these, supplemented by intelligent action, will circumvent, to a large extent, any lasting damage from even extreme boreal conditions.

A. J. MITCHELL JACKSONVILLE, FLORIDA

SCIENTIFIC BOOKS

The Life of Ellen H. Richards. By CAROLINE L. HUNT. Boston: Whitcomb and Barrows. 1912. Pp. xiv + 329.

It is seldom that a biographer is confronted with a more difficult task than that of bringing together in moderate compass a record of a life of such unremitting, aggressive and varied activity as that of Ellen Henrietta Richards. In this instance, however, both author and publishers have been inspired by warm, personal friendship to prepare a memorial which should give worthy expression to the ideals, purposes and deeds of this most remarkable woman, and the outcome is a volume which will gratify the legions of those who, because of personal contact or helpful inspiration, will always count Mrs. Richards among their friends.

The preparation of this memorial volume was undertaken, at the request of Professor R. H. Richards, through the cooperative efforts of a committee of nine of Mrs. Richards's intimate associates. They have gathered materials from many sources, including family records, letters from classmates, college associates, graduates and former students of the Massachusetts Institute of Technology, friends in all walks of life, and from the officers and records of the many organizations in whose activities she took a leading part. From this material Miss Hunt has prepared a most readable and interesting narrative. This she has subdivided into sketches, in separate chapters, relating, respectively, to Mrs. Richards's childhood, girlhood, college life (two chapters), her experiences as a student of chemistry, her laboratory work, her home life, her association with the Woman's Laboratory, her teaching by correspondence, the beginnings of euthenics, her work among and for college women, her activity as a missionary of science, her journeyings, her activities in connection with the Lake Placid Conference, and with the Home Economics Movement. The remaining two chapters of the book deal with the enlarged influence of the last years of her life and the fortunate perpetuation of that influence in the future through the continuation of the helpful activities which she organized and inspired, and which others are now maintaining with enthusiasm.

It is obviously too early to estimate accurately the full measure of what Mrs. Richards accomplished, but this disadvantage is more than offset by the opportunity to obtain accurate information at first hand from many reliable sources, and by the enthusiastic zeal of so many to do honor to the memory of one who had so recently been to them a source of inspiration and help.

Even to those most closely associated with Mrs. Richards, who witnessed her untiring energy and devotion to her work and her ideals, the story of her life, as told in this volume, must excite renewed wonder and respect. It is a singular record of severe and often disheartening obstacles overcome by patient purpose and ceaseless effort, inspired and supported by a breadth of thought and outlook which was distinctly in advance of the period in which she was working. This is strikingly true of her girlhood and young womanhood, where she was a pioneer in her undertakings with respect both to her own education and development and that of her fellow-women; and it is hardly less true of the work of her later years for the improvement of life in the community, and especially in the home. Her viewpoint had much in common with that which in other fields leads to the inception of large engineering operations of wide significance. Whether as teacher, investigator, organizer, missionary, companion or friend, her efforts were essentially constructive, and, while the results may lack something of the tangible permanence and glory which belong to the creations of the engineer, they are none the less abiding and real. It is a pleasure to note that two memorial funds, the proceeds of one of which is to be used for the endowment of research

along those lines of the chemistry of sanitation in which she was interested, and the other to be used in the interests of Home Economics, are already of considerable size, and, if still further supported, will do much to perpetuate her life work.

If the zeal of the biographer has occasionally (though seldom) led to the use of ultra-superlatives, it is far more frequently true that, in the compass of such a work as this, it has been impossible to do full justice to her attainments in so many fields. The volume is amply illustrated (the frontispiece being a most excellent photograph of Mrs. Richards, taken near the close of her life) and it can hardly fail to be a source of gratification to all concerned with its preparation. It is a book which should be widely read and from which much pleasure and profit is sure to be derived.

H. P. Talbot

The Examination of Prospects. A Mining Geology. By C. Godfrey Gunther. New York, McGraw-Hill Book Company.

This book, which is attractively bound in flexible leather as a pocket manual of 221 pages, presents the practical side of the geology of metalliferous ores, excepting iron and placers. Sound advice is given on the procedure of the examination and sampling of mines, and especial attention is devoted to the outcrops and structural features of ore deposits.

The writer states at the outset that a great proportion of the deposits having outcrops of commercial grade or of evident promise have already been recognized and explored. Rich discoveries at the surface belong to pioneer days, and as time goes on the more important developments are the result of lower working costs, improved metallurgical processes, and of an increasing knowledge of economic geology. As engineers in search of developed mines no longer expect to find properties having positive ore of greater net value than the price asked, so those in search of prospects should not expect to find proved ore-shoots awaiting their recommendation. There is usually local capital for the preliminary development of a patently good prospect, and most of these are steadily worked from the time of their discovery until some apparently unfavorable development shuts off the supply of local capital. These statements recall one frequently heard that "all mines are poor at the bottom." The basis is partly geological and partly psychological, for men seldom stop digging when in bonanza. A great majority of prospects have been examined again and again, presumably by men who commanded a knowledge of sampling, the services of an assayer, and at least an elementary knowledge of geology. In order to pick a good prospect from those rejected by his predecessors, therefore, an engineer must base his hope of success upon superior geological training.

Although the author does not attempt a genetic classification of ores, he does present in a logical and effective manner a mass of carefully chosen and ably digested material.

The treatment of the superficial alteration of ore deposits and the secondary enrichment of copper, silver and gold ores is concise and clear; but in view of Stokes's experiments in the solution of gold in ferric salts, the statement that gold is dissolved in solutions of ferric hydrate would seem to demand experimental proof. Numerous examples are cited of changes in value and character that have been noted as ore lodes are followed in depth. The many text figures, which are well chosen and well executed, add greatly to the attractiveness and value of the volume, and both the author and publisher are to be congratulated on its appearance.

W. H. Emmons

Minneapolis

SPECIAL ARTICLES

NOTE ON THE DEVELOPMENT OF AMPHIBIAN LARVÆ IN SEA-WATER

That the amphibia are poisoned by common salt, and hence geographically restricted to regions free from this substance, is a general belief, apparently so well supported by observa-