

whole, the conclusion was favourable. Dr. M. C. Schuyten (Antwerp) gives some favourable evidence, so does Dr. H. Baur (Württemberg), who used Scheiner's experiment as a test of fatigue. The question of suicide at school elicited a very full and detailed paper from Dr. G. W. Chopin (St. Petersburg). It is obvious that national temperament, as well as school pressure, counts for much in the percentages. In Russia the suicide occurs three times as often in the middle schools for boys as among the general population of all ages. In the middle schools for girls the tendency to suicide is about three times weaker than at the gymnasium or real schools, and not more than in the general Russian population. No general solution is offered.

These papers are enough to indicate the large variety of material contained in these transactions. One general feature is obvious—personal hygiene distinctly predominates over environmental hygiene, although the latter is far from neglected. We have no space to note the papers on residential schools, school epidemics, administration questions, medical inspection, special schools, &c. The editors are to be congratulated on the practical nature of the volumes.

It is only right to direct attention to the elaborate address prepared by Prof. Griesbach on the relations between medicine and pedagogy; the tables are of great value.

PREHISTORIC POTTERY IN AMERICA.

THE Academy of Natural Sciences, Philadelphia, has issued as part of the thirteenth volume of its Proceedings another of its great monographs, finely illustrated with coloured and process plates, on a group of mounds in Arkansas and Mississippi, prepared by Mr.



Vessel of the "teapot" variety. Near Menard Mound. Height 6'25 inches.

C. B. Moore, who has made a speciality of this line of investigation. These mounds fall into three groups:—those of the Lower Arkansas, the Yazoo and Lower Sunflower Rivers, and those at Blum. A number of interments, many of which are of the "bunched" or contracted type, has been examined, and a large collection of objects, such as pottery, bone pins, shell and copper ornaments, has been made. Some bones showing marks of specific disease have been unearthed, but there is some doubt whether these belong to the pre-Columbian period, and the sites may have been used for interments after Europeans reached the country.

The most important examples are those of pottery, which, though inferior to specimens found in other sites, is still highly artistic, well baked, and carefully wrought. It consists of pots, bowls, and bottles, of the last the long-necked or carafe type being comparatively abundant. An interesting variety is the "teapot" class, a vessel with a more or less globular body, a circular opening at the top surrounded by a low neck, with a spout and small knob at opposite sides of the body. This class, for the United States at least, seems to be peculiar to the

Arkansas region. The pigments used are generally clays, white or tinted with iron oxides, of which careful analyses have been made by Dr. H. F. Keller. In decoration the scroll pattern is predominant; but in one very beautiful bottle the spaces in the yellow ware are defined on the body in white pigment, the interior being occupied by five-pointed stars and figures resembling an arrow-head, somewhat analogous to the copper pendants found at Moundville, the circular portions of which contain Swastikas or stars.

On the base of another vessel the Swastika reappears, and the same emblem is common on shells and stamped ware from the southern States. Prof. Holmes, in a contribution to this report, interprets this well-known symbol as a representation of the world, the division into four quarters being a convenient mode of marking the groups of guardian deities to whom it was necessary to make offerings or appeals. This explanation, however, hardly accounts for the symbol in other parts of the world. On the whole, these discoveries are of the highest value as opening up a comparatively novel chapter in the art development of prehistoric America, while the forms and schemes of ornamentation deserve the attention of designers in our day, who may find much interesting suggestion in the work of this early school of artistic pottery.

INHERITANCE IN SILKWORMS

IT is not surprising that animals which breed so fast and occupy so little room as silkworms should have afforded the material for the experimental investigation of heredity. The publication before us is the outcome of the third considerable series of breeding experiments with this moth. The first to appear was that of Coutagne ("Recherches experimentales sur l'Héredité chez les Vers a Soie"). This work was done without a knowledge of Mendel's observations, a fact which only increases the value of the work in the eyes of those who are not familiar with this author's other writings. The experiments, on the other hand, of Kametaro Toyama were carried out with the full knowledge of Mendelian principles, and were, indeed, set on foot with the object of testing them.

Mr. Kellogg's experiments were started a year later than Toyama's—in 1901. Mr. Toyama, who published his results before Mr. Kellogg, obtained results confirmatory of Mendelian hypotheses. But Mr. Kellogg does not find this to be the case with all his characters; in fact, he finds that the characters of the larvæ behave in Mendelian fashion in inheritance, whilst those of the cocoon exhibit considerable exceptions to this rule. The author suggests that the cause of this is that the cocoon characters have arisen by the selection of fluctuating variations, whilst those of the larvæ have arisen as discontinuous variations.

Mr. Kellogg's position with regard to the application of Mendelian principles to his results may be stated in his own words:—"Toyama finds the larval variation of colour-pattern and the cocoon differences of colour to follow Mendel's law. I do not. By the use of many repetition or check lots I find the larval characters to exhibit a great fidelity to Mendelian principles in their mode of inheritance, but with the cocoon colours I find exceptions so numerous, so varied, and so pronounced as to lead me to lay great stress on the potency or influence of individual or strain idiosyncrasies."

The chief criticism we are inclined to make is that far too little numerical evidence is given for the generalisations which are made. In an experiment in which nearly everything turns on the numerical proportion in which individuals with particular characters occur, we look for a far more detailed account of the results obtained. For example, Mr. Kellogg whets our appetite by telling of his experiments with a character of the egg, or rather of the female which lays it. Most races lay eggs which stick to the box in which they are laid, whilst some strains of the Bagdad race lay "non-adhesive" eggs. "The one race in my possession whose eggs are regularly (this regularity is not absolute) non-adhesive is the Bagdad

1 "Inheritance in Silkworms." By Vernon L. Kellogg. Leland Stanford Junior University Publications. University Series, No. 1. Pp. 89. (California: Stanford University, 1908.)