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(SUBCONSCIOUS. . .cont)

The subconscious, the set of experiences that occur after birth, exists in all beings. It increases as the intelligence increases. It is very strong in the human psyche. All scientists agree on its presence. Its force was pointed up by Freud. Although scientists know that it exists, they don't know where. Its location is somewhere in the brain and may be related to the hypothalamus.

In order to explain the part of the psyche called the subconscious, Dott.sa Montessori compared the psyche to a house. The house is full of lights, but the basement is dark. The upper floors are the conscious; the basement is the subconscious.

In the subconscious there is no peace, but always much work happening. It is never at rest. In fact, when the conscious rests in sleep, the subconscious is especially active. It works independent of our will; and thus, sometimes when we go to sleep with a problem, we wake up with an answer. "Night brings advice."

The subconscious is the sum of all of our experiences. It is a veritable storehouse from which we can recall in a certain moment something, some information, which we need. And then it is like a light that illuminates a certain part of our conscious thought.

The value of the subconscious lies in the work that it does to bring to the consciousness the memories that we need. Those experiences that come up to the consciousness become valuable.

The Montessori method is based on the work of the subconscious.

ENGRAMS - post effetti: The engrams are the traces left on the subconscious by the experiences one has. They are constantly working, and the result of their work is the sudden light that comes to our consciousness. The first word of the child is said suddenly; it comes like an explosion. But the child (the engrams) have been working to prepare for it. It may have taken a whole year of work. Such explosions occur often in casa, and almost never with the older children who have passed the extremely sensitive absorbent mind period.

The phenomenon of engrams can be seen in our ability to memorize, and in the occurence of problem-solving in sleep. Psychologists, for a long time, gave much greater importance to the consciousness, believing that through the reasoning of man, the association of ideas was produced. Now psychologists and scientists recognize the importance of the work of the subconscious.

The engrams activate when we are really interested in something; they are able to accomplish work which is not possible in the consciousness. The learned person is not one who remembers everything he studies, but one whose intelligence is a result of a subconscious full of the traces or engrams. The richness of our experiences, therefore, makes our mind learned and bright.

The Montessori method is based on this principle, not on the conscious success of the mind. It is based on the child's ability to absorb for a long time, to store the experiences, until they explode to the conscious. Through the engrams they come to consciousness, to the point of consciousness.

(ENGRAMS. . .cont)

There is no consciousness at birth. At the point of birth, the unconscious is all that exists. But immediately as experience begins, the subconscious begins to form and expands as the experiences are deposited and retained in it. Then, during the early years of life, there is a gradual passage from the subconscious part of the psyche to the consciousness. Thus the child becomes conscious. The subconscious, at a certain point between the years 6 and 8, reaches a point of equilibrium and stabilizes in relationship to the unconscious and the conscious.

After birth the child sees, but he is not aware of what he sees. All of a sudden, he recognizes his mother. The image of her has been stored many times in his subconscious, and finally it surfaces in the conscious recognition.

There is the unconscious in all living and non-living things. But the subconscious is only present in animals. It is especially strong in the complex psyche of man. Freud discovered the subconscious and observed that during the earliest years from 1-4, a bad experience could produce serious problems in the subconscious. Freud also discovered that these problems could be liberated from the subconscious.

PHENOMENON OF CAUSALITY AND FINALITY:

Scientific research is based on one of these two different phenomenon. Before Einstein's discovery, scientific research was based on causality phenomenon only: that nothing can happen without a cause. Because of this, scientific thought could reach a certain point: they were able to reproduce certain phenomenon with this cause and effect principle; but there seemed to be much that could not be explained in these terms. Einstein brought the problems to light by explaining the structure of the atom. His discovery of the atom brought knowledge of electrons, his theory of matter brought a revolution of all which was known before.

A strange discovery was made: that many phenomenon do not have a cause. These phenomenon are called finalistic. They cannot be reproduced, only studied. Dott.sa Montessori says that through finalistic phenomenon, perhaps her method will be cleared. The traditional education was based on the principle of the causality phenomenon: Why does the child learn? Because I teach him. And the teacher is therefore the cause of the child's learning. Montessori disagreed. She realized that there are many phenomenon which have nothing to do with our teaching, and that these phenomenon follow a precise pattern. She recognized that there was another guide that the child followed---an inner guide.

And so, just as we do not order a seed to grow, but care for it with sun and water and good soil; so must we create the rich environment for the child and the child grows by himself. He follows the orders given by life itself. This is a finalistic phenomenon. The role of the Montessori teacher is to help this finalistic phenomenon. And to remember that we are <u>helping</u>, not <u>creating</u>.

THE PSYCHIC EMBRYO

The study of the first years of life has become the most important part of psychology. There is first to be considered those first three critical years of development from birth to three years of age, a formative period of great acquisitions that makes the baby into a responsible being. Then during the years 3-6, the child strengthens the experiences he has had during the first period. The emergence and creation of the psychic embryo is the miracle which allows the child to adapt to the level of civilization he enters.

> "Infancy is a period of true importance, because, when we want to infuse new ideas, to modify or better the habits and customs of a people, to breathe new vigor into its national traits, we must use the child as our vehicle; for little can be accomplished by adults. If we really aspire to better things, at spreading the light of civilization more widely in a given populace, it is to the children we must turn to achieve these ends." (The Absorbent Mind, p. 66)

When the child comes to the world, he is a motionless body. He is without intelligence---certainly he reveals none. And this strange appearance is the son of man. The animal's offspring, when born, are able to move and walk very soon after birth. Some leave the mother just a few hours after birth. Man's child cannot raise his head, cannot talk or walk although he is the most intelligent being. It is, in fact, a human characteristic: to be born in this helpless condition. Dott.sa Montessori cautions that if we want to observe the greatest difference between man and animal, we must not look to the man's child. The baby only opens his mouth and tries to suckle.

For a long time, it was thought that the child had no psychic life, only a vegetative one. Today we know that is not true. In fact, the spiritual development of the infant today is given more attention than the physical. "This means the child, from birth, must be regarded as a being possessed of an important mental life, and we must treat him accordingly." (Ab. Mind, p. 66)

During the nine months before birth, the physical embryo is formed. From birth to 3 years, the spiritual embryo is formed. Montessori represents this psychical force by a flame burning brightly within an empty circle, symbolizing the psychical potentialities of the unformed being. This flame burns at the point of birth, ready to make this motionless being alive. It will enable the parts of the body to act according to the will; it will enable the intelligence to react; it will enable the being to acquire the characteristics of his own race; and it will give him the ability to conquer his environment. Thus, the child is given the possibility to become one of his own group. And for all of this work, man needs a long infancy.

The great difference between man and the animals has always been a matter of great interest to scientists. In animals the insticts are formed. Their actions and behavior is pre-established. There may be small changes, but they are basically insignificant. After studying animal behavior carefully for many years, the Dutch biologist, De Vries turned his attention to the study of man, specifically, the psychology of the child. Believing that his animal study would contribute greatly to his study of the child, he was amazed to find no traces of pre-established instincts like those he had observed in the animals. In the child there were no guides to behavior, no instincts. Dott.sa Montessori compares the animals to manufactured objects, and man's child to the work of an artisan. For, coming without pre-established behavior, the human child develops uniquely. He is born free to become different from all others. And because the child's work is long and slow, we cannot imagine when we look at the newborn what he will become.

The study of the child's mind is new and a difficult one because no one adult is able to remember those years. We think with an adult mind, a conscious one. The child's is unconscious, which doesn't imply a lack of intelligence, but simply means that it is different. Therefore, we are not really able to understand it. Dott.sa Montessori compares the child's mind to the hidden treasures of the earth: existing always, but undiscovered.

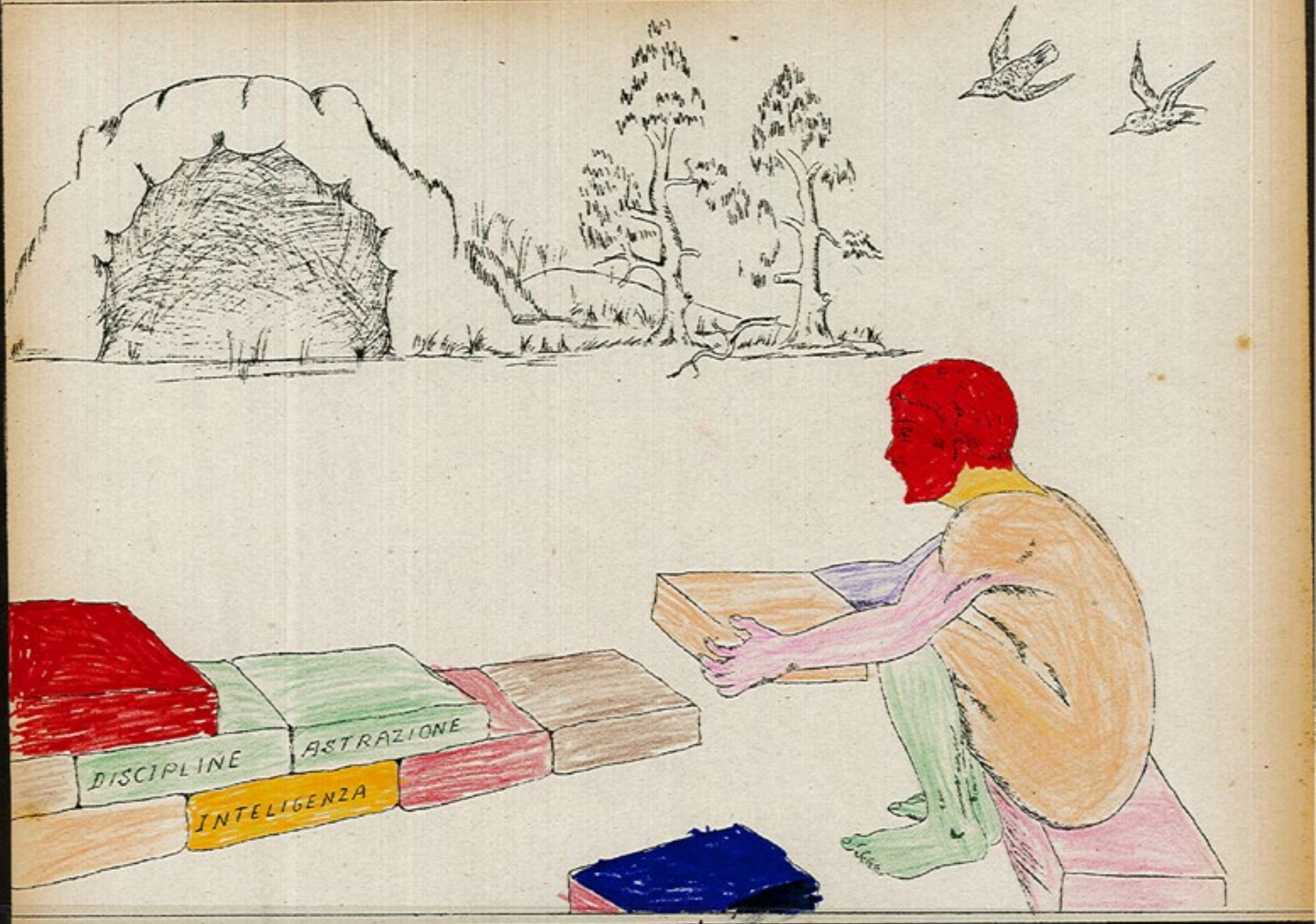
In a series of three impressionistic charts, Dott.sa. Montessori explores the wonder of the human's entry into existence. Within the mother's womb, an invisible force guides the development of one living cell into a completely formed human. It is the whole man who emerges from the mother's body. After birth, the child absorbs the environment through the marvel of his five senses, which put him gradually into a relationship with the external world. The child collects these sensory impressions in very unorganized order. But as he draws farther away from the safe confinement of his pre-natal experience, the experiences he absorbs begin to order. And thus he begins to construct discipline, abstraction, intelligence.

The two-year-old can understand others, can talk, can distinguish many objects. In just this brief two year span, he has achieved all this, constructed himself with his own force. The child has reached this level of achievement through the finalistic forces in him. The vital importance of these years is clear. If something is missed here, the consequences will be serious. The child will, of course, grow on to become a man, but a part of his creativity will be dead forever. And so with the physical embryo: if one leg does not develop during the embryonic stage, it does not grow later.

It is nature who handles the physical embryo; it is man who must care for the psychical embryo. We are responsible for providing the adequate environmental conditions which will help the child to develop. We cannot blame heredity for character defects in children, for seldom does it have anything to do with it. The child does not acquire the mother's or the father's character, but rather he absorbs his character from the total environment during these early years of his life.

Within the mother's womb,
the hand is the invisible force by which one cell forms a whole man who emerges.

Through the windows of his mind,
the Child meets his world. In sight and sound and taste and smell and touch.


DISCIPLINE
ASTRAZIONE
INTELIGENZA

The great difference in man's child is that he is born with great potentialities to adapt to any environment through his own senses. If the small child is reared by another mother and not his natural one, he will take on the character and habits of the family who has adopted him. He will adapt to their environment. Dott.sa Montessori likens the child's mind to a wonderful camera. The camera does not come with pictures already inside; only film. But once the camera has fixed a picture, it remains impressed forever within. The work of a child is done through his potentialities, his nebulae. But he needs adequate development and experience in the environment or there will be no pictures.

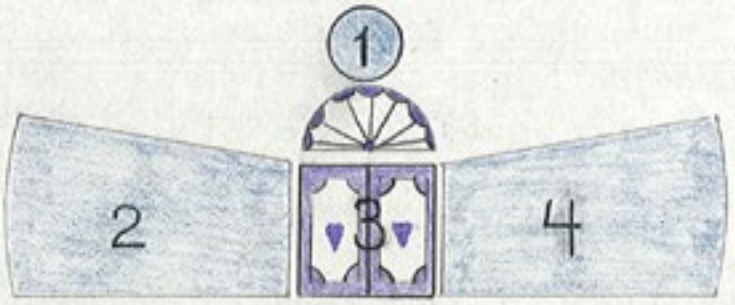
In Dr. J.M. Itard's Rapports et Mèmoires sur le Savage de l'Aveyron, we have the most specific account of a child raised without the presence of humans, and the animal characteristics he thus assumed. The child who grows up in a disadvantaged environment cannot be reversed at age six. He cannot be brought to his normal level of development because many of his sensitive periods have come and gone, and his potentiality has therefore been lost. It is essential that we realize the force of the potentialities, and the importance of an environment rich in spiritual values.

Through the study of evolution, we can notice a constant progression of the nervous system. Each new species brings something new, more complex. In birds, we find the protection of their eggs, the building of nests and the protection of their offspring. The mammals, then, let thé offspring develop within their own bodies and nourish them with their own blood transformed into milk. Man, with those mammalian characteristics, also offers a new development of great complexity: a new psychic construction.

Before we began to understand this new psychic construction, it was believed that the explosion of the child's intelligence revealed in his sudden language ability was a result of the adult's teaching. That is, a causality phenomenon. Today we see, unfortunately, that often the adult destroys part of the child's own psychic construction; that he fails to provide the environment necessary to help this development.

As we comprehend the significance of the child's early life, we begin to see the importance of breast-feeding, a psychic phenomenon for the baby. And the absolute necessity of keeping the mother and baby together the first days after birth. We are, in fact, beginning to regain our natural sensibilities about mother and child. Among primitive peoples, often the baby and mother are separated from all others for a certain period of time, which might be as long as 40 days. We are liable to call such rules mere superstitions. But let us not forget that such habits often enclose real truths. . .perhaps it is we who have lost the natural way. As we approach an understanding of the early life of the child, it is interesting to remember, too, that all babies begin the same. It is the environment we offer them that makes the men they will become.

THE DEVELOPMENT OF LANGUAGE



The development of language from nebulae to conscious expression is a logical construction which has as its end the perfect formation of syntax. The chart above indicates the development of language and its construction during the years 0-8.

The first period (1) represents the development from birth to the age of about 2½. During this period the child absorbs the language in his environment until finally there is an explosion of language expressed in syntax and complete thoughts. This occurs at about two years.

During the second period (2), the child, between 2½ and 4½ years is ready to expand his language in many ways. This is the period that preceeds reading, and in the Montessori Casa dei bambini, much attention is given to the development of the child's language ability. Many new words are introduced with the sensorial material and with the classified nomenclatures, and there is time for children's stories and poetry. During this time, the child must learn to express himself and to describe his experience. . .and so he must be allowed the opportunity for such self-expression. Preparation for writing is given through the sensorial material; practice in the control of the hand and the control of the pencil movements is offered through the metal insets. There is a direct preparation of the hand in the tracing of the sandpaper letters, and an opportunity for expression of complete thoughts with the movable alphabet.

The door (3) represents the child's first realization that thought can be expressed in written form, and that persons can transmit their thoughts to him through the written symbols. It comes to him that even those who are dead can communicate with him because they continue to live through the written word. The child is about 5 years old when he crosses the threshold of this door. It is the entrance to reading.

The fourth period (4) takes the child to total reading. It is during these years 5-8 that his vocabulary grows rich, his comprehension increases, and he develops a clear understanding of the meaning of words. Here, too begins an understanding of the relationship between the different parts of speech. The child is ready now to study many facets of language.

The child, during this fourth period is ready to approach language in many ways:

1. The function of words.
2. Reading analysis.
3. Interpretive reading.
4. Grammar analysis.
5. Use of a variety of books.
6. Use of the dictionary.
7. Possibility for research work with the help of the encyclopedia.
8. Study of punctuation.
9. Possibility of expressing himself, his feelings and ideas, through writing: self-expression.
10. Introductive study of literature, of history and poetry.

It is through such study programs and language activities that the elementary school can offer the child many opportunities to explore his language. He can begin to understand language as the dynamic force at the base of man's life. That language is created by man, and that it tells the history of mankind.

The adult creates language and the child transmits it. Not only does he transmit it between generations, but he enriches it. When we offer him language in his early years, we must recognize that the richer his environment is, the richer his language will be. . .and that the period from 0-6 is especially important for the enrichment of the language. Then, from 6-12 the child will discover the secret beauties of language. He will come to understand that language communicates all the emotions of men, and all that man has created through his civilization.

Language is not pre-existent in the child at birth, but he comes with the potentialities to acquire language. These nebulae enable the child to absorb the language of his environment, but this process requires great activity on the part of the child and a long time. During this time, we see an explosion into syntax; and at this point of explosion, we realize that a great work has been going on within the child.

The formation of language is helped by the sense of hearing and the visual organs. Often children cannot learn to talk when they are deaf, and only a very early observation of this hearing problem can prevent muteness. At about three months the child begins to observe with great attention the lips and mouth of the people around him who talk. It is strange that the child only recognizes the human voice and imitates it. The children who spent their early years among animals (such as the boy studied by Itard) did not imitate the beasts' noises. They became mute. For several months the child absorbs these strong hearing and visual impressions. Then, at a certain point, the vocal chords begin to vibrate. Little by little the child develops the vocal chords, the tongue and the lips; with practice he develops the ability to coordinate the tongue, the mouth, the cheeks.

GUIDELINES FOR OBSERVATION IN THE CHILDREN'S HOUSE

1. Observe all details, even those which do not seem important.

2. When observing one child, notice how he behaves, how he concentrates, how he moves, how he works, how he organizes, whether or not he repeats exercises.

3. When observing one specific material, observe how it is taken from the shelf, how it is used, if it is used, and how the child handles it.

4. To observe the teacher, note the times she intervenes in the child's work and whether or not it is justified.

5. Note the times that children work in groups and the times they work alone.

6. Observe order and disorder. When does order break down and why? And for how long? Then how is it restored? Does the teacher recall it or do the children?

7. Notice the social behavior of the children. Look for the sociable child and the nonsociable, the dependent and the independent---and observe the corresponding characteristics.

8. Follow one child's sequence of work and the interest areas indicated.

9. Note how mistakes are corrected and by whom: teacher or child?

10. Observe fatigue: is it physical or mental? How is it overcome? Note other physical indications of the children's well being.

11. Observe obedience.

12. Note the degree of concentration.

13. Is the class normalized? NOTE: Until normalization begins, concentration is not possible. Note the correlation. . .and the degree to which each is happening.

14. Notice expressions of will; how they express their will if they do.

15. Observe emotional reactions---if the child is passive, agressive, irritable, patient.

16. Notice the differences in behavior between the casa and the elementary groups. Bear in mind that in the casa the children are constructing the individual personality and the older children are developing the social personality.

Psychologists note that language does not develop on a constant plane, but in successive spurts of progress. First the child pronounces sounds, then single syllables and finally complete sentences. When the explosion comes at 2 years, the subconscious has already done much preparation work.

The child's speech begins about the fourth month of his life with vowel sounds. This is also the time at which the child realizes that the voice, the sounds that he hears, come from the mouth of the person talking. At about six months, the child pronounces his first syllable, usually "pa, pa, pa," or "ma, ma, ma," or "ta, ta, ta." He does not, of course, attach any meaning to such sounds, but begins with them simply because they are the easiest to form. There is for the next few months an unconscious attempt to reproduce words, a kind of mechanical babbling. Then, at 10 months, the child begins to discover that words have meaning. This is the second major explosion. (The first the 4-months point.) At one year of age, the child says his first intentional word. And this wonderful event is the result of a whole year's work., The mechanical babbling he has done has served for the coordination of the movements; and so it is that by the end of the first year of his life, the child's maternal language is fixed. He has learned the roll of the Italian "r" or the deep-throated French "ou." His muscles and vocal chords have imitated perfectly the language of those around him.

At 15 months the baby begins to understand that people can communicate by means of words. He realizes that language has a practical use for him. He begins to try to say what he wants from this point on, and often adopts two or three words that he uses to express everything. It is at this time that we can observe conscious babbling. It is a period of great difficulty for the child because those who don't know him can't understand these few words he has, and the result is a great deal of frustration for him. Often he must deal with real anger that he feels when he is not understood, and cannot find the words to make that understanding. One who begins to study a new language often confronts the same kind of problem---a problem of not being able to find the right words, of not being able to say what we mean. We must strive at this point in the child's life to be his interpreters.

The explosion of names, nouns comes at age 18 months. The child discovers that everything has its own name. It has been noted that in one week during this period, a child can go from the pronunciation of 100 words to 800 nouns. Again we are seeing the work of the subconscious. Finally, at the age of two years, the child explodes into syntax. In a veritable torrent of language, he speaks from morning till night in well-formed sentences and complete thoughts. From here he is ready to progress towards the perfection of his language. Towards the development and refinement of grammatical rules and excellence of expression. But at 2 years, we can say that the child knows the language. He has achieved it through a natural phenomenon within himself. Our role is to offer him our help during this period of acute sensitivity and diligent psychic work.

LANGUAGE DEVELOPMENT: HINDRANCE AND HELP

There can be many factors which hinder the development of language in the child. Those obstacles can be in the environment or in the child's own limitations. We recognize the child's great need to express himself and when he encounters difficulty, often the result is a real personality problem.

Sometimes a physical limitation produces this difficulty. If there is a hearing problem, the child is faced constantly with failure; he tries to do something and cannot, which creates great frustration. So it is that often deaf-mutes present difficult personality complexes.

Often the difficulty the small child encounters during his period of language development occurs within the environment. If he doesn't get the necessary help in expressing himself, there are serious consequences. These difficulties that the child encounters are called repressions; the negative effects of the situation produced will last his whole life. Sometimes it happens that during the two to three years when the language explosions should occur, there is no progress. In this case, the 2 or 3-year old will use just a few words or syllables; and he talks very little. His organs of speech are perfect. The phenomenon is called psychological mutism. This mutism can disappear suddenly if the child is able to overcome the obstacle. But sometimes it doesn't happen, and we see results of such problems in adults: in the tendency to stutter, in a lack of confidence to speak, in a difficulty of forming logical thought, in an impossibility of speech without hesitation and interlocution (ah, um, etc.) or in very slow spoken expression.

We must remember how acute is the child's sensitive periods, and that the sensitive period for language is one of the longest. Furthermore, that the sensitive period is not the ability to learn something, but the enthusiasm and the impetus to learn it. Finally, we remember that the child is in the process of forming the man; and that he must therefore incarnate in himself everything that belongs to man, to the group with whom he lives. And his language represents a great part of that formation. We must therefore, come to the aid of the child in every way possible. During the first period of life, the little child utters incomprehensible words, and his progress seems slow. How do we help?

1) we must be patient, listen to him, be his interpreter, resting in the thought that through this kind of help we are truly offering him our finest expression of love and opening for him a way of hope.

2) our pronunciation must be correct and clear so that the child can distinctly hear the sounds.

3) we need to avoid baby talk. . .and never repeat his mistakes.

4) we must offer the child every opportunity to be among people who talk. An environment that offers life in all aspects. If we isolate him, he has no access to the language

5) give the child opportunity to express the words he is learning. Let him talk. This freedom is most important, linked to all of his life. Without it, we are destroying his enthusiasm and self-assurance. He will simply lose the desire to talk. Not only will his vocabulary fail to develop, but he will not be able to express what he feels unless we let him begin as a child.

6) most important to read to the child and to tell him stories. (They love singing, too) Gradually the child absorbs all the expressions in the books he hears, and to this end, he loves repetition.

7) show the children as many pictures as possible, pictures with things to be named and pictures about which they may be able to tell a story. All the time, such conversation increases the vocabulary.

When the children's house program begins, the child of age 3 has already acquired the language of his group. But he stands at the beginning of a three-year period rich in possibilities for the creative development of his language. What he has already achieved is wonderful. And though we cannot understand how it has happened or even how it continues to expand, we can observe well and offer him real help in the development of his language.

THE ABSORBENT MIND AND THE PSYCHOLOGY OF THE UNCONSCIOUS

From the moment of birth, the small child begins his work of constructing an individual human being. From a state of almost complete inertia, this small person forms a being with all the psychic characteristics of man. "It is the child who constructs the man." (M. Montessori, The Absorbent Mind) Dott.sa Montessori repeats this phrase many times to impress the importance of recognizing this great work in which the child is engaged. He does not, of course, consciously will such a project. His work is unconscious and done completely independent of his will. And because the work is unconscious, it does not tire the child. He is simply absorbing.

Before age three the child has no memory; that, too, he must construct. We as adults find it impossible to recollect events in our lives prior to age three. "Only with the advent of consciousness do we have unity of the personality, and therefore the power to remember." (The Absorbent Mind, p. 166) And so it is that, during these first three early years of the child's life, there is no will, no effort, no fatigue, no memory. There is only at work the unconscious force of creativity. Dott.sa Montessori has called this force creativity in the Biblical sense. It is creative power so dynamic as to be incomprehensible to the adult. Just as the story of the creation is beyond our comprehension, so is the creation of the life of man. And yet the adult's power comes directly thru the possibility he had as a child to accomplish his interior work.

The period of this creative work is characterized by intense activity. "Life is activity," says Dott.sa Montessori, "It is only through activity that we may reach perfection. . .and independence." She continues with an exquisite statement on the chief end of man in his continuous conquest of freedom and fulfillment:

> "How does he (the child) achieve this independence? He does it by means of constant effort. The one thing life can never do is stand still. Independence is not a static condition; it is a continuous conquest and in order to reach not only freedom, but also strength, and the perfecting of one's powers, it is necessary to follow this path of unremitting toil." (The Absorbent Mind, p. 90)

Though we are still examining the unconscious toil within the child, it is interesting to reflect that constant activity for man begins prior to the time that he is able to will it. The new social aspirations which represent life without work mark a real loss of natural direction in a generation of people. Thus we have men transformed into deviated children who want to be fed, served, driven and entertained when sleep does not come; men who founder on the shores of their own leisure which they have so persistently sought at the price of real living. Normal people, like normal children, love work---and through it, achieve the independence which brings happiness.

The first work of the child is to absorb his environment. The five senses go to work immediately to completely absorb the child's surroundings. It is only later that he starts to make distinctions. And so it is that the physical and psychic development of the child forms a psychosomatic whole. We cannot divide the two, nor can we separate mental faculties, but we can only study the child as a whole in his work of absorption. His natural interest that we see as an affinity to take in everything about him is guided by the horme, the elanvital. The horme is stimulation, in Greek meaning the excitement which pushes us to do something. It is an integral part of the child's psyche---and that which stirs him towards the mental activity we see in his early life. For a long time it was believed that the child could learn only if we first developed his will and interested him in learning. In fact, we are able to learn only when we have a great interest that enables us to develop the high degree of concentration necessary for conscious expansion of the intellect. But within the young child, the horme is active constantly, stirring that vital interest that allows the concentration.

Another important factor in the child's psyche is the unconscious memory. The experiences and impressions he absorbs are deposited in the subconscious and retained in the unconscious. And because his interest is so intense, this process of storing information is highly effective. This ability to preserve part of our past experience is essential, for without it, the experience is of no help. Indeed only a small part of what is stored by the subconscious comes to the conscious; but the child, whose depth of subconscious augments every hour through his intense interest and activity is developing a wealthy deposit of engrams by which much of his conscious life will be affected.

This way of unconscious absorption is called "environmental experiences." If these experiences do not occur, the psychic or physical part will not develop. When the child is ready to walk, he must have the opportunity to walk or his muscles won't develop properly. The powers to develop are very strong so that, even though there be serious obstacles for the child, he will somehow learn to walk. But it is important to remember that when the new organ appears, when a new physical readiness appears, or when a new psychic period of sensitivity manifests, it is only with environmental interaction that the development will occur properly.

The child absorbs everything. Just as the insects take on the color of their environment or the animal changes his fur with the seasons, so does the child become like the environment that he has absorbed. This is called mimicry.

> "He absorbs the life going on about him and becomes one with it. . .just as the insects become one with the vegetation on which they live. The child's impressions are so profound that a biological or psychochemical change takes place, by which his

"mind ends by resembling the environment itself. Children become like the things they love. In every type of life it has been discovered that this power exists, of absorbing the environment and coming to resemble it." (The Absorbent Mind, p. 101)

The child does not judge between good and evil, beauty and ugliness. He accepts his home, his country, and the habits of those with whom he lives---all of it just as it is. Often the adult makes a judgment of what is beautiful or bad, and then five minutes later he forgets the entire experience. But the child absorbs that same experience without judgment. Dott.sa Montessori compares the child to a sponge or a camera. She says that children don't learn; they incarnate! And then, at a certain point, the child expresses what he has incarnated. It is important to recognize this vast difference between the function of the child's mind and that of the adult: the adult's mind is elaborated, constructed, one that looks, judges, decides before it accepts; the child's mind is The Absorbent Mind which accepts everything. He requires only an environment that is alive. In a rich environment the child of 3 or 4 has learned four or five thousand words---the child in a poor environment at the same age may have only two thousand.

Our challenge is to provide the richest environment possible for the child, and thus we must explore all the possibilities for enriching his mind. We must choose carefully those things which we offer his hands for play, his work. Some persons believe that children should only play in the strictest sense, and in fact, if we offer him nothing more, that is what he will do---engage in idle play. But it is not his natural inclination. Often children break their playthings, not because they want to destroy, but in the hope that they might make them somehow interesting. There are available now many new toys which meet some of the child's mental needs. Some have even been developed for children of seven or eight months. The "new toys" are a welcome addition to the market, but it is interesting to note how often they are built around the principles which Dott.sa Montessori set forth in her own equipment. We must remember as we choose the things we offer our children that the child brings the initial ability to absorb his environment--- and that environment must make possible the activity he needs.

It is through the power of this absorbent mind that the child acquires psychic characteristics, and thus he perpetuates the great differences that occur between groups of peoples. His mind fixes <u>everything</u> in the environment, including his group's particular prejudices. There is a Hammerstein lyric that expresses this phenomenon beautifully:

"You've got to be taught
to be afraid
of people whose eyes
are oddly made;
and people whose skin
is a different shade.
You've got to be carefully taught.

You've got to be taught
before it's too late,
before you are 6, or 7, or 8.
To hate all the people
your relatives hate.
You've got to be carefully taught."

Through this environmental experience man constructs his own instinct. And after this early period in which the child fixes his basic ideas, perceptions, and attitudes, his habit can be modified only through great effort. Some adults may change their religion or way of thinking in a major way, but it is only with considerable struggle that this is possible. Very few adults have the power to change what they have absorbed as children. Ghandi said once that in order to change the mentality of the Indian people, it would be necessary to kill all the adults. When we begin to realize that children do absorb everything---our fears, our prejudices, our feelings, all our sentiments--- we know that we must look at ourselves closely to evaluate his inheritance from us. If the environment we offer the child as he absorbs the characteristics of his group creates in him a character with which he is satisfied, he will be happy. If he is obliged to change his character as a result of that early experience, he will find much difficulty. Thus education for our children must begin with the first day of his life. We must satisfy his mental needs just as we must provide his physical body proper nourishment.

The child's mental work is much different from that of the adult. The adult works in order to reach an external aim. He may or may not love his work, but he is convinced that it must have a goal. The child, working to construct himself, obeys an internal order; and his work is an end in itself. He washes his hands, not to get them clean, but to practice the movements he needs to construct himself. He repeats his activities many times while the adult works the fastest way in the shortest time. We begin to see this pattern in older children. The young child seeks to reach perfection in everything he does. The Montessori exercises are an important aid to the child, for the development of his muscles, for his equilibrium, for control of the small and large muscle coordinations that he gradually must accumulate.

He has much work to do. And the future life of the man depends on the right development during this first part of his life. Society must give great attention to that development: it is mankind's responsibility. All we know is that each period of early childhood obeys mysterious laws; and our response must be one of observation, of respect for every detail of this life. We must become real servants of the child. And perhaps that is the finest message in the method of Dott.sa Montessori. Science now affirms her regard and paramount concern for this early life of the child, but science is hardly enough. It is the responsibility of we, as adults, to disburse the real knowledge of the formation of man. To act on it through a new relationship with our children, and to share it through the powers of our own intelligence and collaboration and love.

SENSITIVE PERIODS

The adult butterfly deposits the eggs in a safe place, usually in the tree where the branches come together with the trunk. And so it is that the caterpillar emerges in a place far from the food supply. But the caterpillar is born with a special sensitivity to move towards the light. And so it makes its way towards the tips of the branches where the tender leaves are to be found. When the caterpillar no longer needs to feed upon the tender leaves, the sensitivity disappears.

The larvae of bees also have a special sensitivity at the dawn of their existence. Though only one can be chosen as the queen, each has the potentiality to become a queen. And because the worker bees prepare a special food called "royal jelly" for the queen bee, each small larvae has a voracious appetite. One is selected as the queen and is fed well; the others get very little. The sensitive period of the great appetite passes, and afterwards the role of each bee is fixed. The workers will be workers, the queen a queen; there will be no change.

These observations were made by De Vries who discovered such sensitivities in various animals and insects. The purpose of these sensitive periods is to guide the animal through his development and to insure his survival. We call these guides instinct.

In man the unconscious and the horme act as guides which can be the mneme or the memory of life. In animals this is called instinct; in man, potentiality. But, whereas the animal's instinct is well-defined, the potentialities of man are not clear, but nebulous.

All life is based on these sensitive periods. To understand the child we must recognize in him this drive that compels him towards a particular achievement, a certain work, something beautiful. And we must see his enthusiasm in contrast to the mind of indifference in which things are done because of obligation and without this surge of energy and enthusiasm for the undertaking.

Dott.sa Montessori represents this enthusiasm that springs from within the child as a flame. With great interest and joy he makes contact with the external world. He wants to possess, to conquer the surrounding environment. The flame is not stable; it moves him from one passion to the other. He makes a major achievement in one area of his development, and then the flame disappears, moving on to ignite his enthusiasm in another direction. Just as the organs of the physical embryo developed at different times, so do the psychic sensitivities appear one after the other.

It is difficult to understand these sensitivities because they work within the unconscious. When we feel hunger, we search for food to satisfy our appetite. At that moment, it is our internal organs

that create the signals for our actions, but we do not understand what is happening. We simply eat as a response to an unconscious message. And thus the work of our internal organs keeps us alive. The child, too, responds to the guide in his unconscious.

Dott.sa Montessori stressed the importance of understanding the unconscious in the child and how it works. When a child repeats the same activity over and over again in spite of warnings and scoldings, there is surely a reason we have not recognized, a need he is expressing. With the idea, then, that we must surely help the child to do the activities he needs rather than opposing him, Dott.sa Montessori began her work. She observed that by helping the child follow his desires, his character was improved. She said that she created no method; that she tried only to be a help to life.

To better understand the special needs of the developing life, Dott.sa Montessori divided the first 24 years of life into four planes, each a period of 6 years. During each of these four periods, there are special needs of the human which, if not fulfilled, result in serious character deviations. In each of the four periods there are potentialities which must find expression in environmental experience in order to develop. And the possibility for such expression must be given at the right time. Once the sensitive period passes, the enthusiasm disappears; and the same development attempted later requires a great effort.

The sensitivities achieve the necessary work of adaptation. Through them the child becomes a part of his group environment. And it is in this way that different people and groups are perpetuated: through the potentiality of the child to become one like the rest of the group. If the child is born into a primitive tribe, he does not develop more civilized characteristics than its members even though that development might mean a more successful life. In the United States, many peoples have mingled and a new type has emerged called the American. The emigrants coming from many different countries gradually abandoned their native habit as they adapted to a new land a new way of life and each other. Their children assumed this new complex called the American way of life; and so a new group is formed. An Italian family might go to the United States and spend a dozen years. When they returned to Italy the adults would still retain the Italian characteristics, but their children who spent the early years of their lives in the United States would have become like American children. For those children who were already 8 or 9 when they began their stay in another environment, this would not happen. It is only during these early years of the sensitive periods that the environment is assumed.

Man always has the possibility of adaptation to a new environment, but it is with great effort that he makes it. For the child, this adaptation happens with enthusiasm and joy.

SENSITIVE PERIODS. . .

How do we know if we are helping these sensitivities? How do we know if we are serving the inner guide of the child? We know by his smile, by his happiness, by the interior peace that shows in his face. It is sometimes easier to detect the negative situation when the necessary help has not been given. When the child's sensitive period has been hindered, often there is a violent reaction. The child wants to climb the stairs and the mother wants to help him. He is apt to become very angry and display a tantrum which sometimes takes extreme forms of disobedience, refusal to eat, and obvious unhappiness. All these phenomenon reveal psychic disturbances. Dott.sa Montessori says they are the first sickness of the human soul. And they can occur when the child is very young. It is very important to meet the young child's needs and to give his psychic constructions the possibility for natural development. We must look to the very smallest details of his behavior to discover the help he requires. All of Dott.sa Montessori's discoveries are the result of long study and observation of the child. She instructs us that we must have great patience to recognize and understand these potentialities, these sensitivities, which are made of love.

When Dott.sa Montessori first opened her Casa dei bambini, she didn't intend to teach the children to read. She placed in her room only the sensorial materials. But the children were not content with them for long. And so she brought in the sandpaper letters to see what they would do with them. They learned to write with enthusiasm; and it was here that she observed the phenomenon of the explosion.

For a long time it was believed that children should learn to write only when they were old enough to have something to say; therefore it was useless to teach young children. Dott.sa Montessori noticed that older children learned how to write, but without the explosions that occurred in the young child. She noted that at about 3 years, there was a great desire to write; therefore, she felt the desire to write was linked to the sensitive period of language. If the child was in an environment with only the spoken language, we would not, of course, learn the written language. But if the second was offered (the written) he was fascinated. And for the young child, it is important to give only the vivid impression. Then he will work by himself, and his work will be characterized by repetition. During the repetition occurs internal processes we don't understand; but we see the result in the explosion of understanding and ability. Not only will the child learn to write, but he will learn three or four spoken languages if they are a part of his environment.

At the age of six or seven, the child who must learn poetry will either be faced with a great effort of memorization or refuse to try. The young child will learn it quickly because he is still in the language sensitive period. The older child has passed beyond it. And so it is that we must understand the special sensitivities of the child from 6-12, too, in order to create the proper environment. He is an explorer in his own way, but his explorations take him in different directions.

THE ART OF OBSERVATION. . .AND HOW TO PRACTICE IT

At the very heart of the Montessori method is the skill of scientific observation. The scientist is dedicated to knowing, effacing interest in anything other. And it is through his constant and patient observations that he lifts the veil of mystery, finds the truth in the deep, and reaches a synthesis of thought. Dott.sa Montessori often gives us the example of J.H. Fabre, the biologist whose studies such as The Life of the Fly, The Life of the Spider, and The Hunting Wasps reveal his excellence as an observer. . .and it is as a result of his dedication to observation that we know much about various species and their distinct modes of behavior. She also reminds us of the ability of the small child to concentrate for long periods of time, and it is that ability of extended concentration that the observer must possess.

It is only with long preparation and much practice that one learns the skill of fine observation. But as educators of young children, it is our first duty. We cannot, in fact, teach the young child in the ordinary sense.

> "There is only one method of educating and treating all children at this point; a method which follows the natural unfolding of man. . .Only nature can dictate the educational method to be followed; for this is settled by its aim---to satisfy the needs and the laws of life. . .These laws and these needs the child himself must indicate by his spontaneous manifestations and by his progress. . .Our one duty is to learn from him on the spot---and to serve him as best we can. . .Thus we must first become excellent observers of him. . .What the child shows is right, inasmuch as it provides us with a guide to reality, to the truth." (The Absorbent Mind, pp. 75, 89)

Our goal is to be a help to life. But it is only through the keenest observation that we may discover the vital needs of the life we wish to help. And so we must learn well this art of observation.

To observe well is to disappear. Too often we intrude upon the object of our observation, sometimes out of impulse, out of forgetfulness, or out of the false belief that we are necessary for the child's success. In truth, we must become physically and psychically invisible. Only then will we begin to observe the truth.

SENSITIVE PERIODS. . .

The child from 0-3 has unconscious experience. The child from 3-6 reaches points of consciousness and gradually becomes conscious of everything he has learned from 0-3. Now the child from 6-12 enters a sensitive period which impels him towards society. He becomes interested in the rules that govern society and the culture of his group. For this exploration, he needs help. He needs tools to help him enter this world of society and culture. He needs the tool of reading and arithmetical calculation. The school, for him, can be a very important help if it responds to his real needs. Often it is the school's failure to meet those vital needs that puts older children into a state of reaction against society. It is no secret that, while society, culture and all that they influence, change; the school continues to employ the methods of one hundred years ago. Many things are still taught which have no real practical value for life in these times at all. Even the intellectual life now differs greatly from that of twenty or forty years passed; and yet the school persists in maintaining their archaic programs. We can hardly wonder at the dissatisfaction of young people. Nor can we wait much longer to make important changes. Dott.sa Montessori demonstrated, for instance, that many subjects taught to children 10-18 at school could be taught much more effectively to children 8-10.

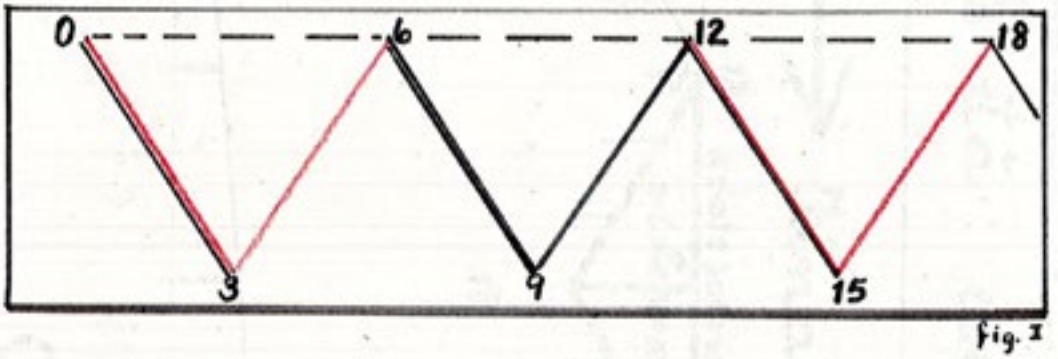


Fig. I

There is a critical difference between the approach that the traditional school and the Montessori method take towards the development of the child. Whereas the traditional school regards the child's development in a straight line, his development in Montessori is not constant. The first three planes of that developing process are represented in figure I. The double lines, the descending left line of each triangle, represents a period in which knowledge and abilities are acquired. The maximum creative periods are reached, then, at 3, 9, and 15. The single ascending lines represent three-year periods in which there is a reaffirmation of what has been learned in the previous period. And so it is, for instance, that from 0-2 the child learns to walk and talk, at 2 he exhibits a great desire for independence. He wants to wash his own hands and eat his own food. Then, by the age of 4, according to how well his desire for independence has been satisfied, the child will exhibit real characteristics of freedom and will be confidently acting out all those acquisitions he has made in his first three years.

SENSITIVE PERIODS. . .

Also in this figure I, we see marked in red two particularly critical periods in the child's development. During the years 0-6 and the years 12-18 the individual is in a period of intense psychic and physical development. In some ways this represents difficulty, but at the same time both periods are highly creative. Dott.sa marks with these periods two births: the birth of the boy during 0-6 and the birth of the man from 12-18. Each of the six year periods that follow these two are less dramatic in terms of psychic and physical development. During the 6-12 period the child is calmer psychically and predisposed to the acquisition of culture. Again from 18-24 we find a more stable period of reaffirmation.

In each of these four planes of development we find certain sensitive periods. Dott.sa Montessori describes many different kinds of these sensitivities: the sensitive period for language which we find extending from 0-6 years, the sensitive period for movement, the period of order, that of imagination, of moral order, of social relationships, of religion, and others. Many of these sensitive periods overlap; others occur simultaneously. Each one increases to its maximum and then begins to decrease. The overall picture is one of a development which ebbs and flows following the dictates of the psyche. And at the end of each sensitive period there appears a certain kind of new character.

It is obvious that if the character has been developed in the best way, the being will open the possibility of acquiring new characteristics; and thus the way is opened for an ever increasing perfection. And so it is that Dott.sa Montessori gives the metal insets first and then free drawing. In this way the child learns first the control of the hand, and later it is easier for him to truly express himself. This is a most basic concept in the Montessori method. The preparation offered to the child in the meeting of his ever-changing needs provides him the tools for genuine self-expression in whatever way he chooses at a later time.

In the human personality there are special strong personal sensitivities that we often refer to as special talents. It is important that we aid the development of those talents or they will remain undeveloped. But, since we can hardly predict what they are in the very young child, we must simply offer him a broad range of experience and then, following his lead, encourage those special sensitivities as they appear. Opportunities to dance, to dramatize, to sing, to paint must all be included in the child's environmental experience. His excellence in these areas must receive our attention in his early years. . .many such talents simply cannot be developed in the adult years if the beginning is not here in the beginning of the child's life. There are, of course, some special potentialities that can be developed later in the individual's life, but then it is only through great effort, difficulty and sometimes pain. Dott.sa Montessori adds that if it were possible to go into the psyche of maladjusted children, we would find many things missing in their psychic development. And so as we provide every help for the normal development of the child, we are creating healthy men. The importance of psychology is to know how we must go about our work.

AN INTRODUCTION TO THE CULTURAL DISCIPLINES

At the age of six years, the sensitive periods which guide the interests of the child are no longer circumscribed within the limited environment of the home and school. It is now the world at large that beckons him. It is at this very point of stunning attraction that the teacher faces the problem of teaching him to read and to write and to do the numerical operations and the calculus. But, knowing that the child cannot, in fact, enter the world in its cultural aspects without the skills of reading and writing, we must offer him those keys as quickly as possible in a way that commands his maximum interest.

We cannot, at the same time, limit him to the 3Rs; but in offering him those tools, we help him understand the world in which he lives. It is not enough ever to fill the child's mind with knowledge. We must introduce him to the realities of the life which he lives and guide him in his appreciation for it. From the beginning, we invite him to explore the world; and we make our invitation in such a way that we create in him a sense of wonder and amazement about his world. As we try to do this, our guide is Dott.sa Montessori's instruction to provide the child first with the whole scope and then proceed to details.

The laws which govern the universe are mighty and profound and we can scarcely fail to present them in an interesting way if we meditate upon the whole pattern. We can introduce the fantastics of it to the child in many ways to strike his imagination. And we must also offer him the possibility to have many of his own experiences to discover these wonders.

Children show great interest toward abstract subjects when they are learned through concrete manual work. Often Dott.sa Montessori poses this question: Why should man be considered only a manual worker or an intellectual worker? In truth, we need both of these abilities to obtain the complete development of the human personality. Man is formed of both his hands and his mind. And so, in the elementary school, the environment must provide the child occasion for work which he may do himself as well as lessons which stimulate his intellectual interest and enthusiasm. Both represent creative channels through which he child makes a part of himself. And---if the child has the possibility, the opportunity for work, he will love to work. Again, our challenge from Dott.sa Montessori is that the child <u>should</u> love all the work he does. For adults, too, the work done spontaneously is good and beautiful; that done out of obligation is difficult to love.

Dott.sa Montessori also instructs us to forget about geography, history, science, the many subjects into which we have divided his learning; and instead remember the child before us. Remember his world. Remember that before us is the small man. . .the man, who, by living on this earth, has transformed it. And remember that man is together with plants and animals, each different according to where they exist, but all living out that existence on a shared planet, each related to the other. And so, too, are all the subjects related.

CULTURAL DISCIPLINES. . .

In our approach to history, we seek to give the child an opportunity to know the lives of great men and their contributions: men who gave their lives towards the progress of civilization, men who spent their lives trying to discover something new, men who discovered new places through great risk and danger and obstacle.

We must approach history with a grand perspective of the history of the universe: of the sun and planets and their relationship, of the earth, of life, of men. If we are to talk to the child about universal law, it is well to give him first the possibility to understand what we will tell him. We must make an indirect preparation. This is presented through a series of experiments, designed less for scientific exactness than for the captivation of the imagination. The experiments are not to teach chemistry or physics, but rather to awaken the child's emotional appetite for further knowledge. And so, the sense of mystery within which the experiments unfold is the most important element. The child is gaining a simple beginning understanding of those secrets he may now discover....we are preparing not only his intellect, but his imagination.

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When the small child looks at the globe, it is enough for him to recognize the continents and the water. But the elementary child is hardly satisfied with this information. He wants to know why: why there is an ocean, why are there mountains, why days and nights and seasons. The teacher must be ready to help him discover these answers. And so the teacher must love to study, to have great experience and to constantly seek knowledge. In the children's house it is enough to love children; in the elementary school, one must love culture and the universe because the children themselves are in love with it. And we must remember that there is a flame within the child that must be kept alive. When we offer geography, the nomenclature is not enough. We will give the river's name, but we must go deeper, into the river's formation and direction and work. We must explore geography in conjunction with all the other subjects of which it is a part---economics, chemistry, history, transportation. As we pursue this comprehensive study, we are creating an awareness in the child that <u>no man can live in isolation. And no country.</u>

As we explore the diversified areas of man's discoveries, we begin to understand that man has lived a difficult life for many centuries. Then suddenly, his life was changed. He was freed from the great hardship of his existence by the advent of the machine: the liberator of man. Through the progress of the machine, man was brought into a close relationship with other men, and the unity of humanity was achieved. No longer was isolation possible, for all men existed together.

CULTURAL DISCIPLINES. . .

We stand now at a particularly critical juncture in the history of man. He is liberated by the machine, but he is in danger of misusing that freedom. Of misinterpreting its responsibilities, foregoing his natural discipline and becoming the servant of the machine. We must teach the next generation how to make good use of the new discoveries---how to harness the machine to the end of human dignity for all men---how to achieve the power of the master who controls the machine and commands its work. Today man knows himself better than he has at any point in history. He understands his role in the universe, that man is a part of that universe, and that humanity must be united. He knows, too, what he must do: that he power and dignity will be safe only if he knows how to serve, how to carry out his part in evolution. He knows, finally, that to fail means that the discoveries of man will destroy man.

We offer the concept of the dignity of the human race in evolution through history, geography, through all the sciences. We always seek to present to the child the cosmic facts. To help him see that isolation simply does not exist in the universe. But, instead, that every phenomenon and being depends on another. This is what Maria Montessori calls "THE COSMIC EDUCATION."

We must stand back and regard the universe in all of its aspects. The interrelationship of every part is a marvelous composition of ordered dependency. The sun is a part of the solar system---and upon it depends the land, the water, the plants, the animals and man. Without its heat and light, the earth could not exist. The plants depend, too, on the land; the animals must have water, earth and sun. The plants are needed to retain the humidity in the land. And the animals and the plants depend on each other for survival. This natural complex of sun, land, water, flora and fauna can exist perfectly without man, and did so for four thousand or more years. If man should destroy himself, the natural environment of the earth would continue.

But man, who is the most powerful being, is, at the same time, the weakest. For he depends on all of these elements of the universe for his existence. And, in addition, he has a need to be united with other humans.

This is the real aspect of the world and its functions. Behind this appearance, there is the obvious voraciousness that causes animals to prey on others and man to eat up space. But beyond this apparent voracious appetite that represents the life struggles of existence, there is a unity that is characterized by the equilibrium of a great organism in which each being seems to say: "I am here.
This is my duty, my role.
That is yours.
And that is his."

Our work together is to create better conditions in our environment for those beings who will come after us. If one looks at life in a superficial way, this principle is not seen. But through the deep study of

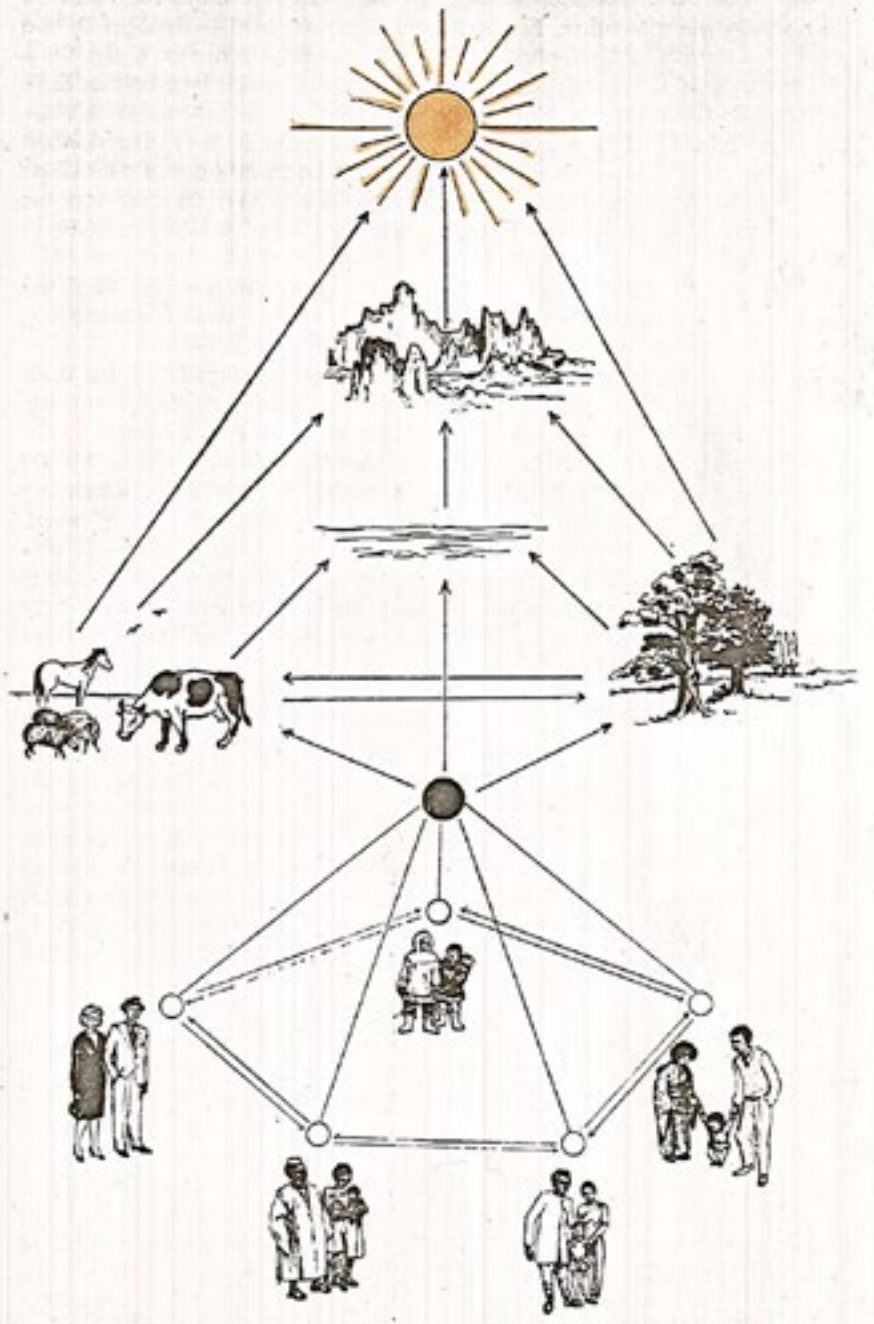
butterfly takes nectar from the flower; but at the same time, without being aware of the fact, the butterfly fertilizes it and in this way the species of the plant can continue to exist.

This seems to be the underlying characteristic: to render service without being conscious of doing so. It is there even where the action carried out might appear to be the opposite of service, as in the carnivores which feed on other animals. Biologists find that by doing so the carnivores help to keep fit the kind of animals upon which they feed. They eliminate the weak and the unhealthy and keep the rest alert, so that the ones which survive are the best of the race. The service they render is shown by what happens when they, as eliminating element, have been removed. A great decadence results in the species of their former victims. The quantity of individuals increases, but these degenerate and, when their number becomes too large for the territory they occupy, famine and epidemical catastrophes ensue, which kill a far greater number than the carnivores did. So even the part which seems cruel seems to exist for the purpose not only of keeping a proper standard of fitness, but of spurring the particular species to reach a higher level. This chart is meant to represent this unconscious exchange of service.

As can be seen, human beings depend for their lives on plants and animals and on water and on the earth and on the sun.

The animals depend on water, on plants and also now-a-days they depend on Man, who creates possibilities for certain types of animals to develop and evolve. Plants depend on sunshine, water, earth, men and animals. This is then the real aspect of the functioning of the world. The visible appearance of voraciousness and preying of different types of life which fight one another hides the unity of an organism in which each organ seems to say: "Here I am — this is my task, that is yours, yonder is theirs and we strive all together to urge evolution on and to create better conditions in our environment for those that will come after us."

When one scrutinizes the past and penetrates in this light the real meaning of what geology has to say, one finds that each kind of life that has preceded, has prepared the ground for the kinds that follow. It stands out very clearly that if the first types of life had not existed, the ones that came afterwards could not have existed either. Because one finds a progress from one to the other. The experience gathered and the change in the environment brought about by the one who has preceded, create the possibilities of life for something which is superior and which could not have existed without this preparation. And it is not only in the past that this happened, the same process of service goes on at the present time. For instance the first type of vegetation that comes on a naked rock is a lichen, called "crust lichen". These plants are the only ones that are able to prosper on rock. No other type of life can do that. And they, we might say, feed themselves to the full. They eat as much as they possibly can. By doing so and dying and their offsprings growing above them, they gradually



evolution which we do with the child, we will begin to understand this aspect: that each being has prepared the land and the environment for those that come after. It will become clear that without the primitive forms and ways of life, the existence of the next group would not be possible. In each case, the more primitive existences make changes in the environment which provide for a superior level of being to live. And not only does this phenomenon happen in the past, but continues to happen in our present world.

We may take the first kind of plant as an example. It existed on naked rocks, a special lichen called "crust lichen." This lichen is the only plant able to feed on rock, and it does so by breaking down the rock for its nourishment. When the lichen is not strong enough to go further into the rock, it dies. But it leaves behind a very thin layer of soil on the rock---and in this layer the next plant grows. This is the lichen that will grow on what has been prepared, and when it dies, another layer of soil will be added. Gradually the layer of soil gets thicker until a new kind of life is provided a place to develop---and this is perhaps a small bush. As Dott.sa Montessori says, these new things will have a banquet and then they will also die, leaving behind a place for new things to grow---mosses, herbs---and then, finally the real plants appear. Each being seems to say: I give my life, my energy, as a contribution to life which will come after me and which will be better than mine.

Even those things which seem to be a poison hide the help they are for something else. The plant cannot live without taking in carbon dioxide and must release oxygen---its poison and our life's breath. And so it is, of course, that this helping process is not a conscious one, but rather the response to a need for the life and the development of the particular being or existence. The service to another being is one constructed on a greater scheme---and so all life is served.

"This is the way God works."

The child's eyes must be opened to this phenomenon. As his awareness of it grows, he will feel the divine work, the unconscious harmony in all of life.

Montessori describes an experience during her work in India. The Indian children despised certain animals who ate dead flesh, carrion. Montessori explained that if these animals did not exist, the dead animals would contaminate the air and the environment so that all healthy life would be prevented. And so, although these animals carried out a disgusting work, they were in fact the real cleaners of the earth and very important for our lives. They made it possible for other beings to live. Dott.sa Montessori called them "the janitors of the earth."

And so we seek to help the child understand the wonder of creation so that he can absorb it with his feelings and his sentiments. It is not

helpful to say "God provides everything," for the phrase is easily misconstrued and has never has good results. Children are able to realize though, through their own experience, an awareness of something eternal in their lives and in all of the universe. They will begin to feel that each thing serves the whole. That our world is a beautiful place in which to live. And that, within it, in everything, there is a profound generosity---even in our own very breath.

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When we review the subjects which we present in our schools, we recognize an invasion of man into this unity. He has divided everything into particular classifications so that he might understand it better. But it is essential that this division is seen as a superficial one---and that, in fact, no one of the subjects can stand alone. It is important for the child to understand what goes on around him and how it all relates to him and interrelates. If he does not understand this, he will be dissatisfied.

It is necessary to remember that always present within the child is the elanvital which pushes him towards a similarily to the adult of his own time, to the exact moment of civilization in which he finds himself. If he is not able to adapt to that environment, he will be maladjusted and unhappy.

And so it is important to consider what it is important for him to know. Two hundred years ago the shape of space was not important information because no one had as yet determined it. Though the world is the same as it was then, our knowledge of it has changed and grown. And now we relate to the fact that the air is round. The child, of course, cannot see it, but he can be led to imagine it. When the earth was first judged to be round, men imagined it. Later they saw it.

In order for the child to construct himself in a normal way, we must put at his disposal the helps necessary for him to understand present knowledge, to give him the possibility for understanding the important things about his own time. And so we must offer him the important subjects. We must offer him a wealth of mathematics and science and dispense with the study of dead languages. It is important to note here, however, that additional languages provide a very meaningful area of learning for the child. Ideally, we can introduce his ear to a second language during his years 3-6 and then at about 7, we can formally present its grammar when he has thoroughly understood the grammar of his own.

In reality, we cannot, of course, bring all things into the classroom which the child wants and needs to know and experience. We cannot bring the desert, but we can help the child imagine it. It is man's great power to create inside himself images and then to put them together

in a unique way. Each man unites his images in this personal way and so creates a world within of things unseen.

"I never walked the moor
I never saw the sea;
But know I how the flowers toss
And what a wave must be." (Edna St. Vincent Millay)

This power of imagination that man possesses provides him the possibility to see those things which are not present in his reality. And thus Montessori constantly challenges us to strike the child's imagination, especially in the years 6-9. When we strike the imagination, we are addressing the subconscious which is still very strong and important. And here lies one of the great keys to Montessori methodology. The six-year-old is conscious, but the unconscious is still a strong force. We must give this child special eyes, with which to see and understand things present and past. We must give him clear keys to the culture together with strong impressions and real experiences.

Then we will have before us those who are ready to follow, untired, full of admiration for our ways, and eager to work. And we must remember, too, that in spite of their keen intellects, the children before us are still children, in need of our help, our guidance and our understanding.

MOVEMENT AND ORDER

> "To have a vision of the cosmic plan in which every form of life depends on directed movements which have effects beyond their conscious aim, is to understand the child's work and be able to guide it better."
>
> The Absorbent Mind

Movement and order are closely related. There are different kinds of movement and order, each significant at different periods of the child's development. . .and differing in their appearance within the individual. Both external and internal order are to be considered: that which develops outside the person and that which is within. Each is originated by different needs. And this is true, too, of movement.

We are particularly interested in those kinds of movement and order which develop in the young child's life, beginning with the period from 0-3. It is during this period that there is an intensive sensitive period for movement and order. And already there are different kinds, some of which continue to operate throughout our lives, but no with the same intensity.

It is said that the newborn child is immobile. In fact, he moves immediately. He moves his arms, his legs, stretches. But these are involuntary movements. His muscles are not developed.

> "All movement has a most intricate and delicate machinery. But in man none of it is established at birth. It has to be formed and perfected by the child's activity in the world. . .in man's case, he finds all his muscles unco-ordinated, and the nervous arrangements for all the movements he learns have to be built up and perfected by actions initiated by his mind." (The Absorbent Mind)

And, already at birth, the mind is developed. The head of the newborn infant is large in comparison with the rest of his body; and Dott.sa Montessori notes that the first thing to become active is his absorbent mind. It must go to work immediately to possess the environment. And so the first sensitivity of the child is that for the order which helps him construct his psyche. He must come to know all the things around him, where they belong and the relationship between them. If he is not able to develop this order, the child's mind will fall into chaos.

Therefore, it is important, during the child's early months, that he find the same things in the same places. A friend of mine found her 18-month toddler one morning sitting on the floor of the bathroom crying most pitifully. He could hardly be consoled. After some time of soothing, she discovered the cause of the real problem: the yellow towel which regularly hung by the sink had been replaced by a brown one. And for her tiny son, that was cause for real consternation. The yellow towel was brought back and the child greeted it happily in its place.

PSYCHOLOGY OF THE PHYSICAL EMBRYO

When we focus our attention on those most important first six years of the life of the child, we must recognize that his life begins before birth. That the unfolding of the development of man commences with the fertilized egg cell and proceeds in marvelous ways to become the human infant. It is, indeed, the miracle of creation. To the science of embryology we look to understand this creative process. "Embryology is the study of the way in which a body, which did not exist, comes to shape itself for entry into the world of the living." (The Absorbent Mind, p.36)

Men have always wondered at the marvel of the formation of the living being, at the formation of the organs and the complexity of the species. During the eighteenth century, philosophers thought that the germ cell contained a minute man or woman, completely developed. Two schools of thought formed: the "animalculists" who believed this miniature person was found in the male germinal cell, and the "ovists" who decided it was in the germinal cell of the female. But, shortly after the microscope was invented, the German scientist Frederick Wolff discovered that from the fecundated germinal cell, the being constructs itself; and that this is true for all living beings.

The size of this tiny round primitive germinal cell of the human is no larger than a tenth of a millimeter. This cell develops independently of the body that conceives it. It is separated from its progenitor by a kind of sac which also protects it as its creative work proceeds. Observed through an ultramiscroscope, one can see that within this cell are tiny corpuscles named chromosomes. In man's cell there are 46 such chromosomes. A closer look reveals that each chromosome contains a chain of about 100 small granules, each a tiny ring. Eventually the chromosome boxes open and these tiny grains, about 4,000 of them, spill out into the cell. These rings are called genes, and are composed of the acid DNA. They contain the inherited characteristics of each species. This acid controls the chemical and vital development of the cell.

Each gene has a certain order. One specifies the order of the development of the blood, another of the bones. One may be the bearer of a slender nose, another of brown eyes. Once released into the germinal cell, these genes engage in a competitive struggle, and those which prevail are called the dominant genes. Those characteristics which do not succeed do not die, but are stored as recessive genes. Immediately the dominant genes begin to develop the cell, each after its own order. It is within these tiny specks that the entire heredity of the race is contained, the whole of human experience passed on.

Now the cell begins to develop, first by dividing into two equal cells, then four, then eight, sixteen, and so on until the cells have formed an empty sphere, the "morula." This circle of cells is also termed the "blastula." And this initial construction happens for all

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The external order that the child seeks is a simple matter of finding things in their correct place. And then gradually he begins to develop an internal order that helps him relate to his environment. His need for order, his regard for it, is completely different from that of the adult. The adult's sense of order may spring from a sense of the aesthetic. The older child's sense of order depends on his sense of what is easy. But the small child looks neither for beauty or for convenience. He needs consistency. In his tiresome effort of absorbing everything around him, we can scarcely imagine the difficulty added if everything continually changes places. It is important that the persons who are close to him during these first 7 or 8 months look generally the same way from day to day. . . that they move in usual ways, that their way of talking and dressing remains fairly stable. It is important that the child himself is handled in the same patterns, that his activities follow somewhat of a regular order. When placed in new situations, we must help him to gradually and peacefully acquaint with the new and different.

The need for this form of order lasts in some degree for the first three years, though the need is never so great as in the very early months. At the age of 3 years, the focus changes, and the new form of order that appears is related to movement. The child now is learning complicated movement patterns such as those required to pick up a pencil, to open and close doors and a host of others. He must order and co-ordinate each of these movements; and then once the movement pattern is memorized, it becomes a part of him and no longer requires conscious effort or thought.

We each have synchronized hundreds of these small movment patterns of the muscles. And when we no longer have to think about them, they have become mechanical. And so we learn to ride a bike, drive a car, or type without consciously coordinating our movements for such work. And the little child, once he has coordinated those muscles for walking, begins to do so very soon with ease and his mind travels on to other conquests.

At the base of all these special movements are the muscles and their coordination. There are, of course, many muscles in our body and everyday we use only a few. There are, indeed, so many that we cannot use them all. But a certain number of them must be used or there is a decrease in the strength of the whole body. The body becomes weaker as well as the psychical and the physical impressions. And thus it is that the real mental and physical health of the individual depends on a certain amount of muscular movement. And since we can affirm that "work is inseparable from movement," we can understand Dott.sa Montessori's caution that "The mental life of anyone who does not work at all is in grave peril."

In order to move, we must first give the order to our muscles. And of course, if the muscles are not trained, the orders are of no avail. The human has the potentiality for a highly diverse number of areas in which his muscles can be trained. He has, in fact, no limits like the animals, but can learn almost any muscular movement pattern and develop it to a fine perfection. It costs him only the effort of much repetition, of much practice. He must train his muscles. And those muscles, in turn, are able to perform because of the special property called muscular memory.

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The Development of Movement from 0 - 3

To understand well the development of movement during these years, we must first observe the development of the brain, specifically the cerebellum. From 0 - 6 months the cerebellum is almost invisible, covered by the mass of the brain. The greatest period of development occurs during the months from 6 to 15. The cerebellum then continues to develop until about age 4, but at a much slower rate. At this point, 4 years, the brain and the cerebellum become proportional in size. It is during this dramatic development of the cerebellum between 6-15 months that the child learns to walk; and it is necessary that the cerebellum develop before this can occur because it is this part of the brain that controls the equillibrium. This is one of the great differences between the child of man and the offspring of the animals: because the animal walks on four feet, the need for equillibrium is not so great and thus the size of the cerebellum is considerably smaller. The act of upright walking depends on the spinal column and considerable equillibrium. It is interesting that the child is born with a straight spine, but very soon a small curvature forms just below the neck from the effort of standing on two feet. Today much gymnastic exercise is designed for the correction of poor spinal positions.

There is a strong innate drive which compels the child to walk. When the child is born, we know that he will walk, but none of us can tell what he will do with his hands. That is, the movement of the hands and the movement of the feet---and their development---are completely different from each other. What the child does with his hands will depend on the possibilities which his environment provides for the development of his manual skills. The development of the hands depends on the psychic development of the child's mind, and also on the degree of the development of the civilization into which he comes. The skill of man's hands is bound up with the development of his mind---and so it is that we can observe the progress of civilization through the history of what man has produced with his hands.

The hands of man express his thought, and from the time of his first appearance, the traces of his handiwork provide an historical record of his mental activity. The art of ancient civilizations help us reconstruct the life and times of peoples who expressed their keen mentality through fine craftsmanship. Egyptian civilization provided many such artifacts as did the ancient Chinese and Japanese cultures. Man's history can be reconstructed through what he has made with his hands. If men had only used speech to communicate their thought, if their wisdom had been expressed in words alone, no traces would remain of past generations. But it is a gift of the hand, this civilization which we inherit. It is a serious thought that today the machine has often taken the place of the work of the hands. As a result, the hands of modern man do not possess the skillfulness of the hands of those men in the past. The result is a decline in craftsmanship and perhaps, even greater, marks a real loss in a certain fine mentality.

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The child's intelligence can develop to a certain extent without the help of the hand; but with the hand, the development level is higher and the child's character stronger. "Watching a child makes it obvious that the development of his mind comes about through his movements. . . Observations made on children the world over confirm that the child uses his movements to extend his understanding." (The Absorbent Mind) And so it is that the child's character remains undeveloped unless he finds opportunities for applying his powers of movement to his surroundings. The development of movement is twofold: it is tied to biological law and it is connected with the inner life. Both are dependent on the use of the muscles.

In studying the child, we follow two lines of development: the development of the hand and that motor development which involves walking and keeping one's balance. This second development begins at 3 months when the child starts raising his head. At 6 months he is able to sit up with help and by 7 months he usually can sit by himself. At 9 months, the child begins to crawl and by the age of 1 year, he is able to begin walking with help. At this point he walks on his toes. . . and sometimes because of a brain dysfunction at this point, the child continues to walk on his toes indefinitely. Normal development, however, proceeds until the child at about 15 months can walk alone. He begins to climb, and likes to carry heavy objects. By two years of age he walks by himself and doesn't lose his equilibrium. He has now reached another level of independence for he is able to do something by himself---something very important. This entire development has occurred as a result of the rapid development of the cerebellum; neither intelligence nor consciousness has intervened. The orders come directly from the brain. And finally, this unconscious progression of events rewards the child with a new state of independence. He development depends on the increasing independence; and so it is that our best help for him is to "help him do it for himself."

The development of the hand is related to the intelligence. During the first months, the child observes the movements of the adult. His first hand movements are those of grasping for something. We often believe that he is trying to hold onto something specific, but actually he is practicing his movements. Slowly this prehension becomes conscious as the child follows his own hand reaching for something. At a certain moment he realizes that he can take an object with his hand; between 6-10 months, he begins not only to grasp objects, but to choose those which he takes. The consciousness is developing. At 15 months he not only wants to hold objects, but he wants to do something with his hands. He begins to take things out of drawers, to play with putting lids on pans. At 18 months he wants to carry heavy objects to be sure that he is strong. Gradually through these efforts the child develops more and more control over his hands. It is important that we allow him the opportunity to perform all of these exercises. . .to do them often and to repeat them. Because it is through them that he is increasing his ability and striving for perfection.

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At the same time, we must remark again that intelligence can serve no end if our tools, our physical abilities, are not trained to serve that intelligence. The spirit is always ready, but it cannot act unless the muscles are ready, too. "The spirit is ready, but the flesh is weak." I am reminded of the inscription at the front of a small chapel in Bergamo that reads "Beati Coloro Che Ascoltano Le Parole Di Dio E Mettere In Practica." To put into practice that which the spirit understands and is willing to give is the key to the joy of service. But until the physical talents are trained, it is not possible.

During the period from 3-6 we find the sensitive periods for receiving sensations. During that time, we must offer the child those objects which will enable him to act out in a clear way his natural affinities. His environment must be filled with objects carefully chosen to meet his needs; and as he spontaneously chooses them and makes use of them, he is constructing his personality in an ordered way. Little by little his sensorial work provides him with precise notions which are stored in his subconscious in an ordered way. We must constantly help him form clear notions of real things. We must offer him the truth, and recognize that we cannot imagine the problems he faces as he tries to unravel his complex world.

If the six-year-old has had the opportunity to construct his personality in an ordered way, he is at this point a conscious being, ready to receive his culture. Now he has a new period of need for a different kind of order and movement. It is tightly related to his mind. His hand works in order to help his mind organize. As he begins to approach his culture, he has need of strong support as he meets a world great enough to destroy him. Our job is to provide him with the keys he needs to explore that world with competence and joy. In order to help his formation of this new order, we must consider his imagination---his ability to see what is not present. His scope has now gone beyond his senses. He has the power to abstract and synthesize. Today Scott, 7, explained to us that when a bowl of soup is not eaten, we are loosing money because we have paid money for the soup and for the fire which cooks it and for the hot water with which the dish is washed. And so we use maybe L500 and no one has eaten the soup. He explained the matter of waste, something I have perhaps verbalized to him 25 times in the space of three years. But when he spoke it was as if he himself had discovered the sequence of events and the amazing results. He was able to abstract, to synthesize the cause and effect---but only now that his mind has the capacity for such thought.

Man's power to imagine, to abstract, to synthesize is the great mark of his intelligence. But each attribute of that mentality must develop in a certain order. And as the development occurs in the child, he becomes able to direct his work with his own mind. The point of perfection occurs when the mind is satisfied, when it realizes that something has been achieved. And at this point of perfection, the teacher must recognize that further stimulation is needed. Recognizing such moments in each child's development is perhaps the teacher's finest work in the elementary school.

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The child now has the need to coordinate the movements of his feet and his hands. This requires much practice and exercise through which he continually reaches a higher level of perfection. He is developing constance, patience, exactness and equillibrium. It is a process at once physical and psychical, for only through movement will his body develop in both ways. Through activity his mind learns to concentrate and his spirit is nourished. It is important that we see that there are not obstacles in this path of his development during these sensitive periods or there will be psychic disturbances, sometimes violent ones. They may result in a great attachment to the adult, a desire to possess, an inferiority complex, a fear of walking, disorder and aimless movements, and retarded independence. Disturbances of such a serious nature make it essential that we recognize the importance of this development of movement, remembering that "To perfect any given activity, movement will be needed as the last stage of the cycle. In other words, a higher spirituality can only be reached through action. This is the point of view from which movement has to be judged." (The Absorbent Mind)

The child from 3 to 6 performs those activities through which he can reach a harmonious level of personal development. At 3, the work that the child does often seems to be directed towards a specific external aim. In fact, he does not wash the floor in order to get it clean, but instead as an exercise through which he constructs himself in an orderly way. Often when the floor is quite clean, he continues to repeat the activity because he is developing through these movements a muscular memory that serves his need for the order and coordination of movements. In the same way, the practical life exercises in the children's house do not serve an external purpose, but instead satisfy the child's deep need for order and organization. He is trying to master each of the things he does. Later on his spiritual needs will prevail and the practical life exercises will no longer command his attention. He may be able to learn such exercises at a later time, but that would be only through great effort. And so it is that the child during this period, must receive every possible help to achieve the necessary internal development provided by exercises of this kind of work. We must provide the activities so that he may perfect his movements. We must put ourselves at his service. And we must help him in every way so that he may reach his goals in a faster, more perfect way.

We must remember, above all, that the acts of the child from 3 until 6 are finalistic phenomenen. In the very doing of them, the purpose is achieved.

Movement must be understood as organized activity for the construction of the human personality. Many exercises for young children in the Montessori school are executed on a thin circular line. These exercises answer the child's need for the perfection of his equillibrium, something we see him do himself when he tries to walk on the very edge of a sidewalk. Each physical work must be accompanied with mental activity so that the two become one. Dott.sa Montessori says that the motor force is an expression of the soul.

This progression to perfection and then a further stimulation towards another achievement must follow a specific order, dictated by the child's needs. The vague mind accomplishes nothing. Intelligence is not enough without order. Order is the basis of the human mind. Dott.sa Montessori notes that all inventions of civilization have been based on order and exactness. Even the fine arts of poetry and music are measured into meters, and grounded in an exactness that becomes the precision of language or sound. At the base of life, in any period of development, there is movement and order. In each of the exercises given by Montessori, there is a gradual progression towards exactness and order. Montessori children are perhaps interested in mathematics because from their very first years, they have worked with their hands, thus clarifying ideas and moving towards exactness of movement and perceptions.

And then all of the child's experiences are deposited in his subconscious. The concrete experiences provide the abstract concepts at the higher levels of schooling. The concepts surface when prompted to the consciousness without the child's realization that he remembers them. And so the importance of the indirect preparation is great. It is through such preparation that the child assimilates ideas and makes them a part of himself. His knowledge through his work with the materials internalizes and is ready when needed, but is never a burden. And the ways in which we meet his needs for order, the ways in which we allow him through movement to develop, indirectly prepare him for an encounter with life fortified with a strong and integrated character---that he himself has constructed.

OBSERVATION: Casa (4-year-olds) November 7, 1973

Physical Environment of the Classroom

At first glance, the shelves seem very sparsely equipped. Visible on those shelves directly adjacent to the children working are the addition booklets, board, strip box and charts; the movable alphabets; a box of colored beads; the sandpaper letters and blackboards; several boxes of matching cards and nomenclature booklets; the multiplication board and chart. There has been, of course only five weeks of school so that the presentations made in that short time are reflected in the minimum equipment.

Also available is the shelf with the metal insets and, far to the side (removed considerably from the general work area) is more typical casa equipment: the broad stair, the boxes of color tablets, the pink tower. Also in this area is the small environment. But the area of this equipment is seldom frequented, perhaps because of the observers who occupy part of that space. It seems that here is equipment which the child of 4 (the age of those children in this room) would have already been introduced to and might be more helpful to the overall picture of classroom dynamics with the materials were it more available.

The bells are in the classroom, but covered and not used.

There is no sign of the decimal system materials---a surprise considering the use of the addition memorization materials and the multiplication board.

Of greater interest is the lack of practical life equipment---there is none in this classroom.

The classroom space for 13 children is adequate, but the arrangement is questionable. All the tables, each suitable for four, are set in the back two-thirds of the room, with little space between; and the last third of the room, towards the entrance (the area of the second shelves described) is open space. Here there is room for mat work of which there was very little. . .perhaps because it seems so far removed from the center of activity.

The overall character of the physical environment is cheerful and orderly, with a parakeet in the corner, the children's designs on the windows, paper chains displayed and maps hung in the corner. The sun is steaming in through the wide corner windows.

General Characteristics of the Children's Behavior at Work

At the tables which seat four each the children do most of their work. . .sometimes occupying all four seats at a table, sometimes two or three at one. Few children return to the same seats regularly and there is very little interaction among the children as they pass from one activity to another. There are a few exceptions. One group of three forms at a table and works together with the sandpaper numerals and blackboards---each with his own materials, but definitely sharing the activity. During the group's activity, one of the three children invents a game: writes a number on his blackboard, holds it up for the other two children to guess which number it is. . .and then they must choose the correct sandpaper letter to show it. When one succeeds in guessing, the child exclaims "Yes! You win the prize!

Generally, however, the children work with little conversation although the activities at one table are often the same. At 9:00 ten of the 13 children are cutting out insets they have traced and pasting them on heavier paper. This exercise continues with various

groups throughout the morning. A few children are able to work independently, moving from one material to the next without help. But, generally the children require frequent suggestions to prompt them into a further exercise. When they have completed work with a material or grow tired of it and leave it, they wander randomly around the tables, observing here and there the work of others, visiting the corner with the parakeet or the maps, occasionally playing---a little hopping on one foot. At 10:00 there is a period of considerable restlessness, then a short resumption of work; but by 10:30 only five children are really at work, 3 are playing with a material which they don't seem to know anything about, and the rest of the children are restless or wandering.

It appears to me that there is a real need here for the practical life materials. Without those stabilizing exercises of repetition and regular movements, the four-year-old child is without the balance of activity which will perhaps establish his concentration ability for the work that he is probably ready to begin in language or mathematics.

Normalization - Concentration

Concentration occurs fitfully in several children,and seems to be happening really only for two. These two children successfully work their way through the entire morning with a good progression of exercises. The one observed most closely begins with the printed alphabet and a phonogram booklet. She completes the exercise and moves to the multiplication board. Thirdly she brings a geography map puzzle from the next room and completes it. And finally, brings and counts the 100-chain. She is working in the midst of considerable activity, but is not once distracted. However, the normalization of the class has not begun to occur.

The Teacher

The teacher is a keen observer and knows quite well what each child is doing at all times. When a child arrives late, she greets him kindly and asks him what we would like to begin. Her demeanor is gentle, pleasant and controlled. Her voice is heard only twice above the class. . . and that is a gentle "ssss" for quiet. It has little effect, but the noise level is reasonable throughout the morning.

Her primary role seems to be that of directing children towards a further activity and keeping the classroom in order. She replaces pencils in the holders, sharpens pencils, moves chairs under the table, rolls up mats. It seems that the children should be doing this keeping house. What about the mat lesson?

She does not sit down at any point, but is in constant motion, guiding a child, suggesting a new activity, correcting an error. There are no presentations.

Her intervention is sometimes successful and sometimes not. When a child working with the sandpaper letters and blackboard begins to be noisy. . .and obviously working below his capability, she guides him to the addition board and he eagerly begins the new work. However, with this same child, when he begins his second sum with the wrong wooden strips, she takes his error off the board and puts the correct one on, also erasing something from his paper. When she leaves the table, he no longer works. To this point, his interest has been considerable, but somehow the correction broke the train of thought. At another time, it is interesting that the teacher makes a correction for a child

OBSERVATION: Casa. . .

on the printed alphabet. The child is working with the phonogram "ch" and has incorreetly spelled a word---ommitting the phonogram. The teacher shows the child where the phonogram should come, but when the child spells the word wrong again, a further correction is not made because the phonogram is correct. So "chitrra" passes and the phonogram exercise has served its purpose without over attention to the peripheral elements of the work.

The inset activity required the teacher's constant intervention. The children are cutting the insets out of bright red paper, of which there is only one large sheet. And the teacher is carrying it around. In order to begin his inset, then, the child requests the paper, the teacher puts the remaining sheet on his table and waits while the child traces the two insets he has chosen. Then she cuts off that part of the paper and leaves it with the child for the further cutting and pasting. But why not use cheaper paper so that each child may take his own materials and complete the exercise alone, from beginning to end?

Conclusions

The class reflects, above all, the early part of the schoolyear. Self-direction and independent action are at a minimum. The absence of the practical life material seems particularly serious to me at this point, since these children certainly need exercises with which they can focus their attention, in order that they may move successfully into the real work of their year. In lieu of washing and polishing, perhaps lessons in the housekeeping of the room, work with the mats, dusting of the shelves, etc. might be helpful for the dynamics of the classroom and might also fill in those pauses which seemed to call for manual work of a particularly basic nature.

CASA GYMNASTICS: An interesting half-hour.

The teacher is remarkably talented. Throughout the half-hour the children, working generally on a circle, within it and around it, are in constant motion. But in perfectly orchestrated movement of an extraordinary variety. This is due chiefly to the teacher's ability to play the piano, give occasional demonstrations of a movement, and delightfully describe the actions she wants---all at the same time. Of particular note:

1) By imitating various animals, the children have a chance to creep, crawl, and execute many other ambulatory actions.
2) The children arebuilding a repetoir of different movements --- many that they have obviously learned previously and a few new ones here and there.
3) These movements are indicated by the repetition of particular piano themes. . .and the children obviously delight in hearing the same music and knowing what to do.
4) Exercises begin simply, stationary and progress in a loosening up process until, when the running and skipping begins, it is controlled and easy.
5) For coordination of movements, the teacher offers only a precise explanation for one part of the movement, such as the position of the hands. Then, when that is learned well, she will add the work of the feet.

OBSERVATION: Casa Gymnastics. . .

6) Good movements:
   a) Knee-spank in sitting position, for loosening the legs.
   b) Hands behind the back, bending at waist and walking.
   c) Rolling on the floor and finally rolling into a huddle in the center.
   d) Walking with heavy steps, then walking on tiptoe.
   e) Sitting and rowing across the room with legs. (a boat)
   f) Being soldiers, birds, cat (arched back, sometimes one leg up for the sharp line of tail), dog, frog, horse.
   g) Stomach-creeping back to get their shoes.

7) Whenever the music stops, children sit on the circle and fold their legs.
8) The bees and flowers game: half the children sit as flowers while the others fly as bees in a circle around them and must land on a flower when the music stops. Musical chairs elimination. Then reverse roles. No one really wins because everyone is having so much fun.
8) The piano is a must for the gymnastics.

OBSERVATION: 6-8

Physical Environment of the Classroom

The classroom is a visual experience in language arts and mathematics. On the walls are several language charts: those used with the introduction of language---the alphabet charts, classified nomenclature wall charts, a verb tense chart---a dynamic material in that the children add several words to it during the morning, and a chart of phonograms. Also on the wall is a chart of the four operation symbols and the large numeral cards are displayed on a table to the side, near which is a smaller table where children come in pairs to work with decimal system materials. There are several long tables that seat 10 and two that seat six, and on the tables, too, we find the tools of language and mathematics. On each table is ample bowls for pencil shavings, pencil holders---and an abacus---a simple counting frame. The latter were not used during the morning.

Most materials are stored along the back wall beyond our view, but the materials coming from that direction indicated a great deal of bead material, addition board and charts, also subtraction and multiplication; the language material used was principally the children's notebooks and their own pencil cases.

Roses on the teacher's table, a table terrain map, and a large swordfish snout add interest to a room that seems to invite interesting activity in its arrangement.

General Characteristics of the Children's Behavior at Work

We are able to observe most closely the smaller table which seats six at which four children work the entire morning and another comes for part of the time. Generally the children remain stationary in one place during the morning. At 9:00 the 22 children are all busy and working well, but the interaction between the five children in our vicinity is considerable. The conversation stems primarily from the work being done, but at times creates a distraction for those involved and those at work at the same table. Specific friendships are not apparent,

living beings. The more primitive species may conclude their development at the blastula stage.

In the human embryo, this circle bends inwards so that there is an inner wall (Endoderm), and an outer wall (Ectoderm). Finally, a third wall forms in the middle, the Mesoderm. This stage is called the gastula.

The multiplication

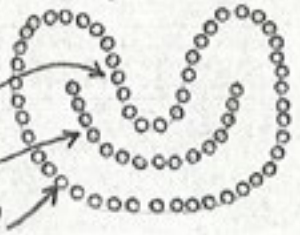
of the germinal

cell. (2, 4, 8, 16, etc.)

morula

blastula

gastula:



Endoderm

Mesoderm

Ectoderm

but rather the social exchanges seem to have a random pattern. At times it is in the form of comparison of work: "How many pages have you written? I have written 5." "My drawing is more beautiful than yours, don't you think." At times this interaction has a definite benefit, as when two work with the negative snake game and the one is able to truly be a help to the other.

Initially at the 6-table all the children are working steadily at composition. The penmanship is remarkably beautiful. The composition seems to be quite original and the accompanying illustrations done with great care. There is considerable pride displayed in the correctness and neatness of the work in the notebook. In fact, often a child does his figuring on the table and then rubs it out in order not to spoil his notebook work. By 9:30, the activity has begun to diversify at the table. It is interesting at this point that one girl begins to work with the negative snake game and, either from lack of understanding of her exercise or unable to do the calculations for it, her activity is extremely hurried and erratic. In trying to make the check, beads are replaced and taken at random from the available boxes until the check is right. . .then a number is written in the notebook and only at the point of replacing the materials does the child really relax into a steady, careful work. She then takes the addition board and has more success with the bingo game.

Characteristically, the children are able to move from one activity to the other independently. And at no time do I observe a child without some work before him. However, the concentration is only sporadic at the 6-table and often activities are only partially completed. Two of the children have a great deal of difficulty working at anything. One child gathers the addition board and strips and a slip of paper on which are written sums. After arranging his pencil case, blowing his nose, sharpening his pencil, and being encouraged by a teacher to begin, he lays out the material---20 minutes have passed in this prior activity. Perhaps part of the problem lies in the child to his left who is trying to think of the right word for her composition out loud. And she is only partly talking to herself and partly talking to the child across from her. Again, the irregular nature of the social interaction seems to be, at this point, an unresolved factor that is interfering with the work.

Some children work extremely well, staying with one material for an hour at a time. . .one child spend an hour and a half working with material on the mat---beads---and his notebook at a nearby table.

At all times, at least one group is involved in a presentation--- 2 children at one point, four at another, five at another.

There is some occasion in several children's work to go to the teacher and ask for a check of their work.

The work continues fairly steady throughout the morning, but the noise level begins to increase towards 10:30, and activities seem a little less concentrated. The children who have worked well throughout the morning are still busy; those whose distractions have been considerable are now hardly working.

Normalization - Concentration

Concentration occurs consistently in some of the children---perhaps one-third of those in the room. The others have specific periods of good work, but are not able to sustain concentration through the points of conversation. And, as yet, working together has not meshed into productive activity generally.. The class is not normalized, but the work foretells its coming.

OBSERVATION: 6-8

The Teacher

With the exception of a late morning reprimand to a child who has worked poorly all morning and was asked to continue his work at the front desk, the teacher is hardly noticeable in the overall classroom picture. Her time is spent almost totally in giving presentations, first at a children's table with a group of four, then at her own table with first three and then two. She acts as a control for those exercises which must be checked, but the children go to her for this. On two occasions, I note her special consultations with one child, but I cannot tell with what they are concerned. At this point in the year, it appears that her role is to present new material as quickly as the children are able to use it.

Conclusions

The work in this elementary classroom is interesting for its particular concentration in the areas of language and mathematics. The children seem especially interested in their notebooks, writing the mathematics as well as the words with great care. The social factor is still not resolved in a positive way to correlate with their work, but the possibilities are obvious for improvement in this direction. Part of the class---though few---are still having great difficulty self-motivating. But the independence of action is prevalent and very nice to see.

OBSERVATION: 9-12 November 8, 1973

Physical Environment of the Classroom

The visual impact of the classroom is considerable. On each of the three long tables are large books and boxes of materials in folders. One of these main tables is covered with such reference material, and on the shelves are other large volumns, sets of reference books, notebooks and boxes of classified folders. In one corner is a very large chart stand from which large charts are often taken. Various cabinets are opened from time to time to reveal further classified materials. There is a table lighted from underneath to facilitate tracing. There is a large table terrain map and many large maps on the walls. Spread across the floor on our point of entrance is the time line of history that extends half the length of the room. Beside my chair is an experiment table equipped with bunson burner, water hoses, and chemistry experiment decanters and stands. The cards on the table, standing together in a box, note experiments with: solar energy, perpendicular and oblique rays, illumination of the ground, illumination of the equator and poles. Behind the table is a huge cabinet with glass doors---and a second one of these on the next wall. . .both containing a myriad of items: foodstuffs, testubes, pitchers, hoses, glass dishes, rocks, stuffed animals, buckets. There is a small globe in the room, a chart of the alpine flowers on the wall, a series of newspaper clippings about the oil crisis posted, remarkably accurate drawings of water & land displayed on a window. It is exciting just to sit in the midst of this world of geography, natural sciences, chemistry, history, and political science.

OBSERVATION: 9-12. . .

General Characteristics of the Children's Behavior at Work

The basic group is composed of 19 children, divided into pairs which remain constant throughout the morning's work. One girl works first with two and then two others. That is the only exception. Together these couples choose materials and work together, often reading aloud to each other or discussing the material being used. A few times we notice that this concentration of friendship prevents work for a short space, and in one particular case, seems to prevent production altogether. But overall, the pairs of friends represent a stabilization of the social situation and contribute to the work experience with the materials. It is interesting that midway through the morning, 6 younger children (perhaps 9-year-olds) come to work; and their social patterns are definitely more in keeping with what we saw in the elementary group. They work in groups at times, but the composition of the group is not stable and changes from activity to activity. And sometimes they pursue work alone.

Two of the pairs spend most of the morning reading silently and discussing only occasionally. This is notable because of the overall noise level which is considerable. At times the volume seems to be higher than the distraction limits---but those children working well are not affected. And the noise seems to rise and fall of its own accord. At 9:00 two-thirds of the class is completely engaged in work. By 10:00 every child in the room is truly busy at work. The entrance of the younger group does not seem to change this in any way.

The variety of activities is considerable. At one point in the morning, 2 children are at the front table working on long division with a series of verbal problems, 2 children are reading the material on the timeline spread out before them, 2 children are at the tracing table, 3 are on the floore with a biology study of the division of cells, 2 more with another biological classification, 2 are working with the floor terrain map, 2 are working with a large map of Italy, 2 working with a chart of the governmental structure of Italy, 3 are wandering temporarily in search of materials, and the rest are engaged with books and notebooks at the tables. And so there is considerable movement, directed not only towards the selection of new materials, but also for reference and research purposes.

The Teacher

The teacher is totally engaged in presentations. She makes a major biology presentation for two boys and then, half an hour later, repeats it with another two. Then she follows this with a long presentation with a group of three. She is interrupted during this presentation by the sound of the map of Italy falling off the hook; but she deftly replaces it, improvising a hook, and returns to the presentation. Between presentations, she makes a quick check of some of the mathematics activities and makes a few corrections in the work. During the presentations, she is still available for checks and consultations from other children, each of which she seems to handle smoothly and quickly. The children appear to have a great deal of confidence in her knowledge and in her personal attention to their work. At one point, she nearly shouts a command for quiet; and it goes unnoticed. But from the way in which she then begins her own work again, it is obvious that she is as oblivious to the noise as the children. She is working, interested, and deeply involved in the material. And yet, towards the end of the session, she speaks quite specifically to those few children who have had difficulty finding good work during the morning and tries to guide them towards something specific.

OBSERVATION: 9-12

Normalization - Concentration

The class is swiftly approaching normalization. The concentration in the majority of the children is highly developed. The younger group that entered began immediately to work well and continued thusly. The original group, even in their conversation and mutual aid, seemed to achieve concentration in a variety of activities. Only three pairs seemed to change activities frequently, indicating some difficulty arriving at the point of real work.

Conclusions

In my observation throughout the morning of one particular child, one who had particular difficulty in switching his attention from his friend to an activity, I felt that perhaps---in spite of the broad range of activities available---that his morning's work was in another area. Is it possible that the language and mathematics work is continuing in another room? And is that where his real work should have been this morning? Only at one point, when he began to color in a map, did his work become really serious. His concentration period lasted 20 minutes and then he brought the carefully detailed map to the teacher for approval. If there is a division in the areas of work, are the children allowed to change rooms? And if not, I wonder why?

IMAGINATION

Human beings have the power to see things which are not present before their eyes. It is called "the power to imagine." We must have clearly in mind what imagination means. The name of imagination is given to many things. Usually it denotes the capacity to reproduce internally the sensitive perceptions; and thus memory is prepared.

The simple power to imagine belongs to man AND animals. That is, the capacity to retain in our minds what we see, and to put that information to further use. We know that animals remember persons; but more than memory, this is a perception. There is also this simple perception on different levels. Each of us sees a room from a different point of view and remembers those details which interest us most. So the simple perceptions are linked to development of the mind and to interest. This imagination is reproductive imagination.

We are interested in another imagination, an intrinsically human quality which is able to abstract images and associate them in different ways according to different needs. Thus something completely new is created. It is the fruit of our mind. This imagination is unique in every person. No being creates the same as the next. This kind of imagination is not only personal, but develops according to the moods of the person. For example, the same noise that we ignore during the day creates images when heard at night that would not otherwise exist. Different moods create totally different reactions: when one is sad, sick, angry, etc.

This imagination is free, unlimited. It has nothing to do with reproductive images, that is the reproduction of images. The development of such imagination is according to the individual. It plays an important part in the development of the intellect and can become a powerful help in the organization of the human mind. It may bring a synthesis rich in content.

It can also be a dispersing force in the individual, a force which takes the individual from one activity to another without concluding anything. This force can make the mind vague, lost in dreams, far from reality. This imagination can be manifested in many forms:

1) To be able to realize a thing which we have never seen before by comparing it with something we already know.
2) To be able to see as real things those things which are not real.
   Ex: We imagine a thief in place of a mouse for the little sounds of the night.
   Images can become so strong that we begin to feel them through our senses.
   NOTE: This imagination is very strong in children.
3) To be able to see real things in a completely unreal form.
   Es: The child is able to see his mother as always beautiful.
   For each of us, our own town is beautiful.
4) To be able to see in reality the things we would like to have but do not possess. This, too, is very strong in children.
   NOTE: This imagination, says Montessori, should not be encouraged unless a broomstick horse is really necessary. . .the transformation of an object into what we would like it to be.

5) The creative imagination which leads to artistic creation & scientific discovery. . .that imagination which transforms known information into new synthesis and original creations.

There are many other philisophical forms of imagination. Imagination is, infact, the mere creation of the human spirit. It is the base of the human intelligence. If we believe the spiritual part of man is the most important, we may also say that imagination is the base of intelligence and all human discovery.

Einstein said: "Imagination is more important than knowledge itself."

The human imagination has no limits. It can travel through infinite space. It can go back to past times. With the imagination at work, one can see earth and all the creatures in it which exist and those which no longer exist. We must be aware when the child is able to imagine things beyond the simple understanding, when he is able to achieve a higher level of synthesis and thought.

There is no great progress in civilization that has not been accompanied by the flame of imagination. Each thing invented is the fruit of someone's imagination. Almost always, this imagination is in touch with reality. Newton discovers gravity by watching an apple fall from a tree. Artistic creation is based on that which the mind perceives through the senses. And so Michelangelo imagines God. We imagine with the things we know.

There is also a form of imagination which does not come from the sense perceptions, but which come from non-sensorial impressions. These are called "revelations." They are intense spiritual experiences, of those whose spiritual life is very intense. But these non-sensorial revelations, in order to be described, must be explained in terms of real things. In the Divine Comedy, Dante's genuis is revealed in his ability to express in words all those images which his imagination calls forth. The artist does not copy a figure, he creates it, invents it; and yet, the raw material of his imagination is the things he observes in reality.

We are not able to imagine that which lies beyond reality. Cosmic space is always represented with geometrical figures, though we have no way to see it. Man must always speak of the new in terms of the old.

If this imagination is a human characteristic, we must try to help it from the beginning. The child is born with the power to construct his own imagination. This first form of imagination is completely different from that of the adult. The child's imagination is characterized by credulity. When he is born, the child of the human is the poorest in a material sense. The imagination of the small child is the product of the maturity of his mind. In large part, it is the product of the adult, for the child believes simply what the adult says. This credulity of the child cannot distinguish between real and unreal things. And so it is our responsibility. We must not foster credulity about something that does not exist. Credulity, on the other hand, does not exist in the mind of the

healthy adult. There have been many times, in the history of man, when this credulity of immature men has been used for the advantage of another to disastrous ends. Dott.sa Montessori says that credulity is the base of uncivilized behavior, occurring when the normal personality of the child is undeveloped. The natural period of the child's credulity is right for his personal construction. Then he must build himself and his own real imagination. The child must not be restrained from this new work. We must help him construct it.

Montessori speaks strongly against all unreal information given to small children. She includes certain children's tales, noting that children's stories are good, but those with the hint of the unreal must be told to children when they can distinguish the real from the unreal, especially those tales which distort reality. And so it is necessary to choose correct stories. They are important, especially for the 3-5 year olds who love to have the same stories repeated. Here the pleasure is sensorial; the child still being in the sensorial period for imagination. The child needs the repetition to construct the images; and once the image has been formed, he has to relate those images. That is why children like books with many pictures. The illustrations help them get a better idea and help to fix those images in their minds. At no age can unreality be the basis of the stories which one tells. We may note that Aesop's Fables are good.

One can tell actual facts in the form of a story because real life, in fact, is a very interesting story: the story of a tree, of the flowers, of animals and fish. Normal children, at a certain point, overcome this limitation of the imagination which is an immaturity. The child is pushed by an internal force towards this end. At times the adult hinders this progress; artificially stopping the development of the child. Montessori compares such hindrances of the child to the ancient practice of foot-binding in China---it simply stopped the growth.

The child must be helped while he is constructing his imagination. He must be put in relation to something that makes his imagination work. He must be given a quantity of elements from the external world in such a way that he can store them. Later on he will be able to use these images as he passes from the second to the third period of his life. Here the imagination must be used to develop the intelligence.

Thus environment and activity is emphasized in the first years: an environment as rich as possible in order to help the child move forward in a concrete, not a vague, way. In the children's house, there must not be only sensorial and cultural materials, but drawings and charts to enrich his mind. There must be good illustrated books. For in the children's house the child is constructing the imagination. He has a need to visualize as often as possible the abstract. If we deny him this help, he will become lost in a world of fantasies. In a world which the psychoanalysts call the psychic escapes. The energy, instead of being channelled, takes refuge in a world of fantasy. It is an energy which has not found its natural place. It is the ego which hides behind a mask. It is important to understand this child's psyche so that we can help him move towards peace and normalization. Dott.sa Montessori notes in this connection: water follows its natural course. If we block it, it will take another way.

IMAGINATION. . .

Psychic activity puts a person in touch with the external world. If we stop this work or encourage it in an abnormal way, we will stop the natural relationship of the child with his environment; and uncomprehensions of the environment will be created, giving the child real impossibilities to act in an orderly way. The psychic activity will then disengage from the rest of the personality and travel by itself. There will be no real imagination, but fantasy. Those children who don't have the possibility to realize the simplest facts of life, regarding everything: moral facts, family relations, physical work, are threatened with this great escapist retreat. Those children who don't have the opportunity for concentration, tend to create for themselves a world apart from reality. They are often the children who are not able to coordinate their work and cause disturbances. So, instead of helping the child, the environment destroys him. The child cannot find his own environment

If the child has constructed himself in a normal way, at the age of 6 he will be able to make abstraction without the help of the adult. He has constructed his imagination sensorially; now he is still constructing his imaginative intelligence, but through personal experience. That development is based on a single effort which takes the child to a clear vision of that which he wants to understand.

What can we do to help? The adult must give to the child the elements which give him the possibility to acquire exact and clear views. In this second stage of development, his interests are vast. His eyes look at the whole: he is fascinated by great and mysterious things. And it is from this approach to the whole that he achieves psychical and moral growth. Dott.sa Montessori challenges us to give this child the universe. The universe is magnificent reality: the answer to all the questions of the child. Everything that exists forms a part of it. All things in it are related, forming a simple unity. If we know how to give him the world, how to keep the flame alive by stirring his imagination, we will rouse real interest in the child and he will acquire real culture.

It is a great mistake if we don't help the child with the imagination, for it is through the imagination that we keep his interest alive. Our concern is not what to give the child, but how. Our goal is not to make the child memorize different subjects. Our goal is simply to touch his imagination to keep his enthusiasm alive. We don't want children who are content with a little bit, but those who want to know everything. We must aid his growth: psychical, mental, emotional.

Educators agree on the importance of the imagination. Often there is a wish that the imagination could be separated from the other intellectual faculties, just as it is sometimes supposed that the intellectual faculties could be separated from the manual. And so the imagination of the children is nourished with fantastic tales. And television invades the human scene, creating lazy minds in both adult and child. Montessori calls T.V. "a state of living death."

It is the school's task to encourage creative imagination. . .so that it will grow as a building full of light, and not a paper castle that will crumble with the first blow. This is the real work of the school. And the result will be imagination which reaches a higher level and develops real creativity.

INFANCY AND CHILDHOOD: IN COMPARISON

Though we can easily note some of the differences between the period of infancy and that of childhood, we must explore those differences beyond their surface manifestations. Because, in order to truly be a help to the life of the child, we must know his needs. And those needs are vastly different.

We know that the psychic development of the human starts at birth. . . and so the development of his character. Certain psychic characteristics exist in the physical embryo, psychic potentialities that will develop after birth. The psychic elanvital, the force independent of will, exists.

Instinct and nebulae can be put into one word: mneme, or "memory of life." It is that mneme which tells the butterfly where to lay eggs, tells the bird how to build his nest, and instructs the human infant how to go about building his character. For the first two years of his life, this process develops unconsciously. There is a gradual passage from the unconscious to the conscious, but the process happens in an unconscious way.

The development of language is unconscious although at a certain point the child realizes that all the language he must learn comes from the mouth of the adult. Slowly he becomes aware of his language, his movements required for that development of language. During this period of his life, everything is fixed unconsciously in his mind---the good and bad, the useful and the useless information. Obstacles during this time may produce serious negative manifestations.

Then there is a period in which the conscious and the unconscious parts mix, and become impossible to separate. The psyche becomes very complex. It is important that we recognize this growing complexity and the changes which it means in the child for Dott.sa Montessori based her method on the work of the unconscious and the subconscious. She carefully explored and pointed out the needs of the infant, the older child, the adolescent in terms of his psychic development, and found them to be vastly different.

There are four planes of development. The great differences in the work done in the children's houses and that of the elementary school reflects these differences. The elementary school is not a continuation of the children's house, though the work there lends support and preparation for the child. In fact, the two school schemes are often completely different, opposite, just as the tadpole is the opposite in form from the frog. And this is because the laws which govern the first period of life are completely different from the laws which govern the next.

The child in this first period from 0-6 years is a highly creative being. He is, in fact, the being who, through his creative capacities, creates the child of the next period. These years from 0-6, at the base of life, were ignored for centuries---hidden and unknown. Dott.sa Montessori was able to raise this veil of mystery because, instead of being guided by the seemingly conscious acts of the child, she looked towards the unconscious, following and observing the natural development of life. And because she took great care to study the road of man's history from the time he appeared until today.

She observed the children's repetition of actions and asked why. She encouraged the repetition because it seemed to be a natural and spontaneous pattern for the child. . .and the result of this encouragement was an improved character in the child. It was through such observations and experiments that she uncovered the different needs of the child at different periods in his life. That there were different potentialities in each period that needed developing.

During the first six years the child is becoming a part of the group. The newborn has no specific nationality, but at six years he has incarnated the characteristics of the group into which he has been born and with whom he has been raised. This child from 0-6 has specific characteristics:

1) He is ego-centric. He wants to be the center of the family. Because he needs to form himself, he must concentrate on himself.
   This seems to be nature's method. And thus it is that this child likes to work alone, constructing his personality in his own way.
2) He has a need for order. In his mind nothing exists, and so it must begin to fill with impressions, information which must be put in order.
3) He needs to explore his environment. And to do so in great detail. He notices the pebbles before the trees.
   It is through this need for order and the need to explore in detail that the child takes himself towards perfection.
4) Credulity. The child does not possess anything; he cannot distinguish between reality and falsity. He accepts everything without discussion. His imagination is forming and thus we must give him solid information based on reality. Thus his imagination can be a help to his natural formation, and not a fantasy stumbling block.
5) Concentration. . . .is necessary for the development of his faculties and as a help for his own formation. Montessori reminds us that it is wrong to constantly change the child's environment. He is attached to the home and a restricted environment. He has a need for a sense of protection.
6) Repetition of exercises is an important part of his work. Through repetition he develops his skills.
7) There is a constant progression towards independence. He says "help me do it by myself." He is approaching self-sufficiency. When he cannot do the exercises alone, he doesn't learn anything.
8) He loves beautiful things. He does not want to be different from the group. He accepts the beauty of the group and his environment.
9) He has the power to absorb ways. He is forming his own imagination.
10) He has a need for protection and perfection. He has a fear of remaining alone, of abandonment. He needs the sense of a circumscribed security and love within his environment. From the persons within it, he will accept everything.

These three walls, the endoderm, the mesoderm, and the ectoderm, will form the final being. From the endoderm are formed all the internal organs, such as the heart and the lungs. These organs, called the vegetative organs or involuntary, are those which function without our will. The mesoderm produces the skeleton. And the ectoderm forms the skin, the sensorial organs, and the nervous system---all those organs that will be in relationship with the external world. These organs which put the being into communication with the world are called the "Organs of Relationship."

These systems form in regular succession. An English scientist, Douglas, observed the progression of this development. What happens is that at certain points in these layers, activity accelerates and the cells begin to construct a particular organ. Douglas called these centers of activity "sangli."

At the beginning all the cells are alike. But, as the organs begin to construct, the cells begin to differentiate. Each group specializes and then will not change again. This specialization of the cells to suit the kind of work they must do transforms them completely, so that the shape and size of the nerve cell is vastly different from the muscle cell, and that one from the skin cell and the bone cell, and so on. The nerve cells, with long filaments which link all parts of the nervous system, is a particularly important type in that it creates the communications system for the whole body. The other major system to develop is the circulatory system, engaged in the important work of uniting the others by collecting and carrying substances to all parts of the body. To this important end, it is the heart which is the first organ to form in the mammal embryo; and immediately it begins to beat although it is only a tiny bag.

The miracle of creation is the perfection with which all these systems are coordinated: the circulatory system, the nervous system, the obedience of the muscles, the intelligence and many others. And it becomes more profound when we contemplate the emergence of this complex organism from only one cell.

Julian Huxley brings us this thought on the wonder of the embryo: "The passage from nothing to the complex body of the fully grown individual is one of the constant miracles of life. If we are not struck by the greatness of this miracle, it can only be for one reason, that it occurs so often under our eyes in the experience of everyday life."

11) He needs to sensorially explore things. And he needs our aid in guiding this need towards points of consciousness, points of interest. He has a great need for exactness.
12) We must offer him the possibility to control his work by himself. And so the points of interest we offer him must be related to his environment.

It is the possibility for these activities and for the satisfaction of these needs as they unfold that allows the expression of the child's potentialities. And we must remember that it is this very creativity which the potentialities express which recreates and renews the environment. For the adult is slow to change. It is within the child that the world becomes again.

In order to construct himself, the child's work must be with his hands. "Did the intelligence bring the hands or the hands the intelligence?" The question bears thought. Man is complete only when his hands are completely free to serve his intelligence. Dott.sa Montessori often said that she worked with her hands to think. And so the newborn must begin constructing his intelligence with his hands. And the child, in natures way of love, loves what he does. His work, his learning becomes a joy. With joy and enthusiasm he explores his world.

If this work of perfection is denied, he will become a rebel.

As the child reaches the age of 3, these characteristics remain the same, but now a great progress from the unconscious to the conscious begins. It doesn't happen suddenly, but gradually the unconscious recedes. It does not disappear, but begins to work as the conscious memory. The boundary between these two periods is often called a rebirth, alluded to as the River Lethe, which one must cross in order to achieve divine perfection. (Dante) Once the river is crossed, the being in Dante's work would forget all the sorrows on earth and the souls would reach bliss. The child at 3 forgets nothing from the period before----but consciously he remembers nothing. The memory is merely the subconscious traces imprinted on the psyche, but never a part of the conscious memory. The exception to this is extreme trauma.

From the age of 3 on, it seems that the child who previously absorbed the environment in an unconscious way now takes it in his own hands. Through conscious activity, he begins to accumulate experience. Manual activity enriches his environment. His acitivities still are mainly sensorial, but the hands play an important role. Those activities must not be limited to simple games, but must be activities related to the life of the group. And the stimuli must be intelligent ones.

In many ways the character of the small child can be related to those of primitive man:

1) The primitive man was ego-centric & individualistic. Much later his social character developed. At first there was only the nuclear family.
2) He had a need to classify and to organize his experience.

3) He had a need to know, to discover. How did the plant grow from the seed? For a long period he eats the fruits before discovering, understanding the seed.
4) Credulity. There is a great development of superstition, which explains phenomenon he cannot understand in another way.
5) Concentration is necessary for him to overcome the hostile environment. He needed to think in order to kill animals for food and shelter and clothing. There was no specialized part of his body adapted for survival. He had to construct everything.
6) The primitive man was attached to the family and the closed society for security.
7) He had a need for the repetition of exercises. He works for thousands of years with some instruments of stone before he discovers something different.
8) Love of beauty is evident in his life. He developed art forms, painting, music.
9) He had a great power to imagine. He had an ability to relate abstract forms.
10) He had a need for protection. For this he created religion which gave him a feeling of security and protection.
11) He needed to explore in smallest detail his environment. Within that environment, he sought all of life.
12) He sought perfection. Because of this innate tendency we find ourselves now in this advanced state of civilization.
13) And he had a great desire for work. An important desire; for without the desire for perfection and the subsequent activity as expressed in work, there is no chance for that perfection and that progress which ensues.

At 6 years we enter the second plane. . .where we meet a little man, constructed by the previous child. As the small child must move constantly to coordinate his movements, so the older child now, who seems bothersome and boring at times, has a need for constructing his mind through mental activity. And so it is that he asks his endless questions.

This new being has different characteristics---sometimes opposite ones from those of the earlier child. This child must still grow, but already he is a little man. He posses and uses all the human faculties: intelligence, will, movement, language, religion, social sensibilities.

At 6 years, the child has mastered the characteristics and the language of his environment. He is now ready for mental work in an abstract way, ready to understand without looking. Previously developed imagination is ready to create completely abstract images in his mind. These abstract realities are the fruit of many elements acquired in a concrete way. He is now able to unite these images according to his personal thought.

With him, now, we can go back into infinite time. We can discover with him the past times, offering him a vision of the earth's beginnings and the wonders of life developing from that point.

INFANCY AND CHILDHOOD. . .

What are the needs of this 6-year-old?

We must strike his imagination to awaken the enthusiasm in him. He needs to understand, to be active, to practice as his being requires. Gradually he will reach abstraction, not mechanical, but an abstraction which will form part of his psychic development.

In scholastic programs, we must keep in mind this thirst for knowledge. That now he needs as much as possible. That he is ready to explore all fields of culture.

However, it is important that we allow him his own natural pace of learning. At this age, there is decisive psychological personality change. The sense of responsibility and duty already exists in the embryonic state. He wants to know right and wrong. He also needs to learn to judge himself. His judgement must be totally different from the adults. And so it is very difficult to teach morals to this child. . .for in many ways, he has become a small rebel. His first desire is to do the opposite of what the adult suggests. Mothers wonder what has happened to their lovely children who have become rude, impertinent, and dominating. Nature has awakened in this child a keen taste for personal independence.

And so he reacts against any limitation imposed. He needs to create his own internal light. We are now in a confrontation with the consciousness of the child which began in a previous plane---he knows what he wants to do. Intelligence is extroverted. The young child now desires to go beyond the safe closed environment. He wants to know the reason for everything. And all these factors make the period a most important one.

If his mind is frustrated and his vital needs neglected, little by little it will close in within itself. Later on, he will refuse any form of culture.

Another need of this age is to form conscious relationships, groups. The children want to understand the laws of man; often they choose a leader of their own group. Obedience to the leader and the law of the group (which they have created) constitutes the tissue of this new society. We see here the natural human tendency of civilization. The light we can bring to his moral order---the ideas we can offer---will be used in his social organization at a later age.

He is a new being. Before he needed the keys to his environment. Now he needs a moral alphabet. To master that alphabet through the experiences he is beginning in human society. It is not the adult who creates these needs or awakens his desire to know, reason and abstract. Neither are we the ones who give him the instinct to associate or the need for social values. Nor the need to learn and research. All this exists because they are the particular sensibilities of this age. . .and they can create great conflicts for the child. The child needs the help and the guidance of the adult. He needs understanding and help to solve his problems. He needs, close to him, ideals for imitation. And he needs to find the law through his adult associations, which will enable him to make choices.

INFANCY AND CHILDHOOD. . .

We must not forget that this child, as well as man, is striving for perfection. That as he moves towards his aim, he needs someone to help. At this age, the first doubts appear and the first struggles start. Instinctively we believe that this age is a happy one; but without help, it can be traumatic. All these sensibilities together must be recognized and met---they cannot wait for satisfaction and development. Postponement means more complex difficulty.

Each period of life has particular sensibilities, grounded partly in those preceeding it. If those sensibilities are not developed, they provide problems in the next plane. Thus, we can have whole groups of adults unready for social life. Masses, without the free development of their personalities, become a people without a consciousness of their role in life, their place in the world.

Thus it is important to know, recognize and serve the sensibilities of each plane. And to provide for the child at every age the opportunity for his own experiences. He must have this for the construction of his personality---a result of his internal development. Without personal active experiences in the environment, there is no development.

Man is born without instinct. He forms his own through experiences of infancy, childhood and adolescence. The experiences are stored in the subconscious, but gradually are forming the individual's attitude towards life. This personal attitude corresponds in some ways to the animal's instincts.

Animal instincts can become rigid, preventing the animal's adaptation to an environment that changes. And so, too, the man's attitudes can become rigid, fanatic.

Man constructs his own instincts. But our own moment in time lacks equillibrium. The ancient laws that have guided men for ages are gone---and new ones are as yet unformed. The ancient idea of love for country is no longer understood and revered as an ennobling quality. Instead, we have either the breakdown of national regard or an extreme kind of nationality that is totally contrary to the original idea. The inclusive concerned community has disappeared, and in its place, we see the isolationist family unit---that seeks to exist at the cost of all other members of the community. And in this retreat from community, the family itself begins to choke off and malfunction. And so it is now that the child is lost in darkness because the adult cannot see the way.

Dott.sa Montessori insists that there are ways. There are rules. There are eternal rules which we must discover.

THE ENVIRONMENT

An Introduction

At one time in order for man to survive, physical and manual strength was necessary to insure his successful existence. Today the cultural complexities of our world demand great intellectual development. In order to bring about the necessary mental development required for our survival, we must discover, through research and observation, the methods for maximum development.

What is meant by intelligence? We define it as the capacity to reason, to make abstraction; and therefore, the capacity to coordinate ideas and to achieve synthesis.

There IS an inherited intelligence. DNA transmits the chemical codes which make up life. It gives out the data, providing the coefficients of the physical and mental make-up. Every individual is born with a certain amount of these coefficients. But these coefficients are only the seeds that develop according to the soil in which they are sown: the environment. The environment is an indispensible element for intellectual development. The brain can be transformed according to the environment: the more stimuli it receives from the very first months, the more it develops. So, in these early days, we must seek to prepare special environments to meet the needs of little children.

The brain can develop well or insufficiently. We can observe the tiny brain of primitive man and the successive development of that human brain. . . a development that is a result of man's work in overcoming obstacles in order to survive. And we note the importance of each successive generation--- the primitive man's children's brains developed greatly in each generation because those children shared the adult's lives so completely and thus shared the problems of survival during their early lives. Thus the enormous development of the brain occurred---as the leaps of consciousness were made by the children who adapted to the point of civilization at which he found it and then began the progress anew on a higher level.

This development is not only one of the complex brain, but also the evolution of the complexity of the nervous system. Recent experiments with animals prove that animals exposed to many stimuli develop their brains to a much greater degree than those who remain without stimuli. We see this not only in the animals' behavior, but also in the actual brain. The surface of the brain in those animals receiving many stimuli is crisscrossed with a network of intersections of complexity. The animals' nervous system development is limited, however. It can reach only a certain point and then cannot develop further. An example is the monkey who can be taught the simple tasks of porter's work, simple manual exercises, but there the progress halts.

In man, the development of the intelligence is unlimited. So, if intelligence and culture are the coefficients on which the development of the species will depend in order to survive, which will be the victorious people? Those who take into consideration the child---before birth and from the moment of bith into life. We know that poor nourishment of the expectant mother can result in the child's physical weakness or mental weakness; that vegetables and protein are essential for the pregnant mother because

of the fatty acids they form for the development of the brain. We must also recognize the importance of correct preparation for the children whom we usher into this world. We must provide an environment rich in stimuli from the first minute of the child's life. And we must provide excellence in the child's schooling.

Every child is born as a blank page. Culture is not transmitted by the parents---only the potentialities. It is the environment which allows the potentialities to develop more or less.

We must have the means for preparing the appropriate environment--- and we must have well-trained adults for the guidance of the children. This implies a good criterion for choosing those adults. Dott.sa Montessori emphasized the importance of carefully selected and well-trained adults to teach the children 60 years ago. The world now has begun to understand. There must be doctors who will provide courses for young people destined to become parents. And there must be particularly good guidance for the teachers. In addition, through family planning education, the emphasis must be on qulity and not quantity. We must study and work to provide such opportunities to every man and thus for every child.

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Man is conditioned from the moment of his birth by his environment, which is imprinted according to the stimuli he receives. Behavior depends on the environment and the imprints from it made on the individual. Through education, man's behavior is modeled. The school's work is to create intelligent stimuli. So much poor stimuli, coming through the channels of mass media in the form of advertising, conditions our behavior. It creates in man a quantity of needs which really do not exist. . .and would not without the media impact. The organization of the city influences the behavior of man. It leads him to isolation, discourages community. The real society of interacting people is replaced by the apartment building problem of minimum encounter and maximum security.

> "The environment does not create life; but life constructs itself on the environment." ---Montessori

The child first uses the environment, absorbing it in an unconscious way, in order to construct himself. Then he conquers it again consciously. As an adult, he will again work on the environment to adapt it to himself. The first work----that of the young child---is a finalistic phenomenon; the result is internal and invisible. The second is causalistic; the result is so visible that man becomes a continuator of creation. . .and in our day, sometimes the destroyer. The adult is active in order to produce; the child is active to grow. For adults, material things are used to produce something; for the child, objects are used to develop himself. The adult makes a wooden box to sell it or to possess it----these are his goals. The child makes a wooden box for the joy of working with his hands. The adult has already constructed his life with his hands; the child is doing it still.

THE ENVIRONMENT. . .

The environment must be prepared for different ages. It must be one in which the child can build his own life. It must be prepared to fit him, to adapt to his needs, just as a garment is made to fit. Thus Dott.sa Montessori insisted on a "house for children"; a place where the child could carry out his life. Piaget says the first years need only "a natural environment." But how can we define "natural?" A crowded apartment in a building, a small farm where the child of 30 years ago was preparing for his future life? Man no longer lives in that kind of "natural environment" and we would scarcely say that the former represents the "natural." Man has constructed, superimposed, an environment on top of nature---and it is this created environment to which the child must adapt. Today there is no "natural environment." The child must adapt to the world which man has created for himself---seldom with the young child in mind. There must be now a real thought for the child. At home there must be a suitable environment for him---even if it is only a small corner adapted particularly to his needs. And at the school, the organization must be not for the convenience of the adult, but for the child.

The school environment must be rich in stimuli for the child. "We love windows" through which the child can see the outside. In the classroom the objects must be adapted to his size. Shelves and cabinets must be low enough. Doors must be constructed so that the child can open and close them easily. Mirrors must be low so the child can see in them. The objects in the classroom must be adapted to the child's psychic needs as well as his physical proportions. Points of interest must be adapted to his age. We must offer him things not too easy, so that a certain effort or strength is called forth from him; but those things requiring an effort that is within his capabilities. Everything must be condusive to the development of the mind of the child.

The child must have objects which interest him and which have an intelligent goal. Beauty must be a part of his school environment---grace, form and color because these qualities attract him greatly. All of these characteristics are a sensorial invitation which bring to life the inner child. (We know that beauty of the environment is an important stimulus for the adult, too) The child has a need for cleanliness and order.

And if we have prepared the environment well, we observe the growth of activity in the child. Activity that is not imposed, but that which comes as a response to the prepared environment. An environment that is an educational element for the mind of the child.

Another important part of the environment is the development of the child socially. He must learn respect for his classmates, for the materials, he must learn to wait. These are important casa lessons. The children together, freely moving around the classroom, must learn respect for each other. Rules against disturbing another child's work are important---the child must wait if the seat he wants is taken..

Also important in the environment is the control of error. The child must know the placement of the material and put it there. His work must not be left in the middle, but finished and put away. The classroom must have ample space so that there is room for the tired child to sit on the floor

THE ENVIRONMENT. . .

In all the exercises, there must be a guide towards accuracy. In order to reach this, concentration and repetition are important. In all the material, there must be an isolation of the difficulty. It is as though the child faces a stairway which he learns to go up step by step, with the assurance that he may pause on each step to rest before attempting the next step.

The teacher is very important. The teacher is the "alive part" of the environment, the one who renders all the objects in the classroom alive.

THE ENVIRONMENT---For the Child from 3-6---has been discussed to this point. We may summarize by saying that in the children's house, there must always be a harmony, an equillibrium between the mind and the muscles. We must help the child become conscious of what he does.

THE ENVIRONMENT: The Plan of the "Real School"

The first stage of the school is sensorially and motor-directed. At the secondary level, mental development is paramount for the child who now meets his world in the complexities of culture. The environment is still of the greatest importance.

We should recall that biologists who knew of the animal instincts met with great surprise the absence of such predetermined behavior in the child of man. The French biologist, Rostin, notes that man has worked for centuries to improve his civilization, but the fruit of his labor is not transmitted to his child, is not fixed in the chromosomes. Because of the special invention of nature, the child's inheritance is transmitted through the environment---and the child is an integral part of the society of which he is becoming a part. We cannot isolate him from that society or we will surely kill him. The child has the power within himself to absorb in a few years the immense road traveled by man throughout the centuries---the cultural patrimony of humanity. The child absorbs it through the environment prepared by the adult. And so it is our task to aid his work by preparing that environment well. (Rostin, "Life and Its Problems)

. Nature is not the creator of this cultural patrimony. Let us regard the earth millions of years after its formation: a rocky terrain, some water in the low places, the air full of carbon dioxide. And then by a union of special factors, the environment was ready to sustain life---and life began. Millions and millions of years later, as a result of the contributions of millions of microscopic lives, a new strata has been formed over those rocks. It is called the biosphere, and it prepares the way for the appearance of man. Then, with the arrival of man, we have another sphere---the sphere of thought---the psychosphere. It is this sphere which the child of age 6 must absorb.

THE ENVIRONMENT. . .
The Elementary School. . .

The child after age 6, just as the primitive man, does not simply accept facts, but wants to know the causes. The problems before man have always been: to understand the why of all existence. And how everything that exists has been made. In seeking the answers to these questions, man was brought first to the study of his environment----and then he constructed something on top of that. The same questions are posed by the child, especially after six. We see, then, the importance of the environment which must be organized to offer every help to the mind's needs in any moment. The mind is like a fire which burns, and it must have fuel (carbon, combustibles) in order to burn. The brighter the fire, the more the nutrients must be adapted because that fuel is the food of the spirit. It must be a food which creates interest.

Our potential capacities are increased if they are exercised---and if they can be exercized with interest. Without interest, our potentialities vanish. Therefore, the environment must be rich in questions---and the answers must not be all ready, prepared, easy. We must have an environment which creates interest, which is full of questions, and one in which the child is able to find elements through which he may discover the answers.

Therefore, Montessori materials must not be in excess. The material provides only the key. And the child opens the door to seek his own answers. A common error is to increase the elementary material until there is no more work for the child to do. The material, too, must capture his imagination.

The environment must be organized to provide for this march of the spirit, to meet the child's sensitivities at the moment when they appear; ready for development and exercise.

Now the child is in a relationship with his environment from a psychological point of view. This relationship is completely different from that of the casa child and his environment. The school must be organized so that it can offer a special plane adapted to this child in order to give him the possibility of free work and the development of social relationships (working with his companions). From the union of these elements, we can also aid the development of moral principles. One cannot, in a modern school, ignore the need for group work.

Group work is, indeed, the preparation of the social individual. The formation of the citizen of tomorrow is too often regulated by an anti-democratic institution: the traditional school. And how poorly it prepares him for his so-called "democratic society." We find the reaction to this condition in the schools in the new "permissive"schools program.

But for Montessori "freedom" meant "freedom to work." Not that freedom which allows the child to do whatever he wants. The Montessori school is rich in intelligent stimuli so that the child can work and explore and research---so that he can feed himself as he needs. The human intelligence does not look for easy things, but raises itself up. If it satisfies the

need for perfection, then sometimes man changes, transforms himself, becomes better. This is not a matter of "lightening the load," because hard work is joyful when there is enthusiasm. And so, the child is not left to himself. The place of the teacher is near him.

Dott.sa Montessori continues on "cosmic education:" The great law which rules the cosmic life is that of collaboration between all beings. This collaboration is the base of the Montessori school. We not only explain these things to the child; we must make him feel them, living with him. We cannot tell him that collaboration is neccesary between peoples if we cannot collaborate in the school. Only the school which is aware of the reality of today and its demands can assure the future with men capable of bringing about collaboration among men. The school must bring a greater wealth that provides for mental adaptations, more flexible and more rapid. It must help to create youths capable of confronting the constantly changing world.

The problem of modern man is that he is slow to understand what is happening around him, bringing grave results when reality is not interpreted in time. How long have they prophesied that the resources of our earth were diminishing? That our way of life must change? But to no avail. What makes it necessary for man to touch man with this reality? The Arabs close the door on oil. And perhaps in doing so, they are helping us to understand before it is too late. . .but the understanding is very late in coming.

We must develop men who are quick to understand. The new generation is not more selfish, more cynical; but their education has been a huge error, a series of mistakes. Their environment has been totally inappropriate. The possibilities of our youth will only appear when the television recedes on his horizon, and when we have put something of value in its place. It is true that we are the victimes of what we have done ourselves. . .but the world we hand our children can be new.

DEFINING OUR TERMS

EDUCATION: In the language of Montessori, education has a specific meaning that is not utilitarian; but is based, rather, on the development of the individual being. That is, education must address all phases of life from birth to maturity. It must correspond to the processes of development and to the needs of adaptation.

Thus, education is no longer a simple function of society, one which occupies the years of youth and prepares him for an acceptance of its established order. But it is education understood as a help to life and a responsibility which society as a whole must assume. In this regard, we must remember that the child "is fashioning humanity itself."

> "Seen in this way, the conclusion is irresistible that society must heed the child, recognize his rights and provide for his needs." (Ab. Mind, p.17)

ADAPTATION: Adaptation is the process of constructing the whole psychic being, with all the combinations that derive from it.

Thus, the individual being, when he reaches maturity, will feel serene and satisfied in the situation in which he finds himself. For living things, adaptation is the most important thing. A lack of it is the source of deep physical and psychic troubles. The well-adapted person is he who has developed harmoniously within his natural environment, that is, the environment within which he lives.

DEVELOPMENT: Development is a process that brings the being from conception to maturity and adulthood, a period that spans the years from 0-24. The development of every being is independent, that is, not dependent on another. Instead, development depends on the power of the unconscious and its unfolding.

UNCONSCIOUS: By the term unconscious, Montessori means the universal intelligence, which is an intrinsical part of all the universe. It exists in a star as well as a man; in a single cell as well as the most complex organism.

It is unconscious intelligence. It works without conscious will. This unconscious intelligence follows its own pattern to reach a certain goal. The order that exists in the universe shows that the unconscious intelligence exists and creates that order.

For example, observe the elements, in number about 103. Everything is formed with these elements. The difference is simply the way in which the elements get together. Some attract each other. Some reject each other. The force that pushes them together or apart is the powerful and unconscious force, one that is beyond our power of understanding.

The unconscious has a guide called "horme."

HORME: The horme is a motor force which pushes irresistibly all living and non-living matter towards its finalistic end. It is a vital force, active in the general structure of the child's absorbent mind, one which guides his efforts towards the goal of independence. It spreads in widely diverse areas and belongs to all life in general. The horme is called "elanvital" or "the desire to live."

For example, all matter changes states with certain temperatures. The temperatures affecting changes are different for all different matter. The horme in the various matter, then, reacts only to certain temperature.

In human beings, the horme may be unconscious. In small children, it is always unconscious; in adults, there is a conscious and an unconscious part, but the unconscious factor is still the greater. When the elanvital (horme) is conscious, it becomes a biological factor. It may be likened to will power.

The horme is also sometimes called "the divine urge," and the source of all evolution.

It is a great help to the mneme.

MNEME: The mneme is the unconscious memory which reproduces the past: it can be called heredity. It is the power which preserves in every being the previous experiences of the species. This is characteristic to all living beings. The mneme is enclosed in the genes, and constitutes the total inheritance of all living beings.

In every living being, there exists a race memory, through which each being is able to reproduce a being of his own species, and also some of the ways of life of that species. From the swallows egg comes a swallow; from the acorn of the oak, an oak tree. There is a part which acts in the physical, in the physical embryo to recreate the species; and this is true for all plant and animal beings. There is also a part of the mneme which acts on the psychic being in the animal and human embryo.

In animals, it is called instict.

In man, it is called potentiality or nebulae.

INSTINCT: Animals are caused to act in certain ways because of their instincts. An instinct is conditioned by the genes. Dott.sa Montessori notes that this powerful force called instinct can take two forms of expression: an elastic one which renders the being more adaptable, and a rigid instinct which doesn't allow the being to adapt. The adapting instinct allows the flower to live in differing temperatures. And allows animals to be domesticated. The rigid instinct sometimes has disastrous results for a species. In the course of evolution, there have been certain points at which a species suddenly disappeared. Powerful animals such as the dinosaurs leave without a trace. The modern hypothesis is that the recessive genes, which give the organism the ability to adapt, must stabilize the organism when there is a sudden environmental change. Sometimes this event produces mutations.

(INSTINCT. . .cont)
In the case of a disappearing species, perhaps the animals' recessive genes had not been used for such a long time that when major adaptations were required, they were no longer there. The instinct, in this event, was rigid.

It has been shown that adaptation is easier for the young.

NEBULAE - POTENTIALITY: Man is born free. Instead of instinct, he posseses potentialities or nebulae. These nebulae may be likened to the germ cell's genes which control the growing of the tissues to form a precise and complex organ. The nebulae give the child, after his birth, the power to absorb those particular models that he finds in his surroundings. For instance, the child is not born with a preformed language. He must acquire it. But he is born with the potentiality to learn any language. When the child learns language, the child's nebulae for language becomes knowledge. The child receives from the nebula of language "suitable stimuli and guidance for the formation in himself of his mother tongue, which is not inborn in him, but something he finds in his environment and absorbs according to immutable laws. Thanks to the nebular energy of language, the child becomes able to distinguish the sounds of spoken language from other sounds and noises which reach him, all mixed together.

"So we can imagine the slow emergence of something not hereditary, yet produced by an instintive tendency which <u>is</u> hereditary." (Ab. Mind, p. 79)

The nebulae enable man to make many acquisitions; they enable him to grow and develop. Dott.sa Montessori notes that man is born free and through his experiences of development he forms his own instinct that is man. He constructs his own attitudes to life. And the experiences which he has stored make him totally unique; every man, then, is different.

These potentialities can become rigid and fanatic, just as we observed in the animal instincts. For man also, this can be a disaster. When the stimuli in the environment is not sufficient, and the potentialities do not develop naturally, we have persons with a dangerous character, those who break the equilibrium in society.

BEHAVIOR: Behavior is that through which each species acts during its whole life. This behavior in animals is given by instinct. Man, instead, constructs his own behavior through his potentialities and it becomes his character. Man, in constructing his character, is helped by his subconscious.

SUBCONSCIOUS: By the subconscious, Dott.sa Montessori means all the accumulated experiences that each being goes thru from birth to maturity. These experiences construct the attitudes towards life in all beings.

Through experiences, each being enables himself to adapt to his environment and his changing environment. His flexible behavior enables him to adapt.