

so perpetuate itself. When a child strikes the combination required, he is never tired of working it. H. found endless delight in putting the rubber on and off again, each act being a new stimulus to the eye. This is specially noticeable in children's early efforts at speech. They re-act all wrong when they first attack a new word, but gradually get it moderately well, and then sound it over and over in endless monotony. The essential thing, then, in imitation, over and above simple ideo-motor suggestion, is that *the stimulus starts a nervous process which tends to reproduce both the stimulus and the process again*. From the physiological side, we have a circular activity,—sensor, motor; sensor, motor; and from the psychological side we have a similar circle,—reality, image, movement; reality, image, movement.

The square to the left (Fig. 5) is the first act of imitation; the movement (*mt*) now stimulates (dotted line) the eye again (*sg'*), giving the second square, which by its movement (*mt'*) furnishes yet another stimulus (dotted line with arrow); and so on. The element of will makes slight changes in this diagram, but they may be omitted in this connection.

With the foregoing descriptions in mind, we may gather up the facts of suggestion. Particular statements of the

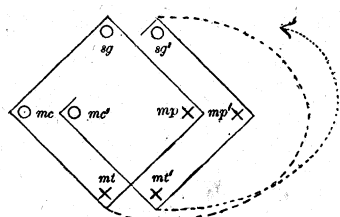


FIG. 5.—PERSISTENT IMITATION.

principle from the side of the nervous system are as follows:—

Physiological suggestion is the tendency of a reflex or secondary-automatic process to get itself associated with and influenced by other sensory or ideal processes. Perhaps the plainest case of it on a large scale is seen in the decay of instincts when no longer suited to the animal's needs and environment.

Sensori-motor suggestion is the tendency of all nervous re-actions to become secondary-automatic and reflex, seen in simple imitation and the passage of the voluntary into the involuntary.

Deliberative suggestion is the tendency of different competing sensor processes to merge in a single motor re-action, illustrating the principles of nervous summation and arrest.

Persistent imitative suggestion is the tendency of a sensor process to maintain itself by such an adaptation of its re-actions that they become in turn new stimulations.

And from the side of consciousness, suggestion in general is the tendency of a sensory or ideal state to be followed by a motor state.

Whether any simpler formulation of these partial statements may be reached, is a question which may be delayed until we have looked more closely at the voluntary life.

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NOTES AND NEWS.

BESIDES the hides of the alligator, of which fifty thousand or sixty thousand are annually utilized in the United States, there are other commercial products obtained. The teeth, which are round, white, and conical, and as long as two joints of an average finger, are mounted with gold or silver, and used for jewelry, trinkets, and for teething babies to play with. They are also carved into a variety of forms, such as whistles, buttons, and cane-handles. This industry is carried on principally in Florida. Among the Chinese druggists, as stated in the *Journal of the Society of Arts*, London, there is a great demand for alligators' teeth, which are said to be powdered, and administered as a remedy. As much as a dollar apiece is paid by them for fine teeth. All the teeth of the alligator are of the class of conical tusks, with no cutting or grinding apparatus; and hence the animal is forced to feed chiefly on carrion, which is ready prepared for his digestion. Other commercial products of the alligator are the oil and musk pods. The tail of an alligator of twelve feet in length, on boiling, furnishes from fifty to seventy pints of excellent oil, which, in Brazil, is used for lighting and in medicine. The oil has been recommended for the cure of quite a variety of diseases. It has a high reputation among the swamper as a remedy for rheumatism, being given both inwardly and outwardly. The crocodiles and alligators possess four musk-glands, — two situated in the groin; and two in the throat, a little in advance of the fore-legs. Sir Samuel Baker says they are much prized by the Arab women, who wear them strung like beads upon a necklace.

— A series of explorations of great interest have, during the past two years, been carried out by two French travellers, MM. Catat and Maistre, in little-known regions of the island of Madagascar. The results accomplished by these travellers were described by M. Grandidier, the well-known authority on Madagascar, at a recent meeting of the Geographical Society of Paris, an account of which is given in the "Proceedings of the Royal Geographical Society" for February. In the summer of 1889 the "Radama I." route from the capital to Tamatave was explored, with the result that it was found to be not so short or so practicable as the ordinary route. The travellers discovered a marshy zone called Didy, similar to the great lacustrine plain of Antsihanaka, lying between the central mountains and the coast range. Two days were occupied in crossing this hitherto unknown marsh, which gives rise to the river Ivondrona, one of the principal streams of the eastern part of the island. The travellers then proceeded to the bay of Antongil, with the intention of crossing the island along the 16th parallel; but M. Maistre was attacked by fever, and returned to Antananarivo, not, however, by the usual route, but through the province of Antsihanaka, which he found to be placed too far eastwards on recent maps. M. Catat, meanwhile, crossed the island from the east, and reached the west coast at Majonga. He found that the great central mountain mass does not extend, as hitherto supposed, to the 16th parallel; and that the great plains of secondary formation, with their characteristic vegetation of twisted and stunted Bourbon palms and other special trees, occupy here more than two-thirds of the country. The elevated zones of the eastern slope of the coast range are covered with forests, which belong to the first belt of forests running through the whole length of the island; but M. Catat found no trace in this region of the second belt, parallel to the first, which clothes the slopes of the central mountains between Ikongo and Antsihanaka. M. Catat returned from Majonga to the capital, up the valley of the Ikopa. The two explorers subsequently visited together the south of the island, where they discovered the sources of the Omlahy, which discharges itself into the Bay of St. Augustine, also those of the rivers Manambovo and Mandrany, and of one of the head streams of the Mananara, and were thus able to determine the watershed of the principal streams of this southern region. They returned from Fort Dauphin along the south-east coast to the mouth of the Mananara, which they ascended as far as Ivohibé, and surveyed the hitherto unknown course of this important river. Their collections will, it is stated, prove to be of much interest to anthropologists and naturalists.