

in the city of Honolulu, and all of these have been introduced. In glancing through the bird section, I note on page 326 the heading "The Legend of Maui and the Alae," and this reminds me to mention the fact that all through the book are scattered native legends which add greatly to its interest.

Reverting again to the extinction of native forms, the statement is made on page 333 that the island of Oahu can make the melancholy boast that it has a greater list of extinct birds, in proportion to the total number of species known from the island, than any other like area in the world.

One of the most attractive fields of natural history study in the islands is that of the fishes. Fish have always been one of the chief articles of animal food of the natives, and many strange and beautiful species abound in Hawaiian waters. The collection of native fishing apparatus in the Bishop Museum is a revelation to the modern fisherman. The natives caught fish in many most ingenious ways, and were expert in making a certain fish poison known as *holahola*. They were expert shark fishers in the olden times, and the use of human flesh as bait was in great vogue. The person to serve as bait was killed two or three days in advance of the anticipated fishing expedition. His flesh was then cut up, placed in a container and left exposed to the air to decompose. Interesting but grewsome! In walking through the markets of Honolulu to-day, the visitor from the States is able to recognize practically none of the fishes exposed. The fish fauna of Hawaii is isolated from that of other lands, although most of the common families of sea fish have local representatives, some of them excelling in flavor the species which exist elsewhere. One is greatly attracted by the "butterfly fish" on account of their bright colors.

The chapters on native and introduced insects are very interesting; and of course every naturalist knows the tremendous interest attaching to the land and fresh-water shells of the islands, and their weight in the discussion of evolutionary problems.

There seems to be at least one striking exception to the general rule which we have men-

tioned, of the easy adaptation of other forms of animal life to the Hawaiian climate, in the case of the eastern oyster, which has repeatedly been introduced, but which has never become acclimatized.

In the portion relating to sea life the book is especially interesting, and the story of the plants and animals from the coral reefs is fascinating.

Scientific men have been criticized frequently in the columns of *SCIENCE* for bad writing. The criticism can not hold for the author of this book, since it is written in a style which even the professor of English at Harvard would, I think, like to claim for his own. The writer of this note can not improve upon a sentence which has been used by Professor Vaughn MacCaughy in writing of this "Natural History of Hawaii": "It is a great guide book to the life of the tropical Pacific; it is encyclopedic in its wealth and precision of detail, and philosophic in its breadth of treatment."

L. O. HOWARD

*Exercise in Education and Medicine.* By R. TAIT MCKENZIE, B.A., M.D. Second Edition. W. B. Saunders Company. 1915.

Muscular exercise has played an important part in man's history whether considered from the standpoint of his health, growth and physical development, or his achievements and progress in civilization. As a branch of science, the application of exercise in education and medicine is in its infancy. The extravagant claims of dabblers and charlatans have done much to confuse the real issues and to retard progress.

Dr. McKenzie has made a valuable contribution to the subject by bringing together in this volume all the available material representing the present status of our knowledge concerning the application of muscular exercise in education and medicine. Since the appearance of the first edition four years ago, this book has been the chief reference work on the subject of exercise. The second edition has been completely revised and enlarged to include all the new material which represents the considerable progress made in the subject during the past four years.

The first chapter contains splendid definitions and a new classification of exercises of speed, effort and endurance. Chapters two to six are devoted to physiology of exercise; they contain the results of laboratory and clinical findings on the behavior of the muscles, heart, lungs, the organs of nutrition and excretion, and the nervous system during and after different forms of exercise; also, modifications produced by differences in age, sex and occupation.

The two chapters devoted to the effects of violent exercise on the heart are of particular interest at this time when the subject is the cause of widespread discussion by physicians, and educators, and giving much concern to the parents of boys and young men interested in athletics. After reviewing the literature on the subject and citing a number of cases from his own wide experience, Dr. McKenzie arrives at the following conclusion: "After the most severe strain one can seldom find any measurable injury in a week's time in a heart originally sound if the athlete has not passed thirty. It is in those unprepared for violent exercise, and especially when approaching middle life, that the danger of heart strain is most imminent."

A classification of athletic and gymnastic exercises and games on the basis of the regions of the body used; the demand on nerve control; the influence on pulse, blood pressure, and respiration; the physical characteristics cultivated; and the best age for practise should prove of great value to the individual and the practitioner in solving the problem of exercise for the sedentary man.

The remaining eleven chapters in Part I. treat in detail of the various systems of physical education in different countries, physical education and athletics in schools, colleges, municipal and philanthropic institutions, and the special methods applied to the training of the blind, deaf mute, and mental and moral defectives.

In Part II., the first three chapters treat of the application of exercise, massage, vibration, and passive exercise to pathological conditions. The remaining thirteen chapters deal with the treatment by exercise of flat-foot, club-foot,

round back, stooped and uneven shoulders, scoliosis, abdominal weakness and hernia, visceroptosis and constipation, diseases of the respiratory and circulatory organs, obesity, nerve pain and exhaustion, tic, stammering, chorea, infantile paralysis and locomotor ataxia.

The author has succeeded admirably in presenting clearly the methods of diagnosis and treatment of the various abnormal conditions which may be improved or corrected by exercise, manipulation and massage. The critical discussion of the various methods advocated for the treatment of hernia, scoliosis, diseases of the circulatory and respiratory organs, and obesity, is particularly valuable because of the author's long and successful experience in the treatment of these conditions.

A large number of diagrams, line drawings and photographs illustrating physical defects, exercises and equipment add materially to the value of the book. This book fairly represents the present status of physical education and mechano-therapy; its use as a guide and reference work by educators, teachers, physicians and other scientists interested in the physical development and improvement of man should aid materially in placing exercise on a scientific basis.

GEORGE L. MEYLAN

COLUMBIA UNIVERSITY

*Electrical Engineering.* By CHARLES PROTEUS STEINMETZ. Fourth edition. Entirely revised and reset. 368 pp., 194 illustrations. McGraw-Hill Book Co.

Since the appearance in 1901 of Steinmetz's "Theoretical Elements of Electrical Engineering" the art of electrical engineering has progressed so rapidly that four editions of the book have been necessary to keep it up to date. The present edition is not merely a reprint from former ones but has been thoroughly revised and rewritten. Some matter which appeared in former editions has been withdrawn and new matter has been added with the idea of preserving the unity of the book and at the same time making it representative of theory and practise as it exists to-day.

The text is divided into two parts, the first