

unexplored regions are pointed out, with hints and advice for future students. The folklore of the island is never lost sight of, and many extracts from the Sagas, and much historical matter, are interspersed in smaller print than the bulk of the narrative.

The writer's love of Iceland is not lessened by his second, and, as he regretfully remarks several times, final visit. It is interesting to note that in his opinion the union between Iceland and Denmark is political only, and that the ties between the two peoples are not likely to become deeper or closer.

The work is illustrated by many photographs and drawings, and a map of the route followed. Altogether it is interesting reading for lovers of Iceland or for prospective travellers over the same ground, although the detailed accounts, evidently intended for future tourists, of the reception, food, lodging, and cost at each stopping place are wearisome.

We regret that Herr Herrmann, with one exception, always alludes to our 'countrymen with some contemptuous phrase; the four years' interval has not softened his attitude towards the British traveller.

M. G. B.

HEREDITY AND ITS PHYSICAL BASIS.

Hereditary Characters and their Modes of Transmission. By C. E. Walker. Pp. xii+239. (London: Edward Arnold, 1910.) Price 8s. 6d. net.

THIS volume deals very clearly and briefly with the whole field of heredity, but perhaps its most interesting feature is the development of a theory as to the relative share borne by the chromosomes and other parts of the sexual cells in the transmission of hereditary characters. Stated somewhat crudely, the theory and the arguments which support it are as follows:—In the chromosomes are represented new characters (*i.e.* individual variations, mutations, and the like), while other parts of the cell are concerned with the propagation of old-established racial characters. That the chromosomes do not bear entities representing all the inherited characters is shown, firstly, by experimental evidence, such as the fertilisation of enucleated Echinoderm ova. For instance, Godlewski fertilised enucleated eggs of sea-urchins with the sperm of crinoids and obtained gastrulæ which possessed pure maternal characters only. Second, through the reducing divisions half the chromatin is eliminated from the mature gametes. In spite of this, all the racial characters are shown by the individual which develops from the fertilised ovum. If one half the entities representing the racial characters of the father are absent from the sperm, it is so improbable as to be almost inconceivable that exactly those characters which are unrepresented will be supplied by the mother, seeing that the entities present in the ovum have been halved in number in a corresponding way.

Further, the racial characters are blended in inheritance, while individual variations and new characters are transmitted in a Mendelian way, the mechanism for which is supplied by the chromosomes. That the sexual characters also are propagated in this manner was suggested, first by Castle,

who supposed that both sexes were heterozygous in this respect; that is to say, that each individual contained both maleness and femaleness, the one latent and the other patent. Difficulties in the way of accepting this theory were removed by the suggestion that one sex was homozygous, its sexual character being recessive, while the other was heterozygous, and showed the dominant character. Credit for this emendation is given by the author to Bateson and Correns, but by right of priority it belongs to Geoffrey Smith. The latter, in his Naples monograph on the *Rhizocephala* (published in 1906), suggests that in the case of crabs the male is heterozygous since it exhibits female characters when castrated by the parasite *sacculina*, and must therefore have femaleness latent. The female, on the other hand, under similar circumstances, never shows male characters. He further surmises that in some parthenogenetic forms the heterozygous sex was the female, since from it both male and female individuals were at times produced.

The ever-present question as to the inheritance of acquired characters comes up again for discussion, and the author, who largely follows the sane reasoning of Archdall Reid, concludes that they are not inherited. Among other arguments in support of this view he includes that from the transmission of the characters of neuter individual in ants. This argument, he says, he has only met with twice before, namely, in the "Origin of Species" and in Poulton's "Essays on Evolution." He will no doubt be interested to know that it figures very largely in the controversy between Weismann and Herbert Spencer, published in the *Contemporary Review* in 1893 and 1894.

One more point must be raised, namely, the use of the word "regression" to signify something the reverse of progression, instead of in the special sense, acquired through biometry, in which it is generally used. The author has followed Archdall Reid in this respect, who, in his "Principles of Heredity," speaks of variations consisting of the addition of a character as progressive, and those resulting in the loss of a character as regressive. We hope he will also follow him in altering "regression" and "regressive" to "retrogression" and "retrogressive" in future editions.

E. H. J. S

GEOLOGY MADE EASY.

Geologie Nouvelle. Théorie Chimique de la Formation de la Terre et des Roches Terrestres. By H. Lenicque. Pp. xvi+271. (Paris: A. Hermann et Fils, 1910.) Price 7 francs.

THE book before us is the work of an engineer, who, having discovered that the received doctrines of geology rest largely on unproved hypotheses, has been impelled to frame a new geology for himself. The French scientific journals having ungratefully met this by a conspiracy of silence, it is left for us to introduce it to the public.

This new light in the dark places of the earth comes, it would seem from the acetylene lamp; for in the principle of that useful invention the author finds the clue to many phenomena which geologists have explained in ways less sensational. Silicates and

carbonates are decomposed at the temperature of the electric furnace, where the stable compounds are silicides, carbides, phosphides, and the like. We are therefore bidden to believe that the heated interior of the globe consists of such bodies as calcium carbide and carborundum; and it is clear that, when some of these substances come into contact with water, startling consequences are to be expected. Thus is explained, for instance, the origin of limestones, setting aside some of late age which the author pronounces to be organic. Eruptions of lime, in a pasty state, were forced up by the pressure of acetylene gas, and spread over the sea floor. Any creatures so unfortunate as to be living in the neighbourhood were expeditiously converted into fossils. In like manner, shales and clays were produced by the action of water on silicides of aluminium and calcium, and were poured out in successive *coulées*, with equally painful results. After this, coal presents no difficulty. It was erupted as a hydrocarbon, more or less fluid, supersaturated with carbon, and such vegetable matters as it happened to encounter were carbonised by the coal itself.

An equal boldness of conception characterises the author's treatment of other branches of geology. Elevation and depression of continents being among the unproved hypotheses, we are offered instead a submergence of the northern and southern hemispheres in turn, resulting from the precession of the equinoxes. Glaciation, of course, finds a like explanation, as Croll has already taught; but our interest is more stirred by those prodigious movements of the ocean which result from the sudden collapse of a melting polar ice-cap. To cataclysms of this kind are referred, not only the deluge in the days of Noah, but the cutting of the Straits of Dover and the severing of Madagascar from Africa, and we gather that the same dread agency may have torn the reindeer from his northern home and transported him to sunny France, where his bones still remain to tell the tale.

Here we must reluctantly take leave of M. Lenicque, while assuring the curious reader that the theories which we have noticed are chosen from many others not inferior to them in novelty and ingenuity.

A. H.

ALL SORTS AND CONDITIONS OF WOMEN. *Women of all Nations.* Popular edition. Edited by T. A. Joyce. Pp xii+220+65 plates. (London: Cassell and Co., Ltd., 1910.) Price 6s. net.

THOSE already familiar with the former edition of "Women of All Nations" will recognise with what skill Mr. Joyce has dealt with it to reduce it to the present extremely convenient and informing little volume. Naturally, the popular edition is less copiously illustrated, but the plates retained are an excellent selection. The range of the book is exceptionally vast, as the title leads us to expect; we pass from criticisms of the modern British woman almost in the vein of Pierre de Coulevain to the chapter on Africa, where we read of girls fattened to attract suitors and of widows buried alive in their dead husband's grave. Women doctors confront

us in many parts of the world; in fact, among the Madi of the White Nile they are the chief medical practitioners who receive fees, while the men only act as honorary surgeons (p. 150). The Madi women, we learn, fight duels; nevertheless, they are capital wives, and married life is very happy in their country. A Zulu lady doctor of very striking appearance is portrayed opposite p. 158.

The chapters on Europe (viii. to xv.) are extremely interesting, showing as they do how gradually East merges into West, and how numerous are the backwaters of civilisation in our very midst.

"Two hundred years ago the women of Russia lived in as much seclusion as if they had been Mohammedans. It was Peter the Great who first commanded them to lay aside their veils. . . . In Russian villages there are still old women who act as professional match-makers, and the peasant women still keep their heads covered out-of-doors, even in the warmest weather" (p. 104).

Austria affords an instance of the persistence of national points of view as seen in the status of Slav and Magyar women. A Slav proverb runs:—"That household is threatened with ruin in which the distaff rules and the sword obeys," while there is a Magyar saying that "it is the chignon that must rule." Italian law is exceptionally just to women (pp. 109-10); a married woman's property is absolutely her own, "she has a right to the guardianship of her children, and, as a daughter, to an equal share with her brothers in any patrimonial inheritance in case of intestacy."

Unfortunately the space devoted to America is very brief, 34 pages, the whole of South America—all too scanty in the unabridged edition—being compressed into seven pages. We regret that Mr. Joyce has so greatly curtailed the section by himself on the Maori of New Zealand, and also the discussion of the racial, geographical, and sociological conditions affecting the position of Polynesian women. We are glad to find that the introduction is entirely omitted; it was certainly beneath the level of the rest of the book.

APPLIED MECHANICS.

- (1) *Notes on Applied Mechanics.* By R. H. Whapham and G. Preece. Pp. vi+206. (London: Edward Arnold, 1910.) Price 4s. 6d. net.
- (2) *Applied Mechanics, Including Hydraulics and the Theory of the Steam-Engine. For Engineers and Engineering Students.* By John Graham. Pp. viii+204. (London: Edward Arnold, n.d.) Price 5s. net.

(1) THIS little book is primarily intended for naval cadets, who are undergoing instruction in applied mechanics during their six months' cruise in the *Cumberland* and *Cornwall*. The examples at the end of each chapter, which are all fully worked out, illustrate, so far as possible, the application of the various principles discussed in each section to actual practical problems which are likely to be met with by the cadets in their future professional career; there is, therefore, a refreshing novelty in these examples, and they differ markedly from those usually met with in the ordinary text-books on this subject.