

As Dr. Mead has explained to you the purpose of this technical session is to put before you an approach to some of the problems that distress and concern us which is embodied in four concrete tools still in process of evolution, a situation which will be very familiar to many of you in lines of work other than ours.

The process out of which these tools grew has been the study of children in states of disturbance and disharmony within themselves and clashes between them and society. Taking both sides of my work together, that in Harley St. and that in the Institute of Child Psychology, the range of ages has been from a few weeks old, to later adolescence with, of late, study of selected adults has been added to check the theories of development that I was gradually hammering out.

Although for many years I have been familiar, both from personal and theoretical experience, with the main theories of human dynamics, I have not found it possible to feel comfortable with views of the source of personal and sociological sufferings and struggle which were worked out, as it were, backwards to children from the experience of adults. Instead I have sought to find ways of gaining direct contact with children and seeing what through media they could and wished to manipulate and use, how their 'selves' were developing within them, what experiences they were having, what concepts they were forming of themselves and of the people and objects among which they lived.

As you know this had led to the design of a number of instruments of expression which have been used now over a good series of years. Continuous study by myself and my colleagues of the "statements the children made by these means impressed on my mind even more deep a physiological problem. This problem can perhaps be stated in this way. All educationalists are agreed, that children are not able until past the age of 7 to present a connected account of an event in which they have taken part, which would have a beginning, a middle and an end. Through the invention of moveable type, increase in the complexity of society and the increasing pressure of the need for communication: philosophical theories such as logical positivism, Piaget's study of the development of cognitive thought and the central place given to speech in the psychoanalysis reading and writing have come almost automatically to form the central core of early education.

Since however it is not possible to conceive of structure without function although we are, through modern electrical and other developments in a much better position than we were, we are as yet without any true concept of the nature of mental activity taking place preverbally, and in later years non-verbally. The questions that arise during these non-verbal years constitute one half of the sources that gave rise to the four tools we are talking about tonight.

The second source both to Dr. Mead's and my own approach to the study of human beings arises from the revolution in man's whole situation the mind of man and the outcome of conflicts between man and man have brought into today so that all over the industrialised countries we are confronted today by the same two phenomena –

The first – the negative reaction to what has, up to now been considered a fairly satisfactory system of child education and the discovery that are no longer willing to play their part in this form of education, school drop out, school phobias, the illogical failure of education in many children of high inherent quality all highlight this problem.

The second – the revolt of students already in Universities against the structure and the content of university education. It may be, that we have to present to you this afternoon may throw light upon both these phenomena.

In order to make what I have to say comprehensible, I think I should state my personal position, - I see man as a part of the whole living world. As such a part, it is clear what is operative in that world, from the blade of grass that makes its way through a stone pavement to the elephant in a teak forest must be operative in him also. This suggests two points: the first, that as 'de Chaudin' has pointed out: in the process of evolution the arrival of sexual reproduction marked a decisive moment in the evolution of man: at the moment of fertilisation of whatever the form of the particular ovum an explosion of force takes place which energises orderly stages of development, until the mature form of whatever individual we have in mind is reached. Second that in each species a number of different forms: - sometimes up to a very large number arise. Some of these disappear in the struggle for survival, some remain unchanged, like the Coelacanth, through millions of years, some surviving to become the next link in the chain of development.

Here a third fact obtrudes itself: that in the struggle for life only that selection of the total inherent potentialities of an individual or species can appear and become stabilised which meet the challenge of life at that stage. When they meet it successfully these qualities become developed and stabilised just exactly because in the current conditions of life at that place and that exact moment in history they are both suitable to the conditions obtaining and successful in them.

To return therefore to consideration of the really immense quantities of records of responses made by children to the opportunities we provide: reports on the process of producing them and comments and explanations made by the children concerning them. What has come out through years of such study and comparison, particularly of series of such happenings is that certain to us quite unexpected forms of procedures recur, standard forms and sequences together with variations of the same that give us a clue to the nature of the individual child's experience.

But before we start to think about this type of material there is yet another aspect of growth and development at which we should take a look.

All living organisms need stimuli to effort, success in achievement, enjoyment of the process of achieving and delight in the result in order that the putting out of effort should become continuous.

I propose in a little while to show you colour transparencies of 13 year old boys in New York going through these experiences.

The question now arises – what is the experience of the boys themselves that gives rise to this sequence of events. From many decades of observation along these lines my reply is unhesitatingly sensorial experience, manipulative possibilities, real (we will come to the meaning of this word shortly) creative and constructive activities. The word real is the hub of the situation. Just as in horticulture definite qualities in the plant flower or fruit will appear in response to defined and definite specialised qualities in the soil and in the moisture that reaches them, so without pruning that relates to the realities of the species represented by the tree, no good fruit appears. One can almost imagine the satisfaction of the tree in the production of a fine crop of say apples. Children live in the same world. They have a hunger for contact with reality, for power over real objects, and are capable almost of ecstasy in accomplishment of genuine achievement. And so we come to our four tools

All of these have the same basic qualities, they are real in that the forms of which they are constructed exist in masses in the world around them; they are interrelated, as the elements, whether person or objective of the world we live in are interrelated: and when presented to the child none of these qualities are apparent.

#### *Slide 1*

The first tool the Lowenfeld Mosaic Test Dr. Mead has been talking of. It is real in that the pieces which fill the box are [blank] of a square – a basic shape with a single linear dimension and a single repeated angle: a rhomboid or diamond with the same linear dimension, but adding the two other possible angles: the square bisected to give a new linear dimension: the diagonally second basic shape which expresses this dimension in an equilateral triangle: this triangle bisected vertically gives the third possible triangle, the scalene. The colours of the pieces, red, blue, yellow, black, green white are those of jewels and the number of each shape in each colour – those needed to compose the simplest regular symmetrical geometric form which can be made with that shape.

Since every living creature lives within an environment which is not himself, but infringes upon him representatives of that environment must be also present. Thus the L.M.T. for instance must be used upon a tray and what is made by the subject has to have a definite relation to that area and the bordering rim of the tray.

Useful and productive as this tool is it is however 2 Dimensional and therapeutic work with children has shown how often three dimensions – or even 4 (i.e. 3D plus movement

or/and time) are the most significant – So here – appearing on R. hand screen – it is our first 3 dimensional tool. It is called Kaleidoblocs – is made of wood painted in five of the six colours of the L.M.T., black being omitted.

At the same time and so we can study these also on the left hand screen appear photographs of the two others to the examination of which we shall turn later.

Kaleidoblocs consist of three elements, first a solid arc of a circle coloured blue, red and white together with two half arcs, one green one yellow whose interior curve fits the exterior curve of the arc. These solid curved sections releases imagination and sets thought to work wondering about the relation between these blocks and the rectangular prisms.

The second element is four right angled triangles the short sides  $2\frac{1}{2}$  units in length and  $1\frac{1}{2}$  units thick. These are an important element in the whole as work on the problems given by the investigator allows him to watch the process of thought.

The third element is comprised of a number of rectangular prisms differently coloured and mathematically related to one another. When offered to a child or adult the blocks are spilled in a shapeless heap on a table or a tray and the child asked to ‘see what you can do with these’. Let us see what they do do.

Here is the construction made by a boy of  $9\frac{1}{2}$  suffering from Enuresis. The general impression given by the family in the consultation session was that he was very much ashamed of his trouble. The slide shows the opposite. Here is a circular garden with a very fine gate and 2 seats and in the middle is a fountain. Peter was not at all ashamed but deep in himself very proud of his urinary competence.

Here are two other constructions made by a 17 year old girl, one a mosaic, one a Kaleidoblocs. I had first seen this child at 11, sent by a school doctor because the time had come for her to move to another school and as the Head Master, staff and children all detested this child, whose school work and social behaviour were equally bad, the Dr. despaired of finding a school which would agree to take her after reading the report which he was sure the Head Master would send, concerning her.

The work she did with me on that consultation convinced me that she was a girl of ability and creative insight; and that a suitable school must be found. After much searching this was satisfactorily accomplished. Five years later at the end of her school period and when about to move to a College of Art for training she made a mosaic response and a Kaleidoblocs construction. The photograph of the Kaleidoblocs, though good in colour does not bring out the skill of the construction of the gate. Like the originality and complexity of the Mosaic she has now “found herself” as far as her relation to the outside is concerned, but the circle behind the gate is empty, as is the space in the centre of the mosaic, and her last action was to place the white cube on the little space at the back

completing the circle and allowing no way out. There is still a lot of work for her to do before she finds the centre to herself.

This brings up the question of continuity and discontinuity in the pattern of longitudinal development and so as a contrast, to the last girl, here is a mosaic made by a 9 year old boy with strikingly poor educational development. He was transferred to a Home School for Maladjusted children at which, at that time, I was working, and here is the mosaic he made when leaving the secondary modern school to which he was moved and in which he made a successful career. It will be seen that through the elaboration of the second mosaic the basic form of the first persists.

This boy's ambition on leaving school was to train to become a football referee.

To continue for a moment with the matter of exploration of norms and of different types of human beings, here is a slide showing mosaics made by two middle aged women identical twins. Neither know the other had been asked to make a mosaic and a year elapsed between the two.

Let us for the time leave Kaleidoblocs with its variety of possibilities and turn to another type of wooden tool Poleidoblocs – from Poly = many and eidos = shape.

There are two of these Poleidoblocs G coloured and Poleidoblocs A in plain wood.

Here are their design and structure.

These set of blocks took their origin a good many years ago, when I was struck by the force exerted in many children's lives by inability to understand mathematics, and was exploring the possibility of making solid 3D mathematical statements, as it were, which would fit with the child's natural attitude to objects, and as I have described them earlier on. Let us take Poleidoblocs G first.

#### *Verbal description of Poleidoblocs G*

These blocks appeal to children and my colleague Miss Anderson who has been the prime mover in developing the practical side and the detailed study of children's responses to Poleidoblocs. She will be describing two sorts of experiments, one carried out by us under the Brit. Ass. in Leicestershire, and one conducted with her help through the initiative of the Head Teacher of one school in a number of schools in Harlow New Town.

We have then to work with three coloured tools, one two dimensional, two three dimensional.

Let us see how children's responses to these compare with one another.

At one time I was interested in the work done with these tools by children with severe difficulties in learning to read.

Here are the responses of an 8 year old non reading boy.

*Verbal description (Ville)*

As you will have heard much of fact from Miss Anderson concerning Poleidoblocs G let us turn and look at Poleidoblocs A.

*Verbal description*

Completion of the design of Poleidoblocs A followed sometime after work had begun with Poleidoblocs G and during a period of association and co-operation both here and in the U.S.A. with Professor Z.P. Dienes.

Now that we know something about these tools and the work done with them we are in a position to consider how these tie up with the school and university situation of today.

We will also be in a position to look at the work of Piaget from a new angle.

Children we find remember the tools, the feel, the smell and the possibilities inherent in at situation they have once experienced and seek to find it again.

There is an immense potentiality of power and drive in normal children to explore, experiment with and seek to create new forms and ideas with the materials to their hand.

Here for example are children in primary school experimenting with Poleidoblocs A. Here is a study of the kinds of problems they set themselves and here one of a structure after the child has left.

These were small children but here to contrast with them are studies of four 13 year old New York boys making things with Poleidoblocs G and Poleidoblocs A. The most interesting of these 'Kenny' is comparable with one of the English 9 year olds, I want to show later.

But first I want to look critically at the work of Piaget from this angle. This is a profound subject of great scope to be more than touched upon in a paper of this length.

So – with the co-operation of Dr. J.D. Williams of N.F.E.R. we have constructed a slide presenting one angle only. One where Piaget's work is widely known – that is invariance or the preservation of constancy. As you will remember Piaget's studies take place in a test situation, the investigator sitting at one side of a table with child sitting opposite him. Situations involving constancy are then presented by the investigator to the child and the child's opinion: - some of these problems are incorporated in liquids and some in discontinuous objects – the child's answers and the scale of development of cognitive understanding in children is then constructed by Piaget from the results of many such experiments with numerous children. But observe – what is asked of the child is that he look attentively at events occurring in front of him: that he think about their meaning and formulate, in words and gestures, his opinions concerning them.

The child's willingness to give his full attention; to bring all his powers to bear upon the problem are taken for granted. The child himself takes no personal part in the exploration of the material. The natural tendency of children confronted with a friendly and genial adult to attempt to say what he feels will please the adult before him, is not considered at all, i.e. what is asked for is a purely cognitive consideration of the problems put before him.

In Piaget's earlier books, he has shown a wide and profound understanding of the child's relation to and perception of the world around him. In this he is a pioneer. None of this understanding however enters into his experiments and studies concerning the development of cognition in children.

Here we have a small example of a process begun many centuries ago and continued in our present educational system and cognitive action and the consideration of problems or the act of learning factors presented by one-who-knows, from the outside, has come to be considered almost as synonymous with education. Nothing of what the child brings to the school of interim knowledge, the excitement of previous conquests of material objects or of the construction of pleasing shapes is brought into the process. The child is not a co-operator, a discoverer, he is a learner.

But using Poleidoblocs A, a child can discover for himself by trying things out, and seeing how they behave and then – with the help of discussion with his teacher come by himself to an intuitive understanding of a principle such as invariance or constancy which later will be put into words for him. These words will be exciting to hear since when given them he will have a solid base of exciting and satisfying experience to give it depth and meaning.

So here is a picture which should have been much more forceful, had we had the technical conditions to make it so, we see how a child can discover

- a) That despite rotation of position a solid object remains in feel, look and manipulability the same.
- b) How, despite differences in the interior pattern of construction, the shape of the combination remains constant.
- c) How whatever the position an object may take up, volume is constant.

The proposition therefore that we wish to put before you for exploration, experiment and detailed study, is that cognitive processes, as such, are not a part of the personality that develops separately. When considered as such it fails to involve the whole personality and maintain the child's interest in the procedure. Instead in true development; development that is of that sort that involves the child's whole potentialities and involves him as himself in the processes of education, all aspects of his pre-verbal and non-verbal powers and experiences can be fully integrated leading him to meet the challenge of today who am I? with confidence and parity.

Let us then look at these children and see how in practice such an approach works out.

Here is a mosaic response made on the consultation visit by a boy of 9. I had been asked to see him urgently as an acute emergency had arisen. The boy was the eldest son of a family of four from a section of society where the males of each generation went to the same schools i.e. a well known preparatory school – then Eton – then Oxford.

The Head master of the Preparatory School at which this boy now was, had that morning demanded that the parents remove the boy immediately from the school, as he attacked another boy with a knife: thrown the furniture of the smaller class rooms about the rooms and become unmanageable.

Finding it impossible to persuade the Head Master to keep the boy until half term, when he would visit his home naturally and need not return I agreed to see him. The mosaic as you see states his position white on white = 'I am no-one' 'I do not feel a person'. Separate piece expressed. Educationally he could not read or write. At the time I was going on holiday and arranged for a tutor to take over charge of the boy while I was away. On my return I saw him again, and here is his L.M.T. response. Now colour appears, red blue yellow black with the main form characteristics of the previous design, I decided time had come to present him with Kaleidoblocs.

Choosing, out of the range of possibilities of Kaleidoblocs one used with all ages of subjects but presented in different frames I presented him with 5 groups of blocks each of a different colour containing blocks of differing shapes. The question put in 9 year old terms was in what way could these groups be combined to form 3 – instead of 5 groups – of equal volume?

Normally this is a problem which takes an adult some 10-15 minutes to solve often with much trial and error.

This boy put his hands in his pockets, remained silent and after roughly 5-8 minutes took the out and said decisively moving two groups together, and another two 'like that'.

This means, you see, that this boy of 9 had been able to imagine visually not only the different groups of blocks but these in different positions, and then to combine these together in his head, the total volume of the combined groups equalling that of the remaining fifth group of blue blocks.

I have since then in my work with mathematicians asked constantly whether anyone else has met a child with this capacity at that age but so far have not heard of any such.

When asked to see if he would like to use the sand tray and small objects he gave his full attention and at that session and at all future ones set out time and motion studies with motor vehicles roads, hill, tunnels crossing each other. After much seeking a school was

found prepared to do all it could to help. He learned to read and write and gradually became able to cooperate with the school and make a friend.

Two years later, nearing the time for a change to his final school he came to see me again and made this mosaic. It is, as you see all black – very rare in children – and ominous in meaning. The design has the subtlety and varied symmetry and grasp of form of an adult. He sat with his head in his hands and we worked over it together – the hopelessness of his real position and the impossibility that his parents would ever understand the power and the importance – especially today – of his abilities and his driving need to have room, time and skilled attention to explore them and consequently the violence of his despair at the prospect of the Public school for which he had been entered at birth.

This is a true and typical example of what is happening in youth today. The inherent abilities this boy has are those which are crucially needed in matured and developed in the world as it will be at that time. How long can we expect him to remain without recourse to violence.

Here we meet the same positions with the New York child from bad big city conditions, and a broken home. We need both, we shall probably have neither.

My second example is of an opposite nature. A boy of 6¼ an only child brought to me by the Clinic staff of a Northern town because of increasing desocialisations and the complete failure of all the means they had tried to help him with.

This boy had the apparent verbal capacity of an adult, read his father's scientific books, quoted and 'discussed' them. He lived in an isolated village where playmates were scarce, had no friends and recently had become increasingly isolated and disliked at school.

I am considering here only his Kaleidoblocs. This construction he made swiftly and with decision. I asked him to talk about it and he said it was a station and in the ensuing discussion he explained that a station had to have a large entrance or you would not see it: that inside were the rails with sleepers between; the green block with the white was the ticket office: and the red those things that run about with luggage. Outside was a lorry and behind a house – so you know it is in a town. In comparison with other children I think you will agree that this shows a remarkable capacity to analyse experiences into their essentials and choose accurately the best means at hand of representing them.

Now for my final example – also a child of 9 but this time a girl. The only girl among a family of boys. To her parents she appeared a gentle child sensitive and needing protection, very skilled with her fingers and popular with her peers at school.

Her main characteristic from the family's point of view was an inability to make a decision, however ordinary the situation such as 'Will you have fruit salad or an ice?' to which she would respond with a 'lost' look and 'I don't know'.

Recently she had been becoming frightened when bed time came, complained of fearful ideas in her head, got up late at night from her bed and sat for long periods on the lavatory seat, feeling she said that something should come but it wouldn't. Rituals began to develop, and actions she felt compelled to make. Her parents, professional people and deeply involved in psychoanalytic theory felt she was developing a compulsion obsessional state and were very troubled. The idea arose that she should come and see me. As usual to break the ice I asked her to do a mosaic. Here it is. Typical for a child who follows rules and feels she should use everything in a tidy manner. We talked and then I drew her attention to a table across the room where a pile of Kaleidoblocs had been spilt onto a table. She moved across swiftly, looked at them, saw the big arc, took it up and placed it on its side with the curve of blue facing her. Saw, although they were not together the two half arcs, took them up one in each hand and placed them carefully as you see on the arc. She then, to my astonishment 'saw' that the green triangles went together picked two up, made them into a square and placed this beside the standing piece on the left – repeated this on the right – stood and looked at the structure for perhaps half a minute then picked up the blue long block and placed it across the top of the two standing blocks, picked up the white little rod (there was white paper on the table, put that on the blue, then picked out the white cube put it on top in the middle and a half white cube on its centre. The whole process, unfortunately I had not timed but I guess to be around 6/7 minutes.

We asked her Mother to come up and see what she had done and they went away.

I heard nothing for a while and then a parent telephoned to say that from that day the little girl's symptoms had disappeared. She was gay and lively and slept normally as she had before. There were no rituals and no terrifying ideas.