

a circumscribed area of what were normal into cancerous cells, either under the influence of unknown causes in the body itself or through the mediate intervention of diverse external chronic irritants, which may be actinic, chemical, bacterial, mechanical, in short, are legion; the other factor is the constitutional condition of the living body, which may favour or hinder growth of the limited number of altered cells into a tumour. Extensive observations on in-breeding stocks of cancerous mice show that in-born pre-disposition plays only a very subsidiary, if any, part in determining both the one and the other; both are acquired. Cancer is a foe to all men, and the liability to it being in all probability acquired may ultimately be found to be avoidable.

A sudden revolution of all former views on the nature and treatment of cancer has not been effected. Much of the knowledge inherited can be utilised, much of it must be discarded. I have not dwelt on the initiative, the sacrifices, and the patient toil of my colleagues Bowen, Cramer, Gierke, Haaland, Murray, and Russell, nor on the enlightened and generous encouragement of the executive committee of the Imperial Cancer Research. It will be evident to all who read my colleagues' papers in the report how much they have contributed to raise the British national investigations of cancer to the premier position among similar institutions abroad. I have not made reference to work by other distinguished investigators, but full credit is given to them in the report itself. Slowly feeling the way from one certain step to another has often simply meant being met by new and unsuspected difficulties. Each hitherto unsuspected difficulty when overcome has, however, brought us more nearly face to face with the realities of cancer genesis, cancer growth, and the natural means by which the body protects itself against them; they all are better comprehended and nearer solution to-day than ever before.

E. F. B.

STUDIES IN ANTHROPOLOGY.

THE growing interest in the study of anthropology as a branch of university teaching is illustrated by the publication of the Proceedings of the Anatomical and Anthropological Society of Aberdeen, of which Prof. R. W. Reid is chairman, for the years 1906-8. The most important contribution in the volume is a report by Dr. G. A. Turner on the natives of Portuguese East Africa south of latitude 22°. The habits, customs, and mode of life of the three chief races in this territory, the Myambaams, Mtyopis, Shangaans, and Lourenço Marques Boys, are described chiefly with reference to the principal forms of disease which appear in their kraals. Incidentally, some remarkable customs of much interest to the anthropologist are discussed. Thus, if a man dies of a disease like consumption, which causes constant gasping for breath, the officiant at the burial has to open the thorax of the deceased in the middle line and remove both the lungs and heart. These are so placed in the grave that they will not slip back into the thorax when they are laid upon it. The rite is obviously a piece of sympathetic magic intended to save the person conducting the interment from contracting the disease.

Full details are given of the remarkable habit of the Mtyopi women, who produce, by means of cicatrization, lumps varying in size from that of a walnut to a pea along the breast, abdomen, and legs. The males of the same tribe file their teeth in the form of pegs, of which the rather doubtful explanation is suggested that it is a mark of primitive cannibalism, because they would be better able to tear human flesh if their teeth were filed. The existence of the practice, however, among tribes who are not cannibals seems to indicate that it is more probably one of the savage's misguided attempts at personal ornamentation. Witchcraft is common among these races, and the witch is much dreaded and often shamefully treated. Some natives, we are told, were in the habit of bringing suspected women for examination by the Portuguese commandant, who was asked to report on their alleged possession of supernatural powers. Finally, to put an end to such proceedings, he shrewdly gave as his verdict that while he was unable to detect anything extraordinary

in the women, he could not speak with such confidence of their male companions. This opinion abruptly brought the investigation to a close. The methods of circumcision are fully described, the most remarkable feature in the operation being the extreme cleanliness enforced upon the performer of the rite, a precaution which usually obviates the risk of septic poisoning.

Local anthropology is represented by a paper by Dr. W. R. Macdonell on the physical characteristics of the medical students at the University, a summary of a long series of measurements which have been taken with the utmost care. For the purpose of comparison the subjects were divided into two groups, those of pure Scotch descent on both sides and those where one or both parents were foreign to Scotland. The general result is that in physical characteristics the two groups are practically identical. They closely resemble Cambridge students and graduates in length and breadth of head, but they are slightly lower in stature. In all three characters they are uniform with the rural population of Aberdeenshire. The average growth between the nineteenth and twenty-third year of age is about 1¼ per cent. in all characters except auricular height, in which it is about 3 per cent. There is practically no difference between honours and pass men in length and breadth of head, and the Aberdeen head is not larger than that of other classes of the community.

HYGIENE—PERSONAL AND ENVIRONMENTAL.¹

THREE well-printed and well-filled volumes containing all the addresses and papers read at last year's School Hygiene Congress in London, and a summary of many of the important discussions, have been published recently. On a more leisurely and comprehensive review than was possible at the congress itself, one cannot but be struck with the small amount of irrelevant matter. School hygiene, involving, directly or indirectly, the whole series of systems of modern education, lends itself to the fanatic, the crank, and every other type of abstractionist. It is, however, with agreeable surprise that one finds here a large number of papers full of concrete experience, presented in a well-ordered way. Like the four volumes of the first congress (Nuremberg), these three form a most convenient conspectus of school hygiene at the present day. There are signs that the movement has become more mature, for the studies are in many respects more detailed. It is difficult to select papers for special observation, but there are many that will repay reading and re-reading. The general address by Bishop Welldon on "The Effect of School Training on Mental Discipline" contains many well-loaded aphorisms, but it is disconcerting to read:—"But, at whatever cost, the habit of unquestioned obedience must be created in the young. When I was headmaster of Harrow School, I used to say to my young colleagues, 'Begin by making the boys feel that you are prepared, if need be, to grind them to powder; then you may safely grant them as much liberty as you will.'" This is one ideal, but it is not the ideal of Froebel, of Pestalozzi, of Herbert Spencer, of Earl Barnes, of Stanley Hall.

The discussion on duration of lessons, sequence of subjects, and seasons of the year as affecting school work, contains good papers by W. H. Burnham (Clark University, Mass.), by M. Chabot (Lyons), who enters into much exact detail, and by Dr. L. Burgerstein (Vienna), whose well-known handbook on school hygiene is a standard. Another "set discussion on the lighting and ventilation of class rooms" contains a careful paper by MM. Courtois and Dinot. The general conclusion is that class rooms in France have too little cubic space, and that the air should be slightly warmed and free from dust.

Griesbach's method of estimating fatigue by the æsthesiometer was discussed by Dr. Altschul and others. Obviously, the method needs to be applied with skill, but, on the

¹ Second International Congress on School Hygiene. London, 1907. Transactions, Vols. I., II., III. Edited and arranged by the Ordinary General Secretaries, Dr. James Kerr and E. White Wallis. Price 5s. each volume; complete in three volumes, 12s. 6d.; bound 15s. net. Vol. I., pp. xxiv+351; vol. II., pp. xv+401-848; vol. III., pp. vi+849-1008. (London: Royal Sanitary Institute.)

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.)