

truth knowingly to get out of scrapes, to shift the blame on others, to arouse a laugh and thus change the subject, and do it with great logical acuteness. An emotional element often enters; fright makes them unable to clearly tell what has happened; distrust of adults often acts in the same way. One must gain the child's confidence to be able to correct the fault. It is only under bad treatment or hereditary taint that the habit becomes a serious moral fault: in its typical phase it is simply a stage in the intellectual development of the child.

The dawn of self-consciousness is an interesting stage in child-growth. This M. Perez very justly divides into two parts: the first is the age at which the child distinguishes its person as a thing apart from other external things, and which M. Perez puts at ten months, although Preyer's child, more than one year old, caught hold of its arm as an external object; the second, the age at which it recognizes itself as the centre of the emotions, thoughts in which it lives. This is not clearly done until the age of five or six: at about that age the child has ample material for taking the introspective attitude, and studying his own personality. Lotze, it may be noted, considered the attention to one's self which a new dress causes, as an important agent in the development of self-consciousness.

The logic used by children is an interesting topic. The unconscious processes of thought must be included under this term. When the child says it avoids the fire because it burns, it goes through an unconscious syllogistic process. But, having little knowledge of general propositions, its deductive processes are very rudimentary. The induction has the same faults as that of hasty reasoners,—generalization on too slim a basis. If the uniformity of nature is the guiding principle of induction, evidently one who has had little experience of this uniformity will go astray in his logic. Little Jack concludes that men do not go to church because his father does not.

The emotions of the first years are vivid, transient, and *naïve*. The child's actions are largely impulsive: it has no reasoned moral algebra. It has a meagre conception of time: it lives in the present, and future ills have little meaning. A child usually overrates its own powers, is sanguine and selfish. The higher sentiments, aesthetic and moral, depend largely on education.

The development of the will includes a motor, an intellectual and an emotional element. With the development of the muscular system, its acts come to coincide more and more with its intentions. The repressing of unnecessary, partly reflex manifestations is one of the most

serious tasks of childhood. It requires all the skill of the parent and educator to make the child a useful, mentally economical member of society, without killing out that *naïveté* and naturalness of development so difficult to retain amid the artificiality of modern society. It is here that the formation of habit as a saver of time and energy becomes all-important.

Perhaps this sampling sufficiently indicates the contents of the work of M. Perez. It opens a rich field. Those who come after will be glad to profit by his experience. JOSEPH JASTROW.

#### WORK OF THE MAINE AGRICULTURAL EXPERIMENT-STATION.

THIS modest report of eighty-seven pages covers the work of the station from its foundation, July 1, 1885, to June 30, 1886, and, though small, is a model of what such reports should be. The first portion is devoted to the fertilizer control work, and contains analyses of seventy-five samples of fertilizers and fertilizing materials, together with explanations of the principles on which the 'valuation' of fertilizers is based.

The second portion of the report is of more general interest, and contains the results of several feeding experiments. Determinations of the digestibility of indian-corn, corn-meal, and corn ground with the cob, when fed to a pig, showed that the meal was much more completely digested than the whole corn, while the percentage digestibility of the corn-and-cob meal was below that of the whole corn. A computation based on the proportion of corn to cob in the corn used showed, that, if we assume the corn of the corn-and-cob meal to have had the same digestibility as the whole corn, about one-ninth of the cob was digested.

Some experiments on milk-production showed a decided gain to result from substituting cottonseed-meal for a portion of the corn-meal of a ration consisting of hay and corn-meal. Similar experiments by Armsby at the Wisconsin experiment-station have given the opposite result; but in discussing these, the director, Prof. W. H. Jordan, shows that the apparent conflict is due to differences in the conditions of the experiments in the two cases. A similar advantage was found to result from the use of cottonseed-meal in fattening steers.

Professor Jordan's report is noteworthy for its clearness of statement and its scientific spirit. The experiments are planned with a definite purpose, and the results are discussed in a way to render them intelligible to any thinking farmer.

*Annual report of the Maine fertilizer control and agricultural experiment-station, 1885-86. Augusta, State, 1886. 8c.*