

THURSDAY, FEBRUARY 20, 1913.

IMMIGRATION AND ANTHROPOMETRY.

Changes in Bodily Form of Descendants of Immigrants. By Prof. Franz Boas. Pp. xii + 573. (New York: Columbia University Press; London: H. Frowde, 1912.) Price 7s. 6d. net.

IN the year 1908 Prof. Boas, at the request of the United States Immigration Commission, began an investigation into the physical characteristics of immigrants. The volume under review contains an elaborate tabulation of the anthropometric data obtained, together with an analysis of the conclusions drawn from them. One of the most remarkable of the facts brought to light is the changes undergone in head form by the descendants of Hebrews and Sicilians. The cranial index of the former when born in Europe appears to be about 83; it sinks to 81 among those born in America. Among the latter, on the other hand, the index rises with the change of birthplace from 78 to more than 80.

It has been suggested, as a mechanical explanation of the relative lengthening of the Hebrew skull in America, that in Europe the babies of this race when very young are wrapped up in swaddling clothes so tightly that they cannot move themselves, and kept lying on their backs; that thus there is constant pressure on the back of the skull when it is in its most plastic condition, with the result that it decreases in length but increases in breadth. In America much greater freedom is allowed to the child, and it can lie as it likes, sometimes on its back, sometimes on its side; consequently, with the removal of the conditions which produce an artificial shortening a longer skull is developed. Prof. Boas examines and dismisses this hypothesis. One of the principal objections to it is that if it applies to the Hebrews it should apply to the Sicilians and Bohemians, who also keep their babies tightly swathed, but the relative length of the skull among the children of Sicilian and Bohemian immigrants decreases instead of increasing.

It has also been argued that the results obtained are due to the fact that the types of immigrants of each nationality have been changing gradually, but an examination of the cranial indices of Hebrews who immigrated at different periods from 1880 to 1910 show that the index is constant throughout this period, and in addition to this the difference between those who arrived in any particular year and their descendants is the same as that shown by a similar comparison involving the whole series.

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The reality of the results is confirmed by the fact that the changes noted are more marked among those children who were born more than ten years after their mothers had arrived in the United States than among those whose mothers had arrived more recently.

Although the numbers dealt with are not very large, it is difficult to suppose that the results are due merely to chance, nor can they be attributed to what might be called a statistical accident. There does not appear to be any ground for deciding whether they are due to the influence of a changed environment or to the selective elimination of certain types. Prof. Boas inclines to the former view and urges that the onus of proof rests on those who hold the latter. They will probably be inclined to disagree with him on this point.

E. H. J. S.

PROBLEMS OF THE COTTON PLANT.

The Cotton Plant in Egypt. Studies in Physiology and Genetics. By W. Lawrence Balls. Pp. xvi + 202. (London: Macmillan and Co., Ltd, 1912.) Price 5s. net. (Macmillan's Science Monographs.)

THERE can be no doubt of the freshness and originality of mind with which Mr. Balls has attacked a great diversity of problems in their application to the cotton plant. Some of these questions are genetic, some pathological, some physiological in the stricter sense, and most of them involve considerations of direct economic importance.

Starting with the intention of improving the Egyptian cotton crop, the author found himself led on from one problem to another, and to the solution of each he makes a real contribution, often approaching to the dignity of discovery. His analysis of growth-rate and of the many influences which affect it is an illuminating piece of work, full of novel suggestions, and a botanical physiologist, looking for a line of work, might with profit follow up any of the various threads which Mr. Balls lets drop in his course.

The same is true of that part of the book especially relating to genetics. The F_2 generation was often of a most complex type, and by the application of a graphic method of analysis apparatus is introduced which may probably assist in the unravelling of other similar cases. In his study of the heredity of seed-weight, new and interesting ground is broken. It is shown that a form with seed actually light is genetically endowed with the capacity to form heavy seed, but, owing to the smallness of the boll, the seed does not become heavy. The problem of interference between

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factorial effects thus illustrated is one that, we are sure, awaits us in many comparable instances. Obviously, such interference might operate either by reducing the number of the seeds or by reducing their size; and in some plants, doubtless, the one effect will be found, and in other cases the other. The discussion of this and various other examples of complex results is unconventional and always fruitful.

The book is one which well illustrates the mental attitude of the investigator to whom problems appeal chiefly by virtue of their difficulty. Had Mr. Balls stuck to any one of the lines he has begun, no doubt he could have gone much further along it; but so soon as anything like a solution is in sight he would rather start another chase. This is not unfriendly criticism: for many who can follow there are few who can begin, and others will some day make something of the various beginnings here left unfinished. The real objection to this book is that it is in outward form at least a *book*. The only thread of coherence running through it is that the miscellaneous embryo treatises it contains were begotten in Mr. Balls's mind by the cotton plant. So, in the same way, the common fowl has been the point of departure for lucubrations on the origin of the mesoblast, on poultry-breeding for the table, on coccidiosis, on the food-value of cereals, &c., but though it may be good for a man to keep all these topics dancing through his own head, no real purpose is served by amalgamating them into one volume. It was to meet such cases that publication in journals was invented. W. B.

THE ENERGY SIDE OF NUTRITION.

Nutritional Physiology. By Prof. P. G. Stiles. Pp. 271. (Philadelphia and London: W. B. Saunders Co., 1912.) Price 6s. net.

ALTHOUGH Prof. Stiles's little book is entitled "Nutritional Physiology," it is really an elementary treatise on the whole realm of physiology, though special attention is directed to digestion, absorption, and metabolism. Its keynote is the word "energy," and the living body is regarded from the point of view of an energy-transformer. The work is dedicated to Prof. Graham Lusk, of New York, and his influence can be easily traced in the chapters which deal with metabolism.

It is not possible to regard the book as a mere addition to the already numerous primers of physiology; it is something beyond this, although it makes no pretensions to being anything profound. It can be read with profit by the junior student, and still more by the senior student, and even the professed physiologist. Old truths are often put in new ways, and so fresh light is shed

upon familiar problems. The language is often quaint and original, and the numerous analogies selected for explaining physiological truths are apt and well selected. Take the following as an example:

"The regulating action of the liver and the muscles upon the carbohydrate distribution may be paralleled, in part at least, by an analogy. Let us compare the active tissues to a mill turned by the waters of a stream. The water supply to the mill is to be compared with the sugar supply to the cells, which derive their energy from it. A meal is to the body as a storm is to the mill-stream—it adds to the volume of the power-producing element. The dam by the mill is like the kidney in its relation to the accumulated store," and so the parable runs on; it is unnecessary to quote more of it here.

The book contains the inevitable chapter on alcohol; this is written in a moderate strain, and may, perhaps, be viewed with disfavour by the extreme teetotaler because it is not intemperate. As one reads it, one almost feels that its author was writing it because he had to, but was protesting all the time inwardly against the American law which excludes all physiological books from scholastic institutions which do not obey the tyrannical behests of the party in power.

W. D. H.

CHEMISTRY: PURE AND APPLIED.

- (1) *Fatty Foods, their Practical Examination.* A Handbook for the Use of Analytical and Technical Chemists. By E. R. Bolton and C. Revis. Pp. xii+371. (London: J. and A. Churchill, 1913.) Price 10s. 6d. net.
- (2) *Der Kautschuk.* Eine kolloidchemische Monographie. By Dr. R. Ditmar. Pp. viii+140. (Berlin: Julius Springer, 1912.) Price 6 marks.
- (3) *Modern Inorganic Chemistry.* By Dr. J. W. Mellor. Pp. xx+871. (London: Longmans, Green and Co., 1912.) Price 7s. 6d.
- (4) *A First Class-Book of Chemistry.* By E. Barrett and Dr. T. P. Nunn. Pp. iv+124. (London: A. and C. Black, 1912.) Price 1s. 6d.
- (5) *Elementary Applied Chemistry.* By L. B. Allyn. Pp. xi+127. (Boston and London: Ginn and Co., n.d.) Price 3s.
- (6) *Trattato di Chimico-Fisica.* Traduzione Italiana con note del Dott. M. Giua. By Prof. H. C. Jones. Pp. xx+611. (Milano: Ulrico Hoepli, 1913.) Price 12 lire.

(1) **T**HE analytical examination of edible fats and oils is increasing in importance and in difficulty day by day. At least sixteen natural oils must be taken into consideration, and, when mixtures of these are presented for examination,