pipes, and of preventing corrosion from electrolysis are well discussed. Pumping systems are treated more fully than usual; this is a step in the right direction, since about 75 per cent. of the water works of the United States are operated by this method, the gravity systems being largely confined to the large towns on the Atlantic and Pacific States. The growing importance of water-supply engineering may be clearly recognized from the fact that the number of water works in the United States in 1898 was about 1600, while in 1897, it was about 3200. The book is well illustrated, clearly written, and will be a valuable aid to all who are planning or operating public water supplies.

The increasing interest in securing purity of water-supplies is not only evidenced by the circumstance that the book of Mr. Hazen has reached its third edition in less than four years, but also by the construction of sand filter beds at seventeen American towns and cities in the last decade. During the same period more than one hundred others have installed mechanical filtration plants. No fact in sanitary engineering is, indeed, more fully established than that the death rate from typhoid fever is materially lowered by filtration, and the present interest of the public gives hope that the time is not far distant when the cities of the United States may take rank with London, Berlin, Vienna, and Amsterdam in freedom from that disease. Mr. Hazen is a high authority on this subject, and, although an advocate of the system of slow filtration through sand beds, his book treats also of the more rapid system of mechanical filters, which in many cases may be installed at less expense. The present edition gives the results of the recent experiments at Louisville, Pittsburg, and Cincinnati, and also valuable information regarding the filter beds of several European cities. Statistics of both systems of filtration are presented in tabular form. These show that the slow sand system is used by cities having an aggregate population of 21,400,000, of of which 10,200,000 are in Great Britain and 260,000 in the United States. The aggregate population using mechanical filters in the United States and Canada is nearly 1,600,000, while this system is practically unemployed in other countries. At the present time only about one-tenth of the cities and towns of the United States have filtered water supplies. The book of Mr. Hazen, as well as the large plant recently built at Albany, N. Y., under his supervision, will have much influence in inducing other cities to inaugurate effective methods for the purification of their water supplies.

MANSFIELD MERRIMAN.

California Mines and Minerals. Published by the California Miners' Association, under the direction of EDWARD H. BENJAMIN, Secretary for the California Meeting of the American Institute of Mining Engineers. San Francisco, Calif. 1899. Vol. 8. Pp. 450.

This treatise upon the mines and mining of California is dedicated to the members of the American Institute of Mining Engineers 'as a souvenir of their visit to California' in September and October, 1899; but it is a vastly more important and valuable work than the usual 'souvenir.' It constitutes a very valuable treatise upon the great industry to which it is devoted and is full of important information, valuable historical facts and industrial statistics. It is a large volume, handsomely printed, extensively and well illustrated, well made and substantially bound. Its market value is stated to be five dollars and the munificence of the Californian is well exhibited in the fact that a copy was supplied to every member of the visiting Society.

The contents consist of thirty-five papers by well-informed writers and often the ablest in their respective departments. In these chapters are described the topography, geology and mineral deposits of the various mining counties of the State, the methods of working, the statistics of production, and the special conditions of exploitation and development of the more interesting fields, especially those in which the precious metals are produced in largest quantity. Regarding the most important products, gold and silver, copper, borax, bituminous and asphaltic rock, quicksilver, and petroleum, the ground is remarkably well covered. We note that the output of silver has less value than that of petroleum and that quicksilver has fifty per cent. larger value than the former.

Numerous half-tone and other illustrations, maps and tables of statistics aid the reader in obtaining a most satisfactory understanding of the extent and importance of the mining industries of California.

R. H. T.

BOOKS RECEIVED.

Richter's Organic Chemistry. Edited by PROFESSOR R. ANSCHÜTZ. Translated by EDGAR F. SMITH. Third American Edition. Philadelphia, P. Blakiston's Son & Co. 1900. Vol. II., pp. vi + 671. $3.00.

Malay Magic. WALTER WILLIAM SKEAT. With preface by C. O. BLAGDEN. London and New York, The Macmillan Company. 1900. Pp. xiv + 665. $6.50.

Lessons in Elementary Physiology. THOMAS H. HUXLEY. Edited by FREDERIC S. LEE. New York and London. 1900. Pp. xvi + 577.

The Teaching of Elementary Mathematics. DAVID E. SMITH. New York and London, The Macmillan Company. 1900. Pp. xv + 312. $1.00.

SCIENTIFIC JOURNALS AND ARTICLES.

The Plant World for February has for its leading article 'Notes on the Edible Berries of Alaska,' by Walter H. Evans, who states that they are of wonderful abundance and variety. John M. Coulter treats of the 'Geograpical Distribution of Conifers,' Byron D. Halsted presents a note on 'Coloration of Leaf for Seed Distribution,' and K. C. Davis discusses the 'Wild and Garden Pæonies in America.' Mrs. Caroline A. Creevey continues her series of articles on 'Plant Juices and their Commercial Values,' amber, copal and turpentine being among those discussed in this number. The Supplement on 'The Families of Flowering Plants' contains the Ginkgoales, the Pinaceæ and the Taxaceæ.

SOCIETIES AND ACADEMIES.

GEOLOGICAL SOCIETY OF WASHINGTON.

THE 97th regular meeting was held at the Cosmos Club, February 14, 1900.

Under informal communications, Mr. Bailey Willis stated that a diamond drill hole at The Dalles, on the Columbia River, had reached a depth of 916 feet and had penetrated several flows of Columbia basalt, distinguished by layers of clay and by differences of texture. No exact section has been kept. A piece of core from 916 feet in depth is shown by examination in thin section to be basalt. The object of the boring, which is a private enterprise, is to prospect for coal.

Mr. H. W. Turner proposed the adoption and use of the term *Sierran*, originally suggested by Professor Le Conte, to distinguish the erosion interval of the early Pleistocene. The actuality and importance of this early Pleistocene erosion were illustrated with reference to the eastern slope of the Sierra Nevada. It was shown that the *Sierran* cañons had in some cases been occupied by lava flows upon which the moraines of Glacial time are resting.

The following papers were presented on the regular program:

(1) 'A peculiar Clastic Dike and its Associated Ore Deposits,' by Mr. F. L. Ransome. This dike is exposed in the workings of the Wedge and Bachelor mines, near Ouray, Colorado. It fills a normal fault-fissure, of small throw, cutting nearly horizontal beds of sandstone and shale. The filling material came from above, and is largely composed of flakes of black shale, derived from a bed which is traversed by the fissure, but which limit the upward extension of the dike. This material was subsequently forced by pressure into all the branches of the fissure and has the form of an eruptive dike. It has been explored to a depth of 630 feet and has an average width of 2 or 3 feet. The ore, which is an argentiferous tetrahedrite, or freibergite, occurs alongside of, or in the dike, in spaces opened by later movements. These have been in part bedding faults, which have dislocated the dike along nearly horizontal planes.

(2) 'Wood River Mining District, Idaho,' by Mr. Waldemar Lindgren. The silver-lead mines of Wood River are located in southern central Idaho, some 50 miles north of Snake River. The geological formations consist of a sharply folded series of Paleozoic, probably very largely Carboniferous, sediments consisting of limestones, quartzites, and slates. Imperfect fossils indicating Upper Carboniferous were found in it at two localities. The large granite area of southern Idaho abuts against the sedimentary