SCIENTIFIC BOOKS

A Bibliography of Eugenics. By SAMUEL J. HOLMES, University of California Publications in Zoology, Vol. 25, pp. 1–514, $5.00.

A VOLUME of great value to workers in bionomics is Professor Holmes's "Bibliography of Eugenics." It often requires as much skill and a great deal more patience to compile a complete and workable record in any field of knowledge as to write a new contribution to science. Often the one is an outgrowth of the other. For in the preparation of his admirable recent survey of "The Trend of the Race," Dr. Holmes has naturally found it necessary to consider every memoir of importance and a good many others which had preceded his own summary. Hence the accumulation of titles which composes the present volume.

The classification of the multitude of books and papers (upwards of 13,000 in all) listed by him and the table of contents itself is informing as well as suggestive. The chief topics are: "Heredity and evolution," "Eugenics," "Genealogy," "Degeneracy," "Alleged increase of insanity," "Notorious families," "Heredity of defects," "Alcohol and heredity," "Venereal disease and heredity," "Heredity factor in crime," "Heredity factor in delinquency," "Inheritance of mental ability," "Genius and insanity," "Race," "Birth-rate," "Birth control," "Natural selection in man," "Selective effect of infant mortality," "Of war," "Sexual selection in man," "Urban selection," "Racial influence of religion," "Immigration and emigration," "Consanguinity," "Race mixture," "Determination of sex," "Sex ratio," "Influence of age of parents," "Order of birth," "Negative eugenics, segregation, sterilization," etc.

Dr. Holmes remarks that "it is a noteworthy circumstance that much of our knowledge of these topics has come from writers who were apparently unaware of the relation of their contributions to the problem of human evolution. . . . I have often been impressed with the enormous waste of effort which is attributable to a general lack of outlook upon racial problems. A large part of this literature might have been much more valuable had it been produced in the light of proper orientation and insight in regard to its wider bearings." In other words, a great deal that is well meant and much that rests on sheer ignorance or emotional prejudice is a burden on the work of the serious student. Most of the "writers on natural selection in man 'have apparently not had the subject of natural selection in mind at all.' . . . To talk . . . of natural selection as if it were practically done away with among civilized human beings, as many writers have done, is eminently absurd. In fact, it may be doubted if civilization has effected much diminution in the intensity with which natural selection acts on the human species."

DAVID STARR JORDAN

Principles of Advertising. By DANIEL STARCH. Chicago, A. W. Shaw Co., 1923, pp. 998.

THIRTY-SEVEN chapters, covering 998 pages, are required by Professor Starch in which to expound the principles of advertising. The main thesis of the work is that the principal function of advertising is to sell or help sell. Five main questions then appear: "(1) To whom may the product be sold? (2) By what appeals may it be sold? (3) How may the appeals be presented most effectively? (4) By what mediums may the appeals be presented so as to reach the class of people to whom the product is to be sold? (5) What is a reasonable expenditure for promoting the sale of the product by means of printed sales efforts?

The answers to these questions must come from the application of scientific method, and the author considers that his chief contribution lies in exposing this method so as to show its general applicability. It must be applied with the special technique of economics, sociology and especially psychology. Examples of all these methods of approach are given in profusion. The 165 tables in the book give such data as: "Figures covering sales, gross profits and advertising expenditures, eight retail stores"; "Proportion of wired homes by states"; "Selling points for a mint candy"; "How different sizes compare when used with the same frequency"; "Attention value of different sizes of display type"; "Tendency in the use of art forms in advertisements."

The book gives evidence of a vast amount of research, original research on the part of the author and his students and thorough culling of the literature on advertising so as to fulfill the aim of bringing together as fully as possible all available materials.

The section of six chapters dealing with the "Human aspects of the market" discusses methods of gathering general information about the consumer, through general statistical methods and through questionnaire. The section of six chapters on "Appeals" treats methods of testing marketing methods and individual advertisements. The sections on "Presentation of appeals" deals with suggestive advertising, argumentative advertising, headlines, illustrations, etc., in the conventional way. The section on "Mediums" discusses magazines, newspapers, posters, etc., in the customary way with as frequent citation as possible of factual material. There is a section entitled "Special fields of advertising" which treats national, retail, foreign and financial advertising.

If there is one characteristic which stands out more

clearly than another it is the compendiousness of the work. Hardly a question has arisen relative to advertising which is not referred to in the voluminous index. The answer is given if it can be truthfully stated. There are, however, many gaps in our knowledge, as Professor Starch would be only too willing to admit. And it is hoped that the excellent guidance which he has furnished in this book will stimultae workers in advertising to make the further investigations that are so greatly needed.

HARRY D. KITSON

LABORATORY APPARATUS AND METHODS

REMOVING JELLY FROM FROG OR TOAD EGGS

THE quantity of jelly surrounding the egg of the frog or toad is always a source of annoyance in laboratory study. The physical and chemical methods already in use are quite unsatisfactory and the writer has been trying for several years to find some process as free as possible from their defects. Professor C. I. Nelson, of the Department of Bacteriology of the North Dakota Agricultural College, suggested that "antiformin" as used in dissolving tuberculous sputum might be successful and it has proved wonderfully effective. It is inexpensive and sufficiently stable for a stock solution to last through the spawning period of the frog. For convenience the formula is given below.

Washing soda	2 pounds
Chloride of lime	1 pound
Water	1 gallon

Use the supernatant fluid from this mixture (or filter) and mix with equal parts of a 15 per cent. solution of sodium hydroxide. The egg masses in my experiments were first fixed in a 10 per cent. formalin solution.

100 to 125 cc is sufficient to dissolve the jelly on one clutch of eggs. The action is complete inside of ten minutes. The eggs are thoroughly washed in 8 or 10 changes of water and allowed to stand in water for a half hour or longer to remove any traces of the antiformin. The eggs are then passed through a series of alcohols to 70 per cent. where they are kept. After 12 or 24 hours they are slightly bleached to bring out the cleavage lines through the addition of a few drops of peroxide of hydrogen to each batch. If the eggs are subjected to bleaching before they have been hardened in alcohol there seems to be some tendency for disintegration. A few eggs tend to break up, but the majority remain in perfect condition. Three or four batches may be stored in an eight ounce bottle, whereas before the removal of the jelly a quart jar would be necessary to hold them.

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SPECIAL ARTICLES

CONDITIONS OF NATURAL SELECTION

OBJECTORS to natural selection seem only to have substituted variation or mutation for special creation and to hold that species were produced first and then dropped into the situations to which they were adapted. With them the origin of species is the same as that of distinctive characters. Species, it seems to me, are not dried things which may be separated by certain differences, but living things which occupy definite ecological positions, and that they separated first and got their differences afterwards.

Natural selection is an ecological theory. What it will account for must be ascertained by ecological investigation. Diversifications of food habits and of geographical and phenological ranges are its most important conditions.

Food habits.—One species of bee gets its pollen from flowers of one species, while another gets its pollen from those of another species. Two species are inquilines of different hosts. Of 182 local species of lower Aculeata whose flight is pretty well made out, 158 fly simultaneously, July 25-27. But for the fact that they provision their nests with different kinds of insects, so many species could hardly thrive in one place and fly at the same time.

Phenological range.—One species of bee flies in the spring, another in the fall. Of 296 local species, only 47.2 per cent. are flying simultaneously. Of 470 insect flowers, only 42.7 per cent. bloom at one time.

Geographical range.—It seems to be a general law that the most closely related species do not live in the same place. This is one of the most important facts in geographical distribution. In the case of 1,428 local species, mentioned in SCIENCE 48: 369, an average of only 1.7 belong to the same genus. The genera with more than one species are usually represented by the most divergent forms. The Bembicidae show only 10.4 per cent. of the North American species, but 83.3 per cent. of the genera. Of 79 families of insect flowers, compared with the same families given in Gray's Manual, 7th edition, the local flora shows 21.9 per cent. of the species and 44.1 per cent. of the genera. These estimates were suggested by the presumption that the most closely associated elements ought to be the most heterogeneous. The closer the competition is, the greater the generic diversification.

The early flora.—The composition of 159 species blooming before July and 162 blooming after June, shows the following percentages: