

flied off, there was no throw. Thirty substances were tested as electrolytes. They in general showed the above phenomena, excepting that the acids which evolve hydrogen when electrolyzed showed it very feebly. Experimenting to find the cause of the gradual reversal of the deflection after the first throw, it was found that any agitation of the liquid produces the same effect, and that when diffusion was prevented, by using fine sand in the vessel or by using gelatine with the solutions, the first throw only remained. The small effect with the hydrogen-evolving acids is probably due to the mechanical protection of the point by the bubbles of gas. Cobalt and nickel were tried and found to give similar effects but smaller. From their experiments the authors come to the conclusion that the particles of magnetic material on the plates are governed by the general laws of magnetic attraction and are held in place against chemical action as they would be against a mechanical force. The rate of change of force at a point is, of course, greater than that on a plane surface, hence the metal on the point is to some extent protected against chemical action, and acts as the electro-negative metal in the circuit. The general rule stated is as follows: When the magnetic metals are exposed to chemical action in a magnetic field, such action is decreased or arrested at any points where the rate of variation of the square of the magnetic force tends to a maximum. The authors criticise a paper on the same subject by Professor Nichols of Cornell, whose results are directly opposite to their own, as far as the two experiments touch. They claim that besides giving no explanation of or drawing any deduction from his results, he has in some cases mistaken disturbances for the real phenomena. The paper seems to explain the phenomena simply and naturally without the help of new relations or hypotheses.

BOOK-REVIEWS.

L'art et la Poésie chez l'enfant. By BERNARD PEREZ. Paris, Ballière. 8°.

THE English translation of Perez's 'First Three Years of Childhood' has familiarized the English-reading public with the general plan of work and method of treatment of this French psychologist and educator. M. Perez is imbued with the idea that the unfolding of mental processes that goes on in every child and is so often the subject of literary effort can yield material for the scientific study of an important chapter in psychology. This psychogenesis in part changes its character with the relative importance of the natural and the artificial elements in the child's education, with the nature of the civilization that forms its environment, with hereditary and individual characteristics. These varying conditions affect differently the various psychological elements that go to the making of a human being, and make necessary different methods of study. In the chapter of 'Infant Psychology' that M. Perez now brings to notice, these varying conditions are of supreme importance; so much so that it seems impossible in some respects to describe the artistic efforts of children, but only of certain children. Nevertheless the path of progress is in so many respects similar, and the directions of artistic interest so unchanging in spite of national and other influences, that one feels something generic even if vague to be at the basis of it all. Again, that close analogy between the development of the individual and that of the race does not lose its application here. It is true that primitive art is far from all being alike, that the art of civilization of which it was the predecessor is no less variable; but from a psychologic point of view the development is generically alike in all cases. For example, we find that the excessive and gaudy decoration of the body is displayed by savages and young children; we find them preferring the same loud, boisterous airs in music, and equally lacking in a sense of the beauties of nature. We see, too, how the subject of serious use and adornment in one stage of civilization degenerates into a toy for the children of the succeeding stage; witness the drum, and the bow and arrow.

A survey of the many paths along which children find their way to the pleasures of art can be most easily attained by a *résumé* of the chapters of the volume before us. In the first chapter are treated the many forms of personal decoration visible in the toilet. We know how soon a child takes an interest in its costume.

how for girls especially the doll is valuable because it is a dressable article; and has not Lotze said that in the exaltation of the ego that is produced by the donning of a new dress is the root of self-consciousness? Taste in this direction is seldom good at first, but it takes its character so entirely from the environment that the psychologist can do little more than record the shifting of interest from one point to another that proceeds as the child matures. In the feeling for the beauties of nature, — the emotions inspired by the graceful, the sublime, the pleasures that flowers and scenery bring, — we have a higher and a later form of artistic interest. M. Perez describes very pleasantly, even if at times prolixly, the growth of these sentiments in different children of his own acquaintance, and records the corresponding descriptions in the autobiographies of eminent men and women. On the artificial side we have the growth of the social instincts, the art of making oneself agreeable, politeness, coquetry, and so on. In France at least this seems to develop precociously early, but the social position of the family must everywhere be the chief factor in its culture or neglect. Passing to the fine arts proper, music is doubtless to be accorded the foremost rank. We know that the most wonderful instances of precocious talent are to be found amongst musicians, and this is in many cases the first artistic pleasure that the child has. The human voice is a source of much pleasure to the child. The distinction between the soothing and the exciting forms of music is soon appreciated. The educational value of rhythm is recognized by all kindergartners. The many decorations of bones, of rocks, of pottery, by primitive peoples are not unlike the first scratches of a child. The things most frequently delineated are quite alike. Given a child, a lead pencil, and some paper, and the result can be predicted, with due allowance to the nationality and other circumstances of the child.

The play instinct is a very potent factor in the growth of artistic taste; performing on a musical instrument as well as acting still go by the name of 'playing.' Foreign personalities are so real to the child, his vivid imagination so easily assimilates them, that 'pretence,' acting, is a common and an early childish trait. The doll is the central figure about which the most thrilling dramas are composed and enacted; to the boy the putting on of a paper helmet and a wooden sword is enough to make him a soldier in thought and deed. Children act to court admiration, and with a normally weak distinction between fact and fiction goes a fondness for acting out what has originated in the realm of the imagination. Literary art is the latest of all acquisitions; but the first letters of a child, though lacking all merit, have a deep interest to the psychologist. To each of these topics M. Perez devotes a full chapter, and succeeds in producing a book which, though not in the strictest sense scientific and certainly not exhaustive or final, is none the less a worthy contribution to an interesting chapter of 'infant psychology.'

NOTES AND NEWS.

JAMES STEVENSON, late executive officer of the United States Geological Survey, died at the Gilsey House, New York, July 25. He was born in 1840, at Maysville, Ky. A more extended notice will appear next week.

— The buildings for the Paris Exhibition have made great progress during the last five or six weeks. According to the Journal of the Society of Arts, the large machinery hall at the south end of the Champs de Mars is now considerably more than half finished, and will probably be completed in another six weeks or two months. Considerable progress has been made with the fine art galleries; but, as they were not commenced until recently, they are not nearly so far advanced as the other parts of the building. The same remark applies to the other parts of the building for the classes included under the term 'liberal arts,' on the other side of the grounds. In this last-named building it is proposed to place a retrospective collection illustrating the progress of the arts and industries from the very earliest period. On the Esplanade des Invalides, the construction of the various small buildings with which it is to be filled has been commenced. This work has been deferred as late as possible, in order not to deprive the regiments quartered in that part of Paris of their remaining drill ground for