That the results of Dr. Montessori's experience in transmitting mathematical knowledge to children appear to be so different from that of others is perhaps due to the fact that her interest was in the study of the unfoldment of man from birth to maturity and mathematics came into it only as a very secondary item. What fascinated her was to try and fathom the secret of that most mysterious period of life: early childhood.

How did man build himself? What was it that brought the helpless newborn to become the active, intelligent child first and then man, that powerful individual whose actions and thoughts were able to transform the world, to use the visible and the invisible in the building of culture and civilization?

What influence did the physical environment on the one side, and the human society on the other have on this unfoldment? Her research was therefore in the psychological rather than in the pedagogical field. If I relate some of her experiences in this research and the conclusions she came to, it is because they will throw some light on the development of what today is known as the Montessori method for teaching mathematics.

Very early she realised that one of the most impelling needs of the young child was the possibility of activity. Not the aimless movement one connects childhood with, but the purposeful activity of someone who, having understood something, tries to realise it. The source of inspiration that caused this need of activity seemed to be the behaviour of the human beings among whom the child grew. Their language, their every day's actions seemed to be a continuous appeal and at the same time a challenge to strive and try to build himself on their image.

But what to be active with if nothing existed? So when Dr. Montessori was entrusted with the care of 30 children of the age-group 3 to 6, she provided an environment made in proportion to the children's size. Besides that, to help their mental development she created collections of objects each of which isolated one sensorial impression, colour, sound, etc. She started giving word lessons on them but the children could not grasp what she meant. Why not try activity first? she thought. And indeed after a time the children understood.

Here was a sure guide: to help intelligence-building in children, objects isolating an abstraction were necessary, the exact technique of using them and freedom of activity. After a while word lessons would be not only understandable, but most welcome.
One day a dramatic event occurred. From one moment to another, one child first, then others (age 4½) spontaneously “discovered” writing in a burst of incredible enthusiasm.

How had it come about?

Pondering upon the phenomenon Dr. Montessori realised that 3 important items had concurred in what had happened: she called them “the indirect preparation”, the “formation of the sub-conscious knowledge” and the “point of consciousness”.

The formation of the sub-conscious knowledge is the accumulation of impressions not consciously registered, but stored in the subconscious. An illustration of this is a person who, having for many years walked through a wood on the way to work, certainly had stored the impression of innumerable leaves. Yet he might have paid no attention to the difference between a lobed and a fid leaf. A casual remark from a botanist would bring the difference immediately into focus. Why? because the knowledge was already there subconsciously. But if the long experience with leaf-impressions had not been there, would the botanist’s remark have aroused such immediate understanding? Yet something is needed to bring a subconscious knowledge into the light of consciousness. It may be a spontaneous sudden realisation, or a word after years of subconscious experience: a point in a long line that stretches into miles! “So”, she reasoned, “this point of consciousness can come either spontaneously or it may be provoked purposefully or otherwise”.

The indirect preparation was the unconscious or purposeful incorporation in an attractive experience of items which will prepare an ability necessary for a future task.

“Sensitive periods” were her next discovery. During these, at a determinate age, certain activities had an irresistible attraction but left indifferent younger or older children. Though the attraction lasted only a limited period, while it lasted, it made young children very eager to learn.

This eagerness gained Dr. Montessori a lot of criticism and misunderstanding on the part of pedagogues and psychologists who accused her of forcing children of a tender age to do things which older children found difficult and distasteful.

The greatest misunderstanding was – and still is – in the field of the acquisition of mathematical knowledge.

Before illustrating by example some of the results of her research in this field, I wish to stress once again the points which will help one to understand what concurred to establish the various features of the method and of the distribution in age of the various items connected with basical