) Egocentric Language.

Some of the unexpected results obtained by Plaget can
perhaps be explained by the method which he used to gather his
material. Active in the opening chapter of "The Language and
Thought of the Child," he describes the way in which were gath-
ered the data used in determining the coefficients of egocen-
tricism—the starting point of his theory. The activities
during which the children were observed seem to be almost ex-
clusively individual occupations—drawing, modelling, reading
and number games. Since when we remember how seriously the
child takes his play activities it is not surprising to find
only a very small number of remarks addressed to other children.
If a group of adults were studied while pursuing any occupation with the same concentration that the young child usually puts into his, they also would doubtless show a minimum of concern for communication with others. True, Piaget's children, as well as displaying an utter lack of concern for the opinions of their companions, exhibit a large percentage of "egocentric" remarks, i.e., remarks concerned with the self and its own activity. These appear to have no social function, and seem to serve simply as an accompaniment to action. There does not, however, seem anything significant in this. Language accompanying action is, by no means rare among adults, particularly among the less cultured classes. That it is found to be much more common among children is probably due to the fact that they have not yet learnt to inhibit speech that has no social significance. It is now generally recognised that the emotive use of language is prior to and more fundamental than its use in the communication of thought. Much of the language which Piaget describes as egocentric has this emotive value and its disappearance in the adult (a matter of degree only) can be adequately explained as due to inhibitions socially acquired. Cooley, speaking of the solitary conversations of children shows the continuity which exists between the thinking aloud of the little child and the more
reticent thought of the adult which also takes place largely in dialogue form. "Speaking broadly it is true of adults as of children that the mind lives in perpetual conversation.... The fact is that language, developed by the race through personal intercourse and imparted to the individual in the same way, can never be dissociated from personal intercourse in the mind; and since higher thought involves language it is always a kind of imaginary conversation.... The impulse to communicate is not so much a result of thought as an inseparable part of it." (57) Piaget found that the percentage of egocentric remarks diminished considerably at about seven years. Further observation is, however, necessary to confirm this. Susan Isaacs found little or no egocentric language in the presence of others in the children she studied. (58).

Possibly if Piaget had observed children under other conditions he would have found a greater desire for communication. Many little children are eager to tell about the day's doings. Ruth at 3 years 1 month often greets "Auntie Free" at night with an account of anything of unusual interest that has occurred during the day; and I, as a visitor, am frequently forced to listen to her recital of items of interest to her (I say forced to listen, for Ruth's remarks are emphatically designed to produce results in the social environment). At dinner after
securing our attention she told us the story of Jairus's daughter, which her father had told her a few days before. "The little girlie was so sick, and when the father came he gave her some medicine and took her hand." (C.S.L.)

Certainly Ruth's social relations were usually with adults as the only other child in the family was still a baby. But adults are just as much a part of the child's normal environment as are other children, and communication with adults, if spontaneous on the child's part, can be indicative of social development. It is true that children communicate with each other in order to play rather than to tell each other their thoughts, as Piaget points out (59), a fact which again reminds us of the intimate connection which exists between interest and mental activity. Strength? have to a child of six, or, "Has thought got strength?" (61)

The disadvantages of the clinical method carried out are expressed. One feels completely in agreement with the ideas criticism which Susan Isaacs has put forward of Piaget's a "clinical" method which is used to reveal the child's idea of nature and of physical causality. "The clinical method brings to light not the ordinary intellectual tools of children at the ordinary level of practical intelligence, but their deeper fantasies. The child has not the organis-
ed body of knowledge to resist being pushed back into the realm of fantasy and egocentricism below rational thought."

when prompted towards fantasies by an influential adult."

(60) Though Piaget warns us that the tendencies he reveals are only subconscious trends of thought and not child's definite conceptions, nevertheless by his detailed examination of these he seems to have placed a false emphasis on the child's fantasy life. It is doubtful whether much will be gained by an attempt to measure the strength of these tendencies, particularly when the technique by which this is attempted is open to such serious criticism.

It can certainly be questioned whether the method does reveal the stage of development which the child has actually reached. Many of Piaget's questions would be puzzling to an adult and must be completely bewildering to the child. What meaning can questions such as "Can a word have strength?" have to a child of six, or "Has thought got strength?" (61)
The situations in which the investigations were carried out are extremely artificial. The fact that the questions used were those first asked by the children themselves has no particular advantage as is illustrated by Jim's answer to his own question a year later. (62) The very fact that they are asked by an adult of the child tends to suggest motivation. "The word 'why' passes from its epistemical sense (where that had been operative) to the informational one - and naturally the most familiar informational one, viz. in the earlier years, that of motive or purpose." (63)
The conditions of the tests - a lengthy talk with an adult - are not likely to reveal the child's capacity at its best: and, as Susan Isaacs points out (64) the child's best performances must be included if we wish to make any pronunciation as to the limits of ability, or aim at a restatement of unfamiliar phenomena; his results apparently have not led him to agree with Piaget on this matter: (65)

The deeper levels of mind which deal in myth and fantasy are not peculiar to the child and the savage. The more simple explanation is: if, for example, the child's forms which fantasy takes will vary in the civilised adult because of conventional thought habits and the pressure of this largely because from the time he learned to utter the organised knowledge and experience, and for similar reasons name of any object he perceived this to be a very efficient will be driven further below the surface. Though in means of attaining that object? His mother gave him interesting to the psychoanalyst in the interpretation of ball, a cry for food caused it to appear: hence it is myth and dream and the understanding of abnormal states, surprising that the distinction between words and things in their practical importance under normal circumstances is difficult to make, and that the child tends to think that small. The child is interested also in the familiar knowledge of the name of an object gives him a certain power concrete affairs of everyday life, and those concerned of fantasy. It would appear, then, that in spite of and Isaac reminds us that Janet and his followers would his assurances Piaget is placing too much significance upon these deeper levels of the mind which under normal world of men and things rather than the fixation of a state it is only through direct teaching that he learns otherwise: of fantasy. It would appear, then, that in spite of and Isaac reminds us that Janet and his followers would his assurances Piaget is placing too much significance support the child in his idea that thinking is in the thrust, upon these deeper levels of the mind which under normal while ideas put forward by such thinkers as Whitley and conditions, have no great interest for parent or teacher, Edington have their counterparts in the dynamic substantivalism and, moreover, is basing this theory upon results obtained of the child. (66) Piaget has also omitted to consider the
influence upon the child's answers of the teaching of the
by a technique which owing to the danger of suggestion
same or related subjects in the school curriculum.
may seriously distort the picture of child mentality.

Piaget's use of the concept of stages in connect-
That the clinical method does do this is suggested by
ion with the child's developing ideas of causality is
Huang's investigations into young children's explanations
particularly unfortunate. He distinguishes no less than
of unfamiliar phenomena; his results apparently have not
seven different types of causal explanation given by
led him to agree with Piaget on this matter. (65)
the child in his passage from magic to rational explana-

Many of the phenomena discussed appear to have
ations, admits later that there are no general stages but
quite a simple explanation. If, for example, the child
does tend to consider the name as part of the thing, is not
matter, and in answer to criticism so modifies his readers'
this largely because from the time he learned to utter the
conception of the meaning attached to the word "structure"
name of any object he perceived this to be a very efficient
that he seems only to be saying in the most disleading
means of attaining that object? His mother came at his
manner that the child's ideas are the result of what is
call, a cry for food caused it to appear; hence it is not
generally known as "experience." (67) And then it may be
surprising that the distinction between words and things is
asked how he would reconcile this with his previous state-
difficult to make, and that the child tends to think that
ment that the child is up to a certain age almost "imper-
knowledge of the name of an object gives him a certain power
ious to experience." over that object. Locating thought, dreams etc. in the
mouth, throat or ears is of no special significance, since
it is only through direct teaching that he learns otherwise:
and Nunn reminds us that Watson and his followers would
support the child in his idea that thinking is in the throat,
while ideas put forward by such thinkers as Whitehead and
Eddington have their counterpart in the "dynamic substantialism"
of the child. (66) Piaget has also omitted to consider the
influence upon the child's answers of the teaching of the
same or related subjects in the school curriculum.

Piaget's use of the concept of stages in connection
with the child's developing ideas of causality is
particularly unfortunate. He distinguishes no less than
seventeen different types of causal explanation given by
the child in his passage from magic to rational explana-
tions, admits later that there are no general stages but
a number of particular stages for each type of subject
matter, and in answer to criticism so modifies his readers'
conception of the meaning attached to the word "structure"
that he seems only to be saying in the most misleading
manner that the child's ideas are the result of what is
generally known as "experience." (67) And then it may be
asked how he would reconcile this with his previous state-
ment that the child is up to a certain age almost "imper-
vious to experience."
that this doubt was justified.

**EXPERIMENTAL DATA**

**THE LOGIC OF RELATIONS.**

According to Piaget’s theory it is the social factor which plays the greatest part in mental development. By contact and conflict with other minds the child’s mind becomes aware of itself, and in consequence loses its egocentric characteristics and is prepared to take a relative and objective view of the world. About 7-8 the child’s social nature asserts itself and these changes take place.

It is relevant here to ask with Susan Isaacs whether the social factor is the only one which assists the child in this progress from a subjective and absolute to an objective and relative point of view, or whether we must take account also of the influences of the physical world. Whatever way we answer this question does it not seem to anyone who has come into sympathetic contact with little children that those ages of which Piaget speaks have been placed far too high? It is unfortunate that he has given us no indication of the mental level of the children he studied, particularly in view of the fact that the number of cases was very somewhat restricted. His general observations throw no doubt upon the correctness of the ages at which Piaget placed such invariant errors, and my own tests have seemed to indicate.
that the number of children tested by Piaget was not sufficient to warrant dogmatic assertions of a novel kind, particularly in view of the fact that the general level of intelligence was not taken into account. Show on my right.

THE LOGIC OF RELATIONS.

Piaget's test in the "logic of relations" as described in "Judgment and Reasoning" was carried out with forty-eight children between the ages of four and ten years selected at random from a primary school. Because it was felt that some of Piaget's results were surely not obtained from children of normal intelligence, and that more weight could be placed upon results obtained from a few cases if general intelligence were taken into consideration, each child whose answers were used in the investigation was first subjected to the Terman intelligence test, and the children have been classified according to the mental age thus determined. Six of the children were on this account placed in the year group below their chronological age, four in the group two years above, twenty-one one year above, while the rest remained in the same year group as that indicated by their chronological age. It was not, of course, hoped to gain any conclusive evidence from such a small number of cases. It is fully realised that any conclusions drawn from these investigations are merely tentative and must remain so until research upon a very much larger scale has been carried out. One feels, moreover,
that the number of children tested by Piaget was not sufficient to warrant dogmatic assertions of a novel kind, particularly in view of the fact that the general level of intelligence was not taken into account. Show me my right leg. Now the questions used in this test were the same as those used by Piaget and described by him in "Judgment and Reasoning," Chapter 3 on "The children were examined individually and their answers recorded. The following is a list of the questions in the order in which they were asked:

1. (The child is opposite the experimenter who has a penny in his breast pocket. on the left arm) You see this.

2. How many brothers have you? And how many sisters? And (Let us suppose that the child has a brother A and a sister B.) And how many brothers has A? And how many sisters? And how many brothers has B? And how many sisters? to the

3. How many brothers are there in the family? And how many sisters? And how many brothers and sisters altogether? to the

4. There are three brothers in the family: Jack, Alan, and Don. How many brothers has Jack? And, Alan? And, Don? And,

5. Are you a brother (or sister)? What is a brother (or sister) defined as before with three objects in a box. The child is told)

6. How many brothers are there in this family? short time.
Look very carefully and then afterwards tell me by heart

11. Right and Left.

How the things were arranged.

7. Show me your right hand. Your left.

Show me your right leg. Your left.

8. Show me my right hand. My left. Show me my right

leg. Now my left. (Experimenter sitting opposite the

child.)

The answers were marked as indicated by Piaget, none

of the tests being counted as correct unless all the quest-

ions in it were correctly answered. The results of the

test for each child were as follows: (A cross indicates that

9. (A penny is placed on the table to the left of a pencil

in relation to the child) Is the pencil to the right or to

the left? And the penny?

10. (The child is opposite the experimenter who has a penny

in his right hand and a watch on the left arm) You see this

penny. Have I got it in my right hand or in my left? And

the watch?

11. (The child is opposite three objects in a row: a

pencil to the left, a key in the middle and a coin to the

right.) Is the pencil to the left or to the right of the

key? And of the penny? Is the key to the left or to the

right of the penny? And of the pencil? Is the penny to

the left or to the right of the pencil? And of the key?

(Six answers.)

12. (The same questions as before with three objects in a

row opposite the child. But the objects are only shown for

half a minute and are then covered over. The child is told)

I am going to show you three things for a very short time.
Look very carefully and then afterwards tell me by heart how the things were arranged.

The answers were marked as indicated by Piaget, none of the tests being counted as correct unless all the questions in it were correctly answered. The results of the test for each child were as follows: (A cross indicates that the question was answered correctly, a line that the question was not asked eg. when the child had no brothers or sisters.)

Results of Test on Logic of Relations.

<table>
<thead>
<tr>
<th>Name of Child</th>
<th>Mental Age</th>
<th>Number of Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patsy</td>
<td>4 years</td>
<td>X</td>
</tr>
<tr>
<td>Noel</td>
<td>Colleen</td>
<td>X X X X</td>
</tr>
<tr>
<td>June</td>
<td>Jim</td>
<td>X X X</td>
</tr>
<tr>
<td>Nona</td>
<td>Billy</td>
<td>X X X</td>
</tr>
<tr>
<td>Alan</td>
<td>5 years</td>
<td>X X</td>
</tr>
<tr>
<td>Brian</td>
<td>Graham</td>
<td>X X X X X X X X X</td>
</tr>
<tr>
<td>Tom</td>
<td>Bruce</td>
<td>X X X X X</td>
</tr>
<tr>
<td>Averill</td>
<td>Juliet</td>
<td>X X X X X X X X X X</td>
</tr>
<tr>
<td>Allison</td>
<td>Tony</td>
<td>X X X X X X</td>
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<tr>
<td>Peter</td>
<td>Ron</td>
<td>X X X X X X X X X X</td>
</tr>
<tr>
<td>Dawn</td>
<td>Yvonne</td>
<td>X X</td>
</tr>
<tr>
<td>Joan</td>
<td>Pauline</td>
<td>X X X X X X X X X X</td>
</tr>
<tr>
<td>Name of Child</td>
<td>Age</td>
<td>Number of Questions</td>
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<tr>
<td>Alec</td>
<td>6 years</td>
<td>X X X X X X X</td>
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<tr>
<td>Dick</td>
<td>8 years</td>
<td>X X X X X X X X X</td>
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<tr>
<td>Berry</td>
<td></td>
<td>X X X X</td>
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<tr>
<td>John</td>
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<td>X X X X X X X</td>
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<tr>
<td>Gerald</td>
<td></td>
<td>X X X X X X X X X X</td>
</tr>
<tr>
<td>Jan</td>
<td>9 years</td>
<td>X X X X X X X X X</td>
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<td>Annen</td>
<td></td>
<td>X X X X X X X X X</td>
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<td>Billiey</td>
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<td>Luluy M</td>
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<td>X X X X X X X X X X</td>
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<td>Marien</td>
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<td>X X X X X X X X X X</td>
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<td>Armbr</td>
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<td>X X X X X X X X X</td>
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<tr>
<td>John</td>
<td>7 years</td>
<td>X X X X X X X X</td>
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<tr>
<td>Betty B</td>
<td>10 years</td>
<td>X X X X X X X X X X X</td>
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<td>Ngaire</td>
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<td>X X X X X X X X X</td>
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<td>Patchie</td>
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<td>X X X X X X X X X X X X</td>
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<td>Colleenl</td>
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<td>Billy</td>
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<td>X X X X X X X X X X</td>
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<tr>
<td>Brian</td>
<td>8 years</td>
<td>X X X X X X X</td>
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<tr>
<td>Tom</td>
<td></td>
<td>X X X X X X X X</td>
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<tr>
<td>Averill</td>
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<td>X X X X X X X X X X X</td>
</tr>
<tr>
<td>Allison</td>
<td></td>
<td>X X X X X X X X X</td>
</tr>
<tr>
<td>Peter</td>
<td></td>
<td>X X X X X X X X X X</td>
</tr>
<tr>
<td>Dawn</td>
<td></td>
<td>X X X X X X X X X</td>
</tr>
<tr>
<td>Joan</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
</tbody>
</table>

The table represents the evaluation of children's mental abilities with a scale of 1 to 12, where 'X' indicates a score in that category.
<table>
<thead>
<tr>
<th>Name</th>
<th>Mental Age</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>7</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dick</td>
<td>8 years</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>John</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don</td>
<td>9 years</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keith</td>
<td>6 years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shirley</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Betty M</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doreen</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Armer</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Betty B</td>
<td>10 years</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Billy</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cynthia</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marybell</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alex</td>
<td>6 years</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daird</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results of these tests (classified according to mental age) show a difference of about two years when compared with Piaget's results.
compared with those of Piaget.

The results of these tests tabulated for comparison with Piaget's results are as follows:-

<table>
<thead>
<tr>
<th>Name</th>
<th>Tests passed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Years.</td>
</tr>
<tr>
<td></td>
<td>Child Age.</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>2 x</td>
</tr>
<tr>
<td>6</td>
<td>2 x</td>
</tr>
<tr>
<td>7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>8</td>
<td>2 3 4 5 6 7 9</td>
</tr>
<tr>
<td>9</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>10</td>
<td>1 10, 11, 12</td>
</tr>
<tr>
<td>Patsy</td>
<td>10</td>
</tr>
</tbody>
</table>

Piaget's results were as follows:-

<table>
<thead>
<tr>
<th>Name</th>
<th>Tests passed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Years.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Marie</td>
<td></td>
</tr>
<tr>
<td>Alco</td>
<td></td>
</tr>
<tr>
<td>June</td>
<td></td>
</tr>
<tr>
<td>Bruce</td>
<td></td>
</tr>
<tr>
<td>Berry</td>
<td></td>
</tr>
<tr>
<td>Tony</td>
<td></td>
</tr>
<tr>
<td>Jan</td>
<td></td>
</tr>
<tr>
<td>Alan</td>
<td></td>
</tr>
<tr>
<td>Gerald</td>
<td></td>
</tr>
<tr>
<td>Graham</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

The results of these tests (classified according to mental age) show a difference of about two years when
The following are the results of the same test the children being arranged according to chronological age:

<table>
<thead>
<tr>
<th>Name of Child</th>
<th>Chronological Age</th>
<th>Number of Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Juliet</td>
<td>5 years</td>
<td>X X X X X X X</td>
</tr>
<tr>
<td>Name of Child</td>
<td>Chronological Age</td>
<td>Number of Tests</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Lulu</td>
<td>6 years</td>
<td>X</td>
</tr>
<tr>
<td>Pauline</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>Dawn</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>Colleen</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>John B.W.</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>John C.</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>Betty H.</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>Ngaire</td>
<td>7 years</td>
<td>X X X X</td>
</tr>
<tr>
<td>Brian</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>Averill</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>Jim</td>
<td></td>
<td>X X X</td>
</tr>
<tr>
<td>Joan</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>Armer</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>Billy C.</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>Tom</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>Peter</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>Pat</td>
<td></td>
<td>X X X X</td>
</tr>
<tr>
<td>Cynthia</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>Billy B.</td>
<td>8 years</td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>Don</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>Shirley</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>Allison</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
</tbody>
</table>
The children who could not say at once how many
numbers were in their own brothers and sisters had
questioned the names indicated by Piaget. Has
any brother (or sister) had a brother (or sister)?

<table>
<thead>
<tr>
<th>Name of Child</th>
<th>Chronological Age</th>
<th>Number of Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Betty M.</td>
<td>9 years</td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>Keith</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>Marybell</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>Betty B.</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>Alec</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>Doreen</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
<tr>
<td>David</td>
<td></td>
<td>X X X X X X X X</td>
</tr>
</tbody>
</table>

Well has Ruby a brother? No, she hasn't a brother, she's only got me and her brother (or sister) had a brother (or sister). (Cf. Piaget.)

<table>
<thead>
<tr>
<th>Year</th>
<th>Tests Passed</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>2 3 5 6 7 9</td>
</tr>
<tr>
<td>6</td>
<td>2 3 5 6 7 9</td>
</tr>
<tr>
<td>7</td>
<td>1 2 3 5 6 7</td>
</tr>
<tr>
<td>8</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>9</td>
<td>2 3 4 5 6 7</td>
</tr>
</tbody>
</table>

The divergence between these two sets of results is so great as to suggest the need for some consideration of general intelligence in determining a question of this nature.

* In the following discussion of the tests the ages given refer to mental age.
The children who could not say at once how many brothers and sisters their own brothers and sisters had were questioned in the manner indicated by Piaget. Has (John) any brothers? No. Aren't you his brother? Yes. The has John any brothers? Yes, one. Who is that? Me. One wonders whether the answers quoted by Piaget where the children persist in error even after being questioned were typical cases or exceptions. Of the twenty one children questioned only two persisted in the statement that their brother (or sister) had no brother. Bill (6 years*). Has Ruby a brother? No. Aren't you her brother? Yes. Well has Ruby a brother? No, she hasn't a brother, she's only got me to play with. Brian (3 years) said that he had two brothers, Barny and Garry. Barny had one brother (Garry), and Garry had no brothers. The solution of his difficulty however, was made clear by the answer he had given to question 3. There are three brothers in a family, Jack, Alan and Don. How many brothers has Jack? And Alan? And Don? When this question was put to Brian he said at once "You can't tell because you don't know which was the biggest."

The phenomenon of juxtaposition which is a dominant feature of childhood, particularly of the period before 7-8 many brothers Barny and Garry had was not due to the inability when egocentricism is at its height can be clearly seen in to see their point of view, but rather to the false idea that the use of the conjunction "because." The main uses of "because" are according to Piaget (1) refer to mental age. In the following discussion of the tests the ages given (2) refer to mental age.
"brother" was a younger brother. Patsy (4 years) had difficulty in understanding that her baby sister could be a sister and have sisters as well as the older members of the family. "How many sisters have you?" One. "And what is her name?" Audrey — and there's Pam, too, but she's a little baby. "How many sisters has Audrey?" One. "Who is that?" Me. "Isn't Pam her sister?" Yes, but she's only a little baby. "But she is a sister?" Yes. "Well, how many sisters has Audrey?" Two etc. This is obviously not an error of the same nature as Bill's.

All the other children immediately corrected themselves when asked. "Are you (John's) brother? Then has (John) a brother? Some corrected themselves laughingly — Yes of course he has a brother, me. To others it was of the nature of a discovery. Pauline (5 years) said her brother had no sisters. "Are you his sister?" Yes. "Well, has he any sisters?" Yes — I've got a brother and he's got a sister!" etc., and then to the hundred from seven to nine years by which time the children were able to tell the blackboard. 

**Juxtaposition and the use of "because."**

The phenomenon of juxtaposition which is a dominant feature of childhood, particularly of the period before 7-8 when egocentrism is at its height can be clearly seen in the use of the conjunction "because." The main uses of "because" are, according to Piaget, (1) causal explanation, (2) logical justification. The relations, however, are not
test the older ones as (1) was answered correctly by all clearly perceived by the child. Elements are simply the children, even the four year olds, and (2) by all the recognised as belonging together but not as bearing any five year olds but one, and by all at 6, 7, and 8 years, definite relation to one another. The child, for ex-

This seems to suggest that both may be correctly comple-

ample, when given the sentence "I teased the dog be-

cause ...." completes it "because it bit me." What he

In order to examine further the phenomenon of really means, of course, is "and it bit me," or "The dog juxtaposition as revealed by the confusion of relation bit me because I teased it." But the relation between indicated by the use of "because" twelve sentences can the two events is not perceived, hence the inversion of cause taking "because" were given to each child to complete, and effect. In some cases "because" is used to mean simply "and," in some cases it introduces clauses which tell "how" in "Judgment and Reasoning" Chapter rather than "why." All this clearly illustrates the ex-

(1) That man fell off his bicycle because

(2) I shan't go to school tomorrow because

(3) I went to the pictures because

(4) That boy threw a stone because

(5) I teased the dog because

(6) The dog bit me because

(7) I've lost my pen because

(8) 7-J.

From this he discovered that (1) was completed successfully (i.e. by 75%) at seven years, (2) at eight years. "It may therefore be assumed that on an average the correct use of the empirical "because" takes its start at the age of 7-8." (68)

From answers given by the children tested one I gave these two sentences to all the children from four to eight years (mental age). It was not found necessary to
test the older ones as (1) was answered correctly by all to the children, even the four year olds, and (2) by all the five year olds but one, and by all at 6, 7, and 8 years. This seems to suggest that both can be correctly completed at five years' sentences. The total number of mistakes at six.

In order to examine further the phenomenon of juxtaposition as revealed by the confusion of relationshight indicated by the use of "because", twelve sentences containing "because" were given to each child to complete. These were taken mainly from those mentioned by Piaget in "Judgment and Reasoning" Chapter was due to the inversion of the man fell off his bicycle because it hit me in (1). That "Ishan't go to school tomorrow because of the child.

(3) A man fell down in the street because he could not

(4) I had a bath because sentence. This was not, of

(5) I teased the dog because it seemed to indicate clear-

(6) The dog bit me because asserted the fact that a certain

(7) I went to the pictures because did some of the others,

(8) I've lost my pen because occurred to them.

(9) That boy threw a stone because

(10) I hurt myself because seem to indicate that this may not

(11) I went a message yesterday because as Piaget would lead

(12) I helped mother this morning because of the five year olds correct. From answers given by the children tested one would conclude that answers such as Piaget quotes must surely
be very exceptional. The twelve sentences were given to
each child. Eight children were tested at five years:
out of ninety-six possible errors three children together
made five mistakes; the remaining five children correctly
completed the twelve sentences. The total number of mistak-
es at six years (possible 84, seven children only tested) was
eleven; at seven years two mistakes (possible 60); at eight
years, three mistakes (possible 96).

The greatest number of mistakes occurred in
sentence (5). Of the twenty-one errors recorded, nine were
made in (5) and all but one of these was due to the inversion
of cause and effect. "I tease the dog because it bit me"
was the typical incorrect response. Several of the child-
ren refused to complete this, saying that they could not
think of an ending to that sentence. This was not, of
course, counted as an error, for it seemed to indicate clear-
ly that these children appreciated the fact that a certain
relation was required, and did not, as did some of the others,
give the first relation that occurred to them.

It is not denied that juxtaposition does exist but
the results of these tests seem to indicate that this may not
be such a universal feature of childhood as Piaget would lead
us to believe. The fact that the majority of the five year
olds correctly completed the twelve sentences helps to bear
out this suggestion, for if juxtaposition is as widespread as
Piaget thinks, surely such sentences as (5), (7), and (9) would reveal it, unlike those of causality or any others indicated by the word "because" necessarily presupposes a Part-Whole Relation. Or at any rate it presupposes that John said to his sisters, "Part of my bunch of flowers is yellow." Then he asked them the colour of his bunch. Mary said "All your flowers are yellow." Jean said "Some of your flowers are yellow." Betty said "None of your flowers are yellow." Which was right? (69). Similar to Piaget found that most of the boys of nine and ten years answered that it was all yellow, that Mary and Jean were saying the same thing. This he considers illustrates yet further the child's incapacity for the logic of relations - his tendency to think about things absolutely and not in relation to one another.

Quite different results, however, were obtained from this test. The answer was correctly given by four of the seven children tested at 5 years, five of seven at 6 years, four of five at 7 years, six of eight at 8 years, and all the nine-year olds. The errors were of the kind indicated by Piaget, discordance in the sense of "because" and "and."

"Explicit discordance, or, in other words discordance indicated by the conjunction of subordination would seem most probably not to be understood until about the age
fully realised that a different language medium has been of 11-12 and at any rate not before the age of 10 ....
used.
For this relation unlike those of causality or any others
language, and are indicative of the French child's use of
indicated by the word "because" necessarily presupposes a
the words "parce que," "bien que," "quelque" etc. The
knowledge of general propositions: or at any rate it pre-
results obtained here in English may simply reflect a slight
supposes the awareness of propositions of a greater de-
language difference, or may on the other hand suggest as did
degree of generality than is the case in causal relations.
the former results in the test of relations that the child

To examine this statement, that explicit discord-
mental ability. It is difficult to see how, in the case
ance cannot be understood till about 11 years five sentences
of "because" a difference due to language would show itself.
similar to those used by Piaget were given for completion.
In both languages the word is heard and used at a very early
age, but the meaning attached to it appears to be essentially
1. I did not get wet even though
2. I went for a bathe even though
3. Jack is playing in the street although
4. I walked all the way to town although
5. I ate another apple although

The answers from the children at 5 and 6 years
showed much confusion. Pauline (5 years) correctly com-
pleted all. Less confusion appeared at 7 years, at 8 years
only five errors (possible forty five) were recorded, at 9
and 10 years one error appeared (possible fifteen at each
age).
The errors were of the kind indicated by Piaget,
"although" being used in the sense of "because" and "and."

In testing child logic by means of conjunctions
such as "because," "although," "even though" etc. it is
fully realised that a different language medium has been used. Piaget's results were obtained in the French language, and are indicative of the French child's use of language. The results of experiments carried out along lines similar to those used in Geneva seem to indicate that the results obtained here in English may simply reflect a slight language difference, or may on the other hand suggest as did Piaget that he believes possible. Though as has been said the former results in the test of relations that the child-number of children examined was so small that the results are not conclusive. It is at least possible that the child's mental ability is different. In the case of "because" a difference due to language would show itself. If this were to happen it would upset Piaget's theory somewhat. In both languages the word is heard and used at a very early age, and the meaning attached to it appears to be essentially the same. If thought takes place earlier than Piaget would be prepared to admit, or is it that, as Susan Isaac has suggested, other factors e.g. experience of the physical world, enter and make their influence felt in the early years of the child's life? It is probable that both these factors are operative. It is difficult to believe that the child reaches the age of seven or eight years with his thought almost untouched by social influences, and it is equally difficult to suppose that the physical world has no educative influence during these early years. It seems clear that the child must very early become aware of a stable order of things outside himself.
His desires are thwarted by persons or by things, and this resistance is a first educative force he encounters. The results of experiments carried out along lines similar to those used in Geneva seem to indicate that the child can perform tasks set by Piaget several years earlier than he believes possible. Though as has been said the number of children examined was so small that the results have to conform to certain unrelenting conditions, if he can be in no way conclusive, it is at least possible that further investigation may confirm what this suggests. If this were to happen it would upset Piaget's theory somewhat, for he has a logical explanation for the appearance of certain difficulties at certain ages. Is it that socialisation of thought takes place earlier than Piaget would be prepared to admit, or is it that, as Susan Isaacs has suggested, other factors enter and make their influence felt in the early years of the child's life? It is probable that both these factors are operative.

It is difficult to believe that the child reaches the age of seven or eight years with his thought almost untouched by social influences, and it is equally difficult to suppose that the physical world has no educative influence during these early years.

It seems clear that the child must very early become aware of a stable order of things outside himself.
His desires are thwarted by persons or by things, and this resistance of external objects is probably the first educative force he encounters. One of the first ways in which the objective world makes itself felt is in the need for motor adaptation. (71). The child can move his limbs at random, but if he wishes to watch his mother moving about the room he has to move his eyes and perhaps his head i.e. he has to conform to certain unrelenting conditions. If he does not know all that he has been doing. It is possible that wishes an object at the other side of the room he must crawl to it—it will not come to him. The utterance of his mother's name or a cry of distress may bring his mother to his side, but the physical world is not so kind. A chair is hard and hurts him when he bumps against it, and if he attempts to punish it (as parents sometimes encourage him to do, thus hindering his development by suggesting that the chair was the active cause of the pain and not his own clumsiness) he usually suffers still further. Observation soon teaches him that other people also have to submit to the conditions of the outer world in order to achieve their purposes. As he grows older and learns to manipulate physical objects for his purposes, in games and in constructive activities, he must gain a fairly clear idea of the meaning of cause and effect as it operates in the material world.

In the case of the social world, that composed of parents, relatives and others with whom he comes into contact,
it is no doubt more difficult for the child to realise the
existence of an external order quite apart from himself. He
is usually the centre of his own little world. Parents and
other adults around him know all about him and are aware of
everything that happens to him i.e. of everything of which he
is aware, so that we can well understand why like Bertrand
Russell's son (72) he expresses surprise when an adult does
not know all that he has been doing. It is possible that
the child learns to respect the stability and objectiveness of
the physical world, in behaviour if in nothing else. How
comes it, then, that he manifests tendencies towards "arti-
ficialism" animism, magic etc? Much, though by no means all,
can probably be explained as due to the influence of adult
teaching and of his own experience. When the child is
questioned about things beyond his knowledge or direct expe-
rience he will unconsciously base his answer upon explanations
which have previously given of related phenomena. "God made
it" is a very frequent reply to many of the awkward questions
only very gradually; nevertheless quite young children
of childhood, and the suggestion here contained, that everything
has been "made" in the way that human being "make" things,
probably accounts for much of the child's "artificialism."

The confusion of cause with motivation can be readily understood when we remember that the "whys" addressed to children by adults are nearly always "whys" of motivation. "Why did you do that?" "Why did you hurt baby?"

The causes of child animism and magic, however, appear to lie somewhat deeper. Piaget seems to think that until seven at least the child lives in a world completely different from ours. The world of the child is completely different for the child from what it is for us. "It is made up almost in its entirety by the mind and by the decisions of belief.... By reason of the same cause which prevented him from adapting himself to other people the child will fail to be adapted to the observation of the senses." (73). But it is certain that, for most children at least, "observation of the senses" has brought home to them well before the age of seven the fact that there is a stable objective world order apart from themselves. The clearness of the distinction between the child's own world of which he is the centre and the external world which forces itself upon him through his dealings with it varies with different children and increases only very gradually; nevertheless quite young children show that they are capable of appreciating the world as it is in regard to it. It is rather, as Ogden points out (76), that "he perceives things in their relation to his own
is known to the adult when the need arises. Not only in overt behaviour but in "verbal" thought also the young child displays a keen interest in and a capacity to deal with objective phenomena. Casual observations of children reveal this interest and ability, and any who seek a more systematic account will find of interest such records as those of Jim's parents(74) or of S. and N. Isaacs.

Nevertheless, tendencies towards animism and magic do exist, even in the most practical little people. In their play inanimate objects are treated as living personalities, their word or even their wish has magic power, and sometimes special formulae are used which can bring about the most remarkable results. Is this because the child's perception is at fault, because he is the victim of an illusion? Piaget seems to think that he is incapable of interpreting correctly the data with which his senses provide him (75), but there is a wealth of evidence which raises grave doubts as to the correctness of Piaget's theory. It seems more correct to say that the child's percepts are more plastic than ours, that his interpretation of sense data depends upon his needs at the moment. When a child gallops round with a stick for a horse, pats it, whips it, gives it a drink, puts it in the "stable," it is hardly correct to say that there is an illusion of perception with regard to it. It is rather, as Ogden points out (76), that "he perceives things in their relation to his own
needs and desires, and his world is a reflection of his own inner activities." A stick is not perceived as an object with certain fixed properties, but as an object which is capable of "exciting" him in different ways. The nature of this "excitement" will vary from one occasion to another. At one moment a piece of wood may be a horse, at another a railway signal, at another a means of bowling a hoop, while the child is quite capable of using the same object for its normal purpose in lighting the fire, showing that he can perceive it as the adult does.

The adult world where objects have fixed and definite properties gradually forces itself upon him more and more. "The world of adults makes itself gradually felt through the unpleasant consequences of certain acts of behaviour. In the adult world the child is not free but instead meets with compulsion and opposition which are lacking in his own world." (77) With the increasing pressure of adult standards his own play world becomes more and more delightful and satisfying. Here he is master. People, objects, animals over which he has actually little control now do what he wishes. His desire is law and is always fulfilled. Makebelieve play is to a large extent compensatory. Whatever experience necessary to his happiness is denied him in the real world the child will create for himself in the world of play and fantasy. Shirley, a timid little girl of four years, has a somewhat overbearing
as brother of school age. Most of her play hours are
spent as "Peter," and as Peter she goes to school and
enjoys in imagination experiences such as her brother,press-
ion relates. "Is your little girl home yet?" she asked a
visitor (whom she knew had no children). "Well, she's
which
ought to be because I've been to school and I'm home."selatin
to
The visitor who entered into the game asked her her be far
mo name: "I'm Peter and I've just come home from school."
ity
the (C.S. 2) such as Piaget supplies, which rests upon bare re-
ords of child.
When one world claims the field of attention are in
no the other is driven out with varying degrees of completeness.
John's remark reported by Kenrick (73) is significant in
this respect. When a mother who feared that make-believe
play was harmful tried to check his fantasy life and keep
him to realities John protested "Mummy, I know after it's
only pretend but it's true while I'm doing it." Similarly,
or Shirley when asked to fetch a basket she had been shown the
day before, protested that she had never seen it, and when
the adult insisted that she had shown it to her Shirley
so remarked "You might have shown me when I was Peter, but
not when I was Shirley." (C.S. 2) It seem to have appreciated
its full sign. Imaginative play is, therefore, an essential
means of self expression, enabling the child to avoid to
dissipate the overwhelming sense of inferiority which at
some extent the overwhelming sense of inferiority which at
would result if he were forced always to live and perceive
things as in the adult world. It thus affords a means of
escape from a world where rule and inexorable causality
would deny him adequate outlet for his abundant mental energy,
and frustrate all attempts at self assertion and self expres-
sion.

An interpretation of child life such as this which
takes account of his play activities and their intimate relation
to his mental and physical requirements seems to me to be far
more helpful as an aid to the understanding of child mentality
than one such as Piaget supplies, which rests upon bare re-
cords of childish statements made under conditions which are in
no way typical of spontaneous child activities. Such phenom-
ena as the absence of awareness of contradiction could, I
think, be better understood if the co-existence of the play
and the adult world were more fully recognised and sympathet-
ically studied. Piaget does appear to recognise this.

"When a child turns from a state of belief to a state of play,
or from a state of submission to adult talk to a state of per-
sonal investigation his opinions are apt to undergo singular
transformations: he may deny what he has just affirmed and
so on..... The child's belief varies as a function of his
environment." (79) Yet he does not seem to have appreciated
its full significance, for is not this a sufficient explana-
tion of the child's apparent neglect of the law of contra-
diction? John's remark quoted above seems to indicate that
the contradiction is only apparent; and in any case, the
phenomenon is not uncommon among adults.
This illustrates the delight in rhythm, the vague feeling of
Magic is a very common feature of childhood,
and the satisfaction of having some power to control
finding a place small or large in the play life of most
the unknown which in this case is given definite form
children. This form of play also probably has its
All adults as well as children, find relief from
origin in the child's feeling of inadequacy in the face
the sternness of the actual world in a play or fantasy world
of an unrelenting world. At all events it is a most de-
where things are as we should like them to be, and where we
lightful exercise of the imagination which adds interest
and satisfaction to many of the child's ordinary occupations
But the child is also vitally interested in the real world,
and is perhaps a means of expressing certain fear of the
and as his control over actual conditions increases his need
environment by allowing the child in imagination to have
for make believe play diminishes. He can assert his own
control over it. Possibly a delight in rhythm accounts
for the predominance of activities such as tapping among
But where adjustment to conditions as they are in fact does
the magic rites. A. A. Milne's poem "Lines and Squares"
not take place at a normal rate and a serious confusion exists
is an excellent example of the normal appearance of magic
between the fantasy and the real world, an over-indulgence
in play.

"Whenever I walk in a London street,
I'm ever so careful to watch my feet;
And I keep in the squares,
And the masses of bears,
Who wait at the corners all ready to eat
It suggests that the children in whom such a condition is
The sillies who tread on the lines of the found (except perhaps the youngest) are not finding sufficient
Street,

opportunities for self-expression and self-authority.
Go back to their lairs,
Perhaps some of the cases noted by Piaget could
be explained in this way. 
As he illustrates from Gosset's "Father and Son," and this child in whom such an
squares!"

Just look how I'm walking in all of the
This illustrates the delight in rhythm, the vague feeling of extreme belief in magic is found; for one whose self assertion fear, and the satisfaction of having some power to control in other ways was denied. Failing to find the means of the unknown which in this case is given definite form, expression in the actual world he turned to the world of

All, adults as well as children, find relief from imagination where realities may be ignored. Other less the sternness of the actual world in a play or fantasy world extreme cases quoted by Piaget also reveal, sometimes very where things are as we should like them to be, and where we clearly, the feeling of inferiority and inability to control have the control and power that we cannot have in reality.

circumstances, as does the case of the boy who put on his. But the child is also vitally interested in the real world, boots several times in the morning to avoid the notice of and as his control over actual conditions increases his need his teacher in class (30) for make believe play diminishes. He can assert himself

There does not seem any reason for thinking that in actual life and not only through words of magic power. magic in the child is evidence of a mind which works differ-

But where adjustment to conditions as they are in fact does ently from that of the adult, nor that its occasional re-

not take place at a normal rate and a serious confusion exists appearance in the adult reveals traces of this primitive between the fantasy and the real world, an over-indulgence mentality which lingers on and is not yet fully superseded in magic indicates that the child's development is not com-

true "Reason." Most of the phenomena which Piaget pletely satisfactory. Magic if seriously entertained puts forward as peculiar characteristics akin to those found i.e. when it passes the stage of play and rhythmic enjoyment in the savage, and therefore (so the implied argument runs) and becomes an obsession is due to a failure to adjust the evidence of a primitive form of mentality, can be explained self to the real world and indicates a retreat from reality.
as normal functionalities of a mind similar to our own. It suggests that the children in whom such a condition is play world fashioned by the caprice of his own mind is in found (except perhaps the youngest) are not finding sufficient the case of the child, as Hume points out (31) an expression opportunity for self expression and self assertion.

not of a defeat, but of an overplus of energy. It is a Perhaps some of the cases quoted by Piaget could means whereby he is enabled "to multiply and enrich his ex-

be explained in this way. He illustrates from Edmund be explained in this way. He illustrates from Edmund Gosse's "Father and Son," and this child in whom such an ways of life .... it is a phenomena of expansion of growth."
extreme belief in magic is found was one whose self assertion in other ways was denied. Failing to find the means of expression in the actual world he turned to the world of imagination where realities may be ignored. Other less extreme cases quoted by Piaget also reveal, sometimes very clearly, the feeling of inferiority and inability to control circumstances, as does the case of the boy who put on his boots several times in the morning to avoid the notice of his teacher in class. (80)

There does not seem any reason for thinking that magic in the child is evidence of a mind which works differently from that of the adult, nor that its occasional reappearance in the adult reveals traces of this primitive mentality which lingers on and is not yet fully superseded by true "Reason," Most of the phenomena which Piaget puts forward as peculiar characteristics akin to those found in the savage, and therefore (so the implied argument runs) evidence of a primitive form of mentality, can be explained as normal functionings of a mind similar to our own. The play world fashioned by the caprice of his own mind is in the case of the child, as Nunn points out (81) an expression not of a defect but of an overplus of energy. It is a means whereby he is enabled "to multiply and enrich his experiences, to enlarge his soul by experiments in a thousand ways of life .... it is a phenomenon of expansion, of growth."
child mind, and one cannot read Piaget's account without feeling a certain artificiality, a lack of reality. Is thinking of such a nature that its description as syncretism, artificialism etc. can satisfactorily explain phenomena or even guide us to think more clearly about its inadequacy of that theory is one, I think, to his neglect of such detail. I believe that the actual data are far more valuable then the interpretation which he has put upon them. While his work will be of the greatest help in understanding the difficulties and errors of childhood, its value is considerably diminished by his attempt to formulate a rigid theory. Child study is still at a stage when facts are more valuable than theories. Moreover, a great variety of facts is necessary as a foundation of a novel theory such as his, facts collected under many different conditions, not merely in formal situations such as those of most of the tests described in "Language and Thought" and "Judgment and Reasoning," nor in situations which take the child so distinctly at a disadvantage as the clinical method undoubtedly does. The child's moments of insight, of objective thought, of clear reasoning, must also be considered together with his moments of confusion and irrationality. A theory based upon errors without due regard for achievements does not adequately explain the
child mind, and one cannot read Piaget's account without feeling a certain artificiality, a lack of reality. Is childish thinking of such a nature that its description under such terms as syncretism, artificialism etc. can satisfactorily explain its phenomena or even lead us to think more clearly about it? The inadequacy of his theory is due, I think, to his neglect of such a large portion of the child's experience. His study of the child rests upon data collected in extremely artificial situations, omits to consider the effects of the child's impulses and interests in determining mental activity, ignores its emotional accompaniment — in fact, neglects almost completely "the essential springs or motive powers of all thought and action." It is probable, then, that Piaget's theory postulating a radical difference in kind between child and adult thinking will need to be considerably modified, for observation seems to show that while the adult often falls to the level of childish errors, on the other hand children are capable of thought processes essentially similar to those of the adult at a much earlier age than Piaget would admit. Thought, that is, in both adult and child, can take place on many different levels, at one time being strictly logical, at another defying all rules of reasoning. Through a failure to recognise or
or rather to appreciate the relation of thought to the other activities of life. Piaget has tended to regard the adult as a paragon of logicality and to place the child in a completely different category. Spearman's own to unanalysis of cognitive activity, however, finds the fundamental processes in the very early years of childhood, and regards growth not as a transition from one plane of thought to another, but a progressive clarification, the same principles being involved in both child and adult thought. The child also a primitive mind and many that he is a rational. The little child's self-interest cannot, of course, be questioned. He is undoubtedly far more concerned with himself than with other people. So are we all—but the child expresses this self-interest much more naively than do adults. He is egocentric in thought, too, though it is doubtful whether this "egocentricism" has the profound effects upon reasoning which Piaget's theory suggests. All of us have a tendency to think egocentrically, i.e. from an absolute standpoint, but the adult has the advantage of social experience which has taught that unsatisfactory consequences follow too great a neglect of the viewpoint of others. The child in his sheltered position as a privileged member of the family is not always given the opportunity of feeling the pressure
of other people to this extent.

The child mind does clearly show tendencies towards animism, magic, participation etc., confuses cause with motivation, and in fact reveals many features known to be characteristic of primitive peoples. There is no reason, however, for regarding these as signs of a mentality differing from that of the civilised adult. Ethnologists have pointed out the weaknesses of theories which ascribe a primitive mentality to the savage, and Piaget's theory which would give the child also a primitive mind and deny that he is a rational being (for that is what egocentricism implies) does not appear to have sufficient foundation in fact. There is, after all, only a fleeting resemblance between the child and the primitive. The savage is dominated as are peoples in every civilisation by the thought habits and culture patterns of the society in which he lives. Magic, animism etc. have become fixed into definite systems of belief. The child today, however, is from birth open to the influences of a society which thinks in very different ways. The child mind undoubtedly has its own needs and its own method of satisfying those needs, but as far as "judgment" and "reasoning" can be studied there is no reason to suppose that it is of a different order from our own. Fantasy life will be concealed and tend to become fixed. On the other hand we must not confuse the child by putting the weight of our adult support behind his tender.
A study of Piaget's searching examination of the child's mental life makes certain features of childhood stand out very clearly as important to parents and educators. Although not new, the points which claim attention are made in a very novel and arresting manner. After reading Piaget's account of the strange and seemingly irrational explanations given by children to phenomena which they do not understand, and bearing in mind the point made by Jim's parents (82) that it was when he was denied experience with concrete objects that he resorted to animistic explanations, it becomes apparent that what the little child needs is opportunity for first-hand experience with actual objects and conditions. To give him this opportunity is not to force an interest which is not yet present, as observers such as Susan Isaacs have shown: the young child is spontaneously interested in actual doing. We must not, of course, rob the child of his fantasies. Some degree of fantasy is essential as an outlet for his abundant mental energy which is too great to be expressed fully in his ordinary activities in the actual world. The developing self must find expression in some way, and if adult disapproval greet every flight of imagination, the child's fantasy life will be concealed and tend to become fixed. On the other hand, we must not confuse the child by putting the weight of our adult support behind his fences. "Naughty
table to hurt Tommy's head" is rather an unnecessarily foolish way of showing sympathy. By all means let the adult show sympathy and approval and, if invited, enter into the child's play, but not in such a way as to foster incorrect ideas or to prevent the physical world from having the influence it normally would have. These recent studies of children have shown, therefore, the necessity for actual experiences, for practical knowledge of concrete things and of conditions which must be respected. Ability to deal with concrete situations is the basis for conceptual thinking, the clarity of the concrete being the determining factor for abstraction. This is, then, but another plea for more active doing and less passive listening in education.

Piaget's studies in verbal syncretism have revealed in a most arresting manner the way in which adult ideas are deformed when presented to the child. A new idea is assimilated to the child's subjective schemas, and consequently is modified and even distorted in order to make it fit in with what is already present. Of course, this is not a peculiarly childish phenomenon. "It is a fundamental law of the mind that so long as it can it will use perceptions already acquired rather than form new ones. The child who calls a badger the first time it sees one a 'bow-wow' and the philosopher who tries to bring new facts
under his old headings are obvious instances.\textsuperscript{(33)} t. As the content of the child's mind is much more limited than is the case with the adult, he will be more open to the dangers of forming incorrect conceptions of new material presented to him. This has its obvious bearing on education, and shows clearly the folly of attempting to present entirely new material in an abstract fashion, without linking it up with the child's former experience and where possible providing some form of direct concrete experience as this is less open to misinterpretation. As the results of syncretism are revealed only when the child gives expression to his thoughts, the value of some form of verbal expression becomes clear, quite apart from its other uses, as an indication of what the child has actually understood.

We are again reminded of the tremendous value of social experience for the child. Piaget regards it almost as the sole factor in intellectual development. Whether or not we wholly agree it is evident that opportunities for social experience should rank as of at least equal importance with more direct teaching. The case for nursery schools is thus strengthened.

Although this thesis is an attempt to show that the actual processes of child thought differ in no essential way from those of the adult this does not suggest...
adequately with the problem which has been raised, in any way that the child is nothing but a small adult, but merely that the differences lie in other directions. The more I am aware of Piaget and his works, and was therefore surpised to see in recent publications references to his "brilliant a miniature grown up, a point which Piaget has made with re-studies" of childhood, his "masterly analysis" of children's remarkable emphasis.

Intellectual no less than physical needs are very different, and childhood is a period which a first reading of his four volumes has given me an impress-must be respected as one having its own peculiar needs, its own mode of expression, and above all its own peculiar value.

Looking back to our own childhood we can say with Paul, "When coherence which his theory achieves seems very inadequate I was a child I spoke as a child, I felt as a child, I thought when I recalled the vividness and variety of life which as a child," though some of us may hesitate before asserting happy healthy children enjoy — such a theory was difficult that now that we are become men we have "put away childish to reconcile with impressions gained from informal child things."

However, I can say (as Graham Wallas said after writing "The Great Society") that now that the thesis is finished, I can see more clearly than I could while I was writing it, what it is about. Certainly, along with an increased sympathy for Piaget's treatment of his subject, this study has given me a much greater appreciation of the problems which arise in a discussion of mental growth.

The whole problem of relations needs to be more thoroughly investigated before Piaget's work can be accepted, and if I were able to begin this study again, or continue it now that

Having finished this thesis I now see more clearly the means of approach which should be taken in order to deal with question that I would concentrate attention.
adequately with the problem which has been raised. When I began this thesis I was definitely antagonistic towards Piaget and his work, and was therefore surprised to see in recent publications references to his "brilliant studies" of childhood, his "masterly analysis" of children's disquestions, his "absorbingly interesting material" and so on. A first reading of his four volumes had given me an impression of extreme artificiality: the completely logical nature of his argument and the remarkable degree of unity and coherence which his theory achieves seemed very inadequate when I recalled the vividness and variety of life which happy healthy children enjoy — such a theory was difficult to reconcile with impressions gained from informal child study. However, I can say (as Graham Wallas said after writing "The Great Society") that now that the thesis is finished, I can see more clearly than I could while I was writing it, what it is about. Certainly, along with an increased sympathy for Piaget's treatment of his subject, this study has given me a much greater appreciation of the problems which arise in a discussion of mental growth. The whole problem of relations needs to be more thoroughly investigated before Piaget's work can be accepted, and if I were able to begin this study again, or continue it now that I have reached a fuller understanding, it is upon this question that I would concentrate attention.
problem of relations is basic to Piaget's theory, and I feel that no further criticism can be urged against him until this matter is settled by thorough and systematic investigation. There seems to be no a priori evidence for or against Piaget in this respect, for he is using the word in a sense rather different from that of Spearman and Burt, so that their studies of relations do not throw much light upon the problem as he sees it; hence new experimental evidence dealing with this type of relation — detachment from the immediate point of view — is essential to confirm or invalidate his work.

10 months — 1 year. Most of Ruth's time is spent with adults though she welcomes the opportunity to play with other children. I paid special attention to language in studying this child, and on several occasions kept a record of her remarks over a period of two or three hours.

2. SHIRLEY E., 4 years 1 month. Shirley has one brother, Bill, who is six years old. Shirley plays alone during the greater part of the day, while her brother is at school. She is a very imaginative child, and delights in impersonating other people, as may be gathered from the few remarks quoted.

Other children mentioned in this thesis, of whom a less thorough observation was made were

3. JOHN G., 6 years 7 months.
4. NORLIN F., 4 years, 6 months.
5. JULIAN M., 4 years 1 month.
CASE STUDIES.

1. LEVY-BRUHL. In addition to the forty eight children who were submitted to mental tests and then studied for comparison with Piaget's results in connection with "judgment" and "reasoning", the following younger children were observed closely under less formal circumstances, in their homes and at their play:

   1. RUTH C., 2 years 11 months - 3 years 1 month. Ruth has one sister, Joy, aged at the time of the observations 10 months - 1 year. Most of Ruth's time is spent with adults though she welcomes the opportunity to play with other children. I paid special attention to language in studying this child, and on several occasions kept a record of her remarks over a period of two or three hours.

   2. SHIRLEY E., 4 years 1 month. Shirley has one brother, Bill, who is six years old. Shirley plays alone during the greater part of the day, while her brother is at school. She is a very imaginative child, and delights in impersonating other people, as may be gathered from the few remarks quoted.

Other children mentioned in this thesis, of whom a less thorough observation was made were

   3. JOHN S., 6 years 7 months.

   4. NOELINE F., 4 years, 0 months.

   5. JULIAN M., 4 years 1 month.

   6. PIAUER.
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<td>Primitive Mentality, pp. 32, 218.</td>
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<td>3. DRIBERG</td>
<td>The Savage as he really is, p. 2.</td>
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<td>5. BOAS</td>
<td>Anthropology, Encyclopaedia of the Social Sciences, pp. 107-8.</td>
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<td>17. PIAGET</td>
<td>Judgment and Reasoning in the Child, p. 205.</td>
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19. **ROUSSEAU**
   
20. **PIAGET**
   
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25. **FORM OF EDUCATION**
   
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27. **STERN**
   
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31. **PIAGET**
   
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19. **Emile** p. 54 (Everyman's)
20. "Language and Thought of the Child" Preface XII
25. Ibid. p. 228.
29. "Language and Thought of the Child"
30. Ibid. p. 196.
31. Ibid. p. 40.
32. Ibid. p. 126.
34. Ibid. pp. 334-5.
38. Ibid. p. 28.
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<td>39. ISAACS</td>
<td>see &quot;Pedagogical Seminary&quot; Vol 36, also &quot;Mind&quot; Vol. 38.</td>
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54. HAZLITT.       op. cit. p. 354 ff.
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56. SPEARMAN AND DAMON "The Abilities of Man" p. 216.
57. COOLEY.         "Human Nature and the Social Order"
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58. ISAACS.         op. cit. pp. 87-8.
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62. FORUM OF EDUCATION Vol 6, p. 32.
63. ISAACS.         "Intellectual Growth in Young Children" p. 323.
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67. PIAGET.         see "Mind" Vol. 40 (1931) No. 158.
68. PIAGET.         Also Brit. J. Ed. Psych. Vol. 1, Part 2, (1931). This of course opens up the vexed question of maturation and experience. p. 245.
69. NUNN.           "The Child from Five to Ten" p. 13.
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