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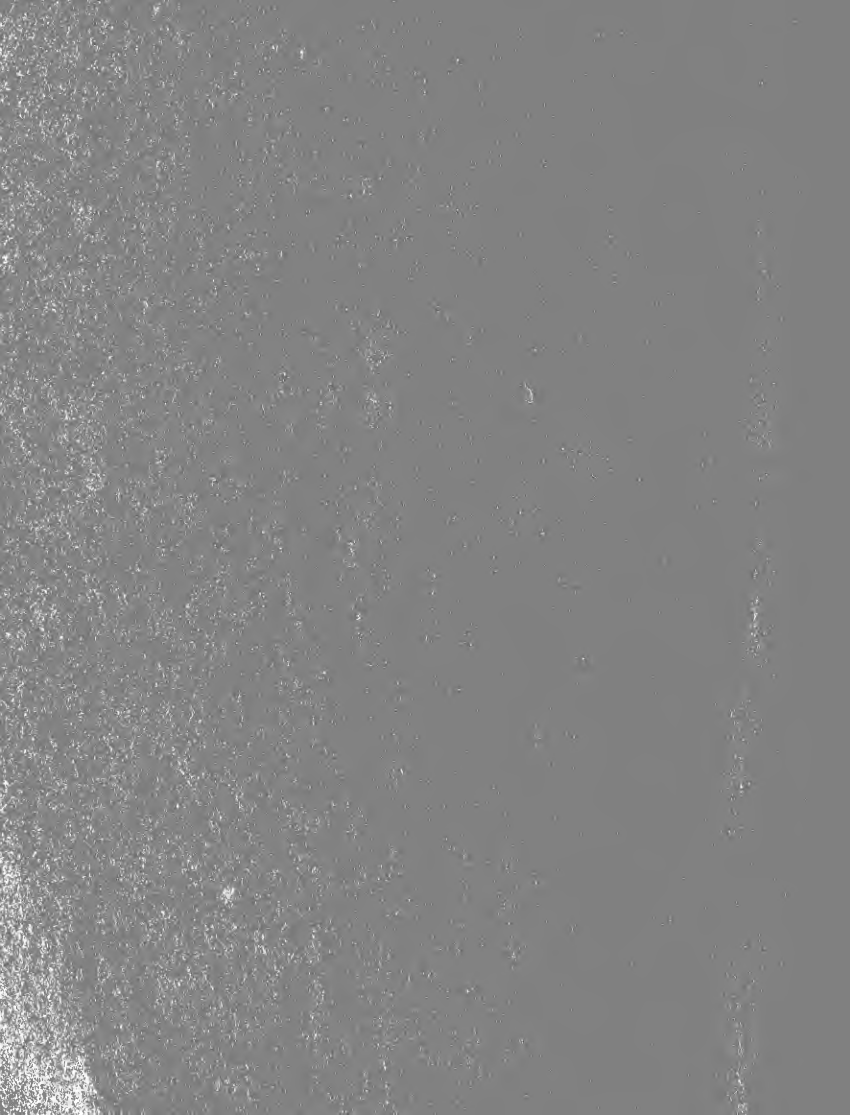
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My System of Education

BY

Maria Montessori, M.D.



*A Lecture by Doctor Montessori delivered
before the National Education Association
in August, 1915, and reprinted from the
Journal of the Association, 1915.*

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MY SYSTEM OF EDUCATION

Maria Montessori, M.D., Rome, Italy

My system is to be considered a system leading up, in a general way, to education. It can be followed not only in the education of little children from three to six years of age, but can be extended to children up to ten years of age. It is not a simple theory, but has been experimented with and put into practice. Its results constitute a scientific proof of its value.

Altho the first part of my experiment deals only with children between the ages of three and six years, nevertheless it must be considered as a "directive system" for the education of all children having attained the school age. In fact, my last experiments, not yet known to the public, have been made on children up to ten years of age, and the same directive system has proven satisfactory. The results were of still higher importance than in the first case with smaller children because richer in practical evidence both in the formation of character and in the attainment of knowledge.

The fact on which it was possible to estab-

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lish my system is the psychologic fact of the "attention" of the child, intensively chained to any exterior object or fact, which proves in the child a spontaneous, altho complex activity of its entire little personality.

It will be of some interest to relate here the episode that made me decide to plan out a special method for the education of children.

I was making the first experiments in San Lorenzo (Roma), trying to apply my principles and part of the material that I had previously used in the education of backward children.

↳ A little girl, about three years of age, was deeply absorbed in the work of placing wooden blocks and cylinders in a frame for that purpose. The expression of her face was that of such intense attention, that it was almost a revelation to me. Never before had I seen a child look with such "fixedness" upon an object, and my conviction about the instability of attention which goes incessantly from one thing to another, a fact which is so characteristic in little children, made the phenomenon the more remarkable to me.

I watched the child without interrupting her, and counted how many times she would do her work over and over. It seemed that she was never going to stop. As I saw that

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it would take a very long time, I took the little armchair on which she was sitting and placed child and chair on the big table. Hastily she put the frame across the chair, gathered blocks and cylinders in her lap, and continued her work undisturbed. I invited the other children to sing, but the little girl went on with her work and continued even after the singing had ceased. I counted forty-four different exercises which she made, and when she finally stopped, and did so absolutely independently from an exterior cause that could disturb her, she looked around with an expression of great satisfaction, as if she were awakening from a deep and restful sleep.)

The impression I received from the observation was that of a discovery. The same phenomenon became very common among those children, and it was noticed in every school in every country where my system was introduced; therefore it can be considered as a constant reaction which takes place in connection with certain exterior conditions that can be well established. Each time a similar "polarization" of the attention occurred, the child began to transmute itself completely; it became calmer, more expressive, more intelligent, and evidenced extraordinary interior qualities, which recalled the phenomena of the

highest mentality. When the phenomenon of polarization of the attention had occurred, all that was confused and drifting in the conscience of the child seemed to assume a form, the marvelous characters of which were reproduced in each individual.

This reminded one of the life of man that may be scattered indiscriminately in a chaotic condition, until a special object attracts it and gives it a fixed form, and then only is man revealed unto himself and begins to live. This spiritual phenomenon, which may involve the whole conscience of the adult, is therefore but one of the ever-present aspects of the "formation of the inner life." It is met with as a normal beginning of the inner life of children, and it follows the development so as to come within the reach of research as an experimental fact.

It was thus that the soul of the child gave its revelations, and, guided by these revelations, there arose a method where spiritual liberty became demonstrated.

The news of this fact rapidly spread thruout the world, and it was received at first as a miracle. Then little by little, as the experiments were repeated among the most diverse

ances, the simplicity and evidence of the principles of this spiritual treatment were recognized.

When you have solved the problem of controlling the attention of the child, you have solved the entire problem of its education. The importance of a scheme to concentrate the attention is self-evident. Professor William James, the renowned authority on psychology in America, points out to us how there exists in children that exterior variability of attention that makes it so difficult to give them the first lessons. The reflective and passive character of the attention, by which the child seems to belong less to itself than to any object that may attract its attention, is the first thing that the teacher must conquer. The ability incessantly to recall a wandering and scattered attention, always ready to vanish, is the real root of judgment, character, and will; that system of education that succeeds in bringing this faculty to the highest degree should be the ideal and standard system.

To be able to choose objects that will interest and hold the attention of the child is to know the means of aiding it in its mental development. All things which naturally arise and hold the attention with considerable

steadiness are those which represent a "necessity" for the child. Toward these things its attention is directed in a natural, almost instinctive way. All other things that attract its attention do so only lightly, transitorily, and for a very short period of time. Thus the newborn child has a series of unco-ordinate movements, but the complex movement of sucking, which is in direct proportion to its need of food, is performed with regularity, co-ordination, and steadiness. We must recognize that something like this is needed for its psychic development.

Consider the little girl only three years of age who perform the same exercise fifty times. A crowd is roaming about her, a piano is playing, a chorus is sung, and nothing can distract her from her deep concentration. In a similar way, the baby holds on to the breast of the mother without being interrupted by any exterior agent and lets go only after its need is satisfied.

How shall we choose the means of development by experiments? Since a constant and peculiar psychic reaction is an established fact, it is possible to determine some stimulating (reactive) agents or objects that can aid the spontaneous development. The character of this reaction itself must be the guide.

to the choice of these objects which are to constitute the implements or tools for this scientific work.

Each one of these instruments must be built with every detail to answer the purpose. As the lenses of the optician are made in accordance with the laws of refraction, the pedagogical instrument must be chosen to correspond exactly to the psychic manifestations of the child.

Such an instrument could be compared to a systematized mental test. It is not, however, established as an external criterion of measurement with the purpose of estimating the instantaneous psychic reaction which it produces, but on the contrary it is a stimulus which must be determined by the psychic reactions which it is capable of producing and maintaining in a permanent manner. It is the psychic reaction which determines and establishes the systematic mental test and the psychic reaction which serves as the sole means of comparison in determining the tests. It is a polarization of the attention and the repetition of the acts to which it corresponds. When a stimulus corresponds in this way to the reflex personality, it serves, not to measure, but to maintain an active reaction. Therefore it is a stimulus of inner formation. In

fact, it is upon such activity, aroused and maintained, that the associative organism begins its inner elaborations in relation to the stimuli.

It is not as a scale for weighing personality that this science comes into the old sphere of pedagogy as it was in the case of the experimental psychology introduced in the school up to the present time. It is a science intended for the purpose of "transforming" personality, thus taking the place of a true and real pedagogy. While old pedagogy in all its different interpretations had for its point of view and starting-base the conception of a "receptive personality," which was supposed to receive tuition and allow itself to be passively transformed, this scientific direction presupposes an active personality, reflective and associative, whose activity manifests itself thru a series of reactions derived from systematic stimuli chosen by experiments. This new "pedagogy" belongs therefore to the series of modern sciences not of old speculations. But the method that embodies it, that is to say the attempt, observation, retrying, taking notice of new phenomena, the reproduction of said phenomena and utilizing them, places this new pedagogy among the experimental sciences.

Nothing is more interesting than these experiments. By them we can establish, with the greatest precision, all necessary exterior stimuli, definite in their qualities and quantity. Small frames, for instance, of different forms, arouse only a temporary and transient attention in a child three years of age; but, gradually enlarging the size of the frames, you will reach that limit at which the attention is steadily held, the activity stimulated by them will be permanent, and the exercise set up in it becomes a factor of development. The experiment is repeated on several children and we come to the point where we can establish the right size of a series of objects; in the same way you can proceed to determine the color and all other qualities of your material. In order that a quality be "felt" so intensely as to hold the attention, a sufficient size and intensity are required in the stimulus. These can be determined by the degree of psychic reaction in the child in the same way that you establish which is the smallest size of colored surface which can attract the attention of the child upon the colored tablets, and so forth. The quality, then, is determined by the psychic experiment and the activity that it provokes in the child, who remains absorbed for a considerable length of time work-

ing on the same subject. It is while in this state that the phenomenon of interior development and auto-formation takes place.

Of the qualities of the objects one must be picked out which stimulates principally the highest activities of the intelligence; this is the quality that enables the child to verify mistakes. In order to create a process of auto-education, it is not sufficient that the stimulus arouses an activity, it must at the same time direct it; the child must not only be occupied for a long time on an exercise, but it must continue on it without making mistakes.

All the physical or intrinsic qualities of the objects must be determined aside from the immediate reaction of attention provoked in the child, also this fundamental characteristic of permitting the control of error, that is, to summon the active collaboration of high activities, such as comparison and judgment. For example, one of the first objects which attracts the attention of the three-year-old child, the solid insets (a series of little cylinders of various dimensions which are taken out and replaced), contains the most mechanical control, because in making one mistake in the replacing of the cylinders, one of them is left without a place. Hence a mistake is an obstacle which can be surmounted only by

correction, otherwise the exercise can proceed no farther. Furthermore, the correction is so easy that the child accomplishes it by himself. The little problem which has unexpectedly sprung up before the child like a jack-in-the-box has interested him.

It may be noted, however, that the problem which has arisen is not of itself a stimulus to the interest—does not urge the child on to the repetition of the act, or to progress. That which interests the child is not only the sense of handling the objects, but the conscious acquisition of a new power of discrimination, that of recognizing the difference of dimensions among the cylinders, the difference which at first he did not perceive. The problem arises only in relation to the mistake—it does not accompany the normal process of development. An interest simply stimulated by curiosity in the problem would not be that formative interest which draws its sources from the needs of life itself and which, therefore, directs the construction of the inner personality. If it were only the problem which led the soul along, it might lose its own spontaneous order as every other external cause which strives to lead life astray on false paths.

On the other hand, the experimental criterion for determining the number of objects

is quite different. When the instruments have been constructed with great precision, they provoke an auto-exercise so orderly and responding to the facts of inner development in such a way that at a certain point a new psychic picture is revealed, a sort of upper plane in the complete development.

Then the child spontaneously abandons the objects, but not with signs of fatigue, altho he is carried along by new energy and his mind is capable of abstraction. At this stage of development the child turns his attention to the external world and observes it in an orderly manner, according to the order which has been formed in his mind along with the preceding development, and he unconsciously begins to make a series of measured and logical comparisons which represents a real spontaneous acquisition of knowledge. This is the stage henceforth known as the Period of Discovery, discovering which evokes in the child enthusiasm and joy.

This higher stage of development is most fruitful because of its later growth. It is necessary that the child's attention should not be detained on these objects when the delicate phenomenon of abstraction begins. For example: The teacher who should at such a moment call the child to renew his activity

with the object would in so doing retard his spontaneous development, would put an obstacle in his path. When that enthusiasm which leads the child to uplift himself and to experience so many intellectual emotions is spent, then one road to progress is closed. The same mistake may be made thru an overabundance of material since it may distract the attention, may cause the use of the material to become mechanical, and may cause the child to pass by his psychological moment without seizing it or even being aware of it. These extra objects (materials) are useless and amid them the soul may lose itself. What must be accurately determined is how much material is necessary and sufficient to respond to the needs of the inner life in its development. The observation of the child's expression and of the manifestations of his activities as a whole are the guiding factors in determining the quantity.

Perhaps I insist too much on this point in order to reply to the many important objections and suggestions which have been made to me, because there are those who think that the form alone of the problem is able to arouse the interest.

In the second series of objects used to educate the eye to dimensions, the control of the

error is not mechanical but psychological. The child himself, since his eye is already taught to recognize differences of dimension, will see the error if only the objects are of fixed dimensions and highly colored. For this reason the succeeding objects contain a control of error in their very size and vivid colorings. A control of error of quite a different kind and of a much higher order is found in the material used for the multiplication table where the control consists in comparing the work itself with the answer, a comparison which necessitates a marked effort of the child's intellect and will and which henceforth places him amid true conditions of a conscious auto-education. The seeming distraction is revealed in its real essence by the happy expression of the children's serious faces animated by the keenest joy. The child, to all appearances, does nothing, but only for a minute; shortly he will speak and will tell us what is taking place within him and then an outburst of activity will carry him on a round of continuous explorations and discoveries. He is saved.

On the other hand, here are other children who experienced the same primitive phenomena, but they were surrounded with too many objects. At the moment of maturity

ask for records

they felt themselves seized, forced, actually "bound with cords" to earth. A diminution of the intensity of the attention given to new objects, instability, and hence weariness are made manifest by the cessation of inner activity. The child gives way to lower tendencies, foolish laughter, and disorderly acts. He asks for more objects and still more objects, because he has remained imprisoned in the "vicious whirl of vanities" and he no longer feels the need of gaining relief from his ennui. Such is also the fate of an adult who, in life's chaos has committed a like error—he becomes undisciplined, weak, and "is in danger of losing himself." If someone does not help him and, tearing away all unnecessary objects, point out to him "his heaven," it will be difficult for him to have the energy to attain it by himself.

These two extreme types give an idea of the criteria by which one determines in an experiment the "quantity" of the objects used for development. The "too much" weakens and retards progress. This has been proven again and again by all my collaborators. If, on the other hand, the material is insufficient and the natural auto-exercises are unable to lead up to that state of maturity which raises one, there is no outburst of that spontaneous

phenomenon of abstraction which is the second step in that auto-education which goes forward in infinite progression.

This same fundamental phenomenon of intense and prolonged attention leading to a repetition of acts guides one in finding the stimuli which are suitable to the child's age. A stimulus which causes a child of three to repeat an act forty times in succession may cause another child of six to repeat the same act only ten times; the object which quickens the interest of the three-year-old cannot quicken the interest of the six-year-old child. However, the child of six is capable of far greater attention than the three-year-old, when the stimulus is in direct relation to his activity. If the child of three has a maximum power of repetition, say of forty times in succession, the six-year-old is able to repeat an act in which he is interested two hundred times. If in the case of a three-year-old child the maximum period of continuous work on the same object is half an hour, for the six-year-old it may be more than two hours.

Thus tests give positive psychic characteristics which can almost be measured according to age. Analogously, since there are for the various ages materials for progressive development upon which the various personali-

ties can react differently, it is possible to determine with scientific precision the level of the average psychical development according to age, a precision which I consider the famous Binet and Simon tests are far from attaining. A relationship is established between the inner needs and the stimuli.

This is a suggestion, however incomplete and insufficient, of the "possibility" of experimentally determining the means for psychic development. They can really be established and with such precision as to bring into existence a real relationship between the inner needs and the stimuli, just as there exists a relationship of form between the insect and the flower. That is to say, there remains in the organization of the external means for inner development "a material imprint," and this is that of which the soul has need in its path, in its course, in its flights. The material part does not contain the imprint of the whole soul, as the imprint of the foot does not give the imprint of the whole body, as the aviation field is not the place for the extensive course of an aeroplane, but is only a piece of terra firma necessary for the flight, and is also the resting-place, the refuge, the shed to which the aeroplane must always return. Thus, in the psychic formation, there is a material part

necessary in order that the spirit may lift itself, and there the spirit must seek support, rest, and refuge. Without this, it cannot grow and rise "freely."

In order that this material may be a real support, it must reproduce and contain within itself those forms which correspond to the needs of material help. Thus, for example, in the first part of the psychic life, the material corresponds to the primitive exercising of the senses and is determined in quality and quantity by the sensorial needs supplied by nature, corresponding to the exercise of the activity sufficient in order to mature a superior psychic state of observation and abstraction. Vice versa, nothing in the material corresponds to the successive course thru the world which the infantile spirit completes with such rapture, making great acquisitions of knowledge. Then we see the spirit crying out for exercises of a higher order and behold the same primitive phenomenon of the attention, which henceforth is exercised on the alphabet and on the material for arithmetic, repeating in a more complex form the methodical exercises of the intellect, by correlating the auditory impressions with the visual and motor impressions in the written and spoken word, and in the positive study of

quantity, proportions, and number. Then the same accompanying phenomena are manifested which are the concomitants of patience, of constancy, and, at the same time, of vivacity and joy, and characteristic of the spirit when the inner energy has found its outlet. The field in which it can exercise itself comfortably and quietly enlarges and the spirit which becomes organized in such a way under the guidance of an order which responds to its natural order, becomes strong, grows flourishingly, and manifests itself in equilibrium, serenity, and calm, which then gives that wonderful discipline characteristic of the conduct of our children.

The practical consequences of such a system of education are: the easy and spontaneous solution of pedagogical problems considered impossible to solve; the realization of ideals thought to be utopian.

✓ From such a system there comes forth a school where the children work for themselves—that is, they are free. In this freedom they work much more than heretofore has been customary in school, not alone without fatigue, but with renewed nervous forces, and they attain culture more rapidly and more efficaciously—that is, they surpass the ordi-

nary level. In fact, children can learn to read and write at four and one-half years of age generally, and in the elementary schools they save from one to two years. This educational problem, which today science propounds, is solved, tho it was considered among the insoluble questions such as the fourth dimension, perpetual motion, and the squaring of a circle. The problem is to lessen effort and at the same time increase output. In fact, the overworking of pupils has forced hygiene to insist on less work, whereas social progress requires that the schools produce men even more cultured.

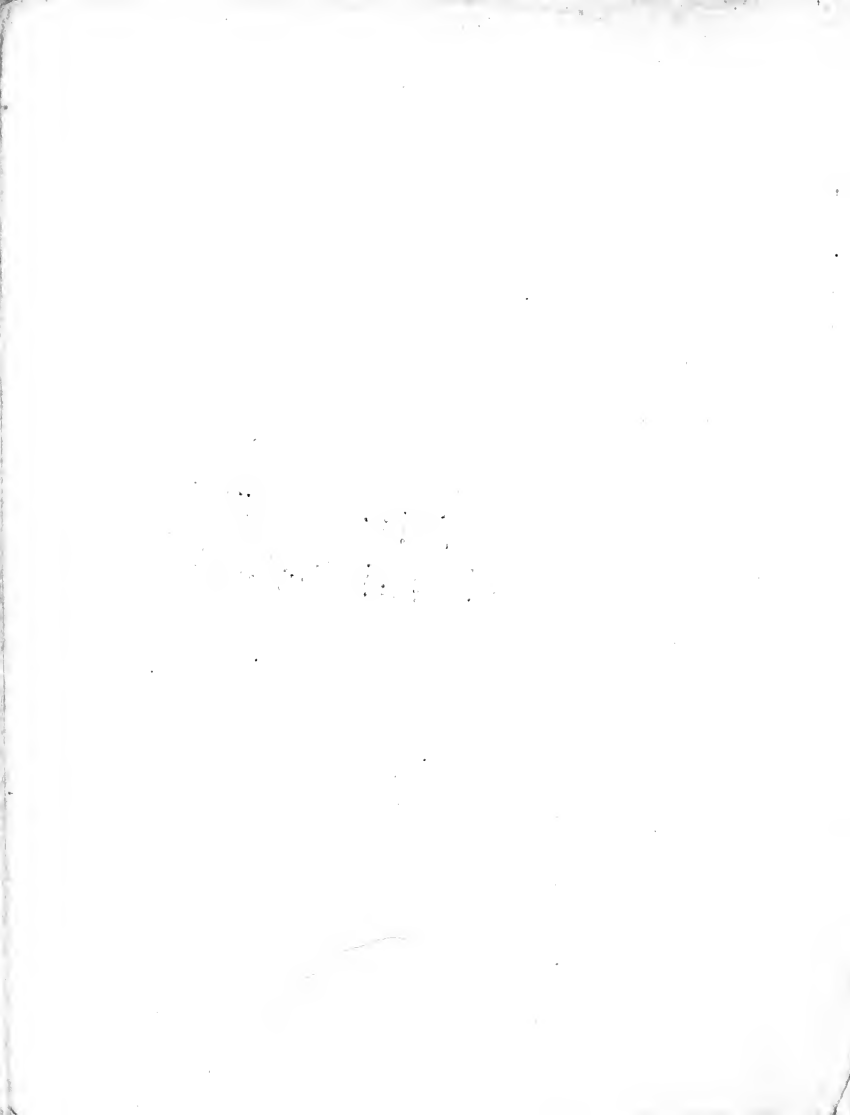
Furthermore, children brought up under our method acquire a salient personality, a peculiar formation of character, and they are capable of perfect discipline, a thing which solves the problem of liberty. For liberty, as it has been tried up to now, brought about either disorder and lack of discipline or a lessening of scholarship. In truth the solution of the question of freedom depends entirely on finding the means which will serve as an aid to spontaneous psychic development, to character and to intellectual culture. In this manner auto-education is also attained, a thing which is impossible unless we determine with

precision the means necessary for the child to educate himself—that is, to develop his own activities.

Finally, in such a way is a true positive science of education initiated, which up to the present has not been given by pedagogical anthropology nor by German experimental psychology with its applications to the school in the branch called "scientific pedagogy." Such sciences have studied the personality of the pupil but have not changed it, they have pointed out and analyzed the errors of the school, but they have not reconstructed. Besides, if from these sciences there had really arisen a scientific pedagogy capable of transforming man, as the other positive sciences have transformed the environment, it would not have left educators and the public so indifferent; it would have aroused a popular interest since children and the schools are of common interest to all mankind.

The scientific pedagogy, as understood thus far, does not indeed present anything but the ideal for establishing pedagogy on the lines of positive and experimental science in accordance with the progress of the time and not the realization of such an ideal. In fact, the scientific laboratory of experimental pedagogy cannot be other than the school itself, where

the children live and are transformed. I believe that my system of education is founding this laboratory where the first germs of a science of man are visible because of the precision of systematic means, and also because of the effect upon human development.





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