upon a mass of insignificant experiments in mechanics. This book is decidedly the best setting forth of the best collection of experiments for secondary school work which I have been able to obtain. From the contents it will be seen how well the choice of experiments in the various subjects has been made: General and mechanics, 14 heads; sound, 2; heat, 6; light, 7; and electricity and magnetism, 9. Or by pages: General and mechanics, 100; sound, 12; heat, 30; light, 32; electricity, 55.

The general instructions are very good and well presented. The line illustrations are thoroughly satisfactory; they have been made for this book and are not reproductions of hackneyed and inapplicable cuts from other texts. To be commended are also the outline tables and suggestions for making the records in the note book. In fact there is so little to find fault with in the book that the little may be ignored.

The book is its own evidence of the practical work the author has been doing in his schools and is at once a guide and a standard for other teachers. The book should be in every laboratory where physics is taught.

W. HALLOCK.

An Inquiry into the Conditions relating to the Water Supply of the City of New York. By the Merchants' Association of New York. Copyright by The Merchants' Association, 1900. Published by the Association at its office, New York Life Building, New York City. 1900. 8vo. Cloth. Pp. xxxix + 627.

This large and well-filled volume is perhaps the most important technical municipal document ever issued from our modern press, either public or private. It presents the results of very complete study of the problem of water supply to the City of New York, made by a committee of experts of national and international reputation, under the direction of the Merchants' Association of that city. It was conducted purely as a matter of patriotism and public spirit, especially for the purpose of securing a reliable and useful collection of facts and data with which to throw light upon the great municipal question raised by the famous Ramapo contract. It is important in itself as giving an enormous amount of essential information, and hardly less so as illustrating a degree of public spirit and an extent of intelligent research relating to scientific and technical questions such as, perhaps, was never before seen as the product of a patriotic spirit in municipal affairs. The Association expended $33,000 in the work, and its officers and aids gave their services; even the experts in law, engineering and other departments giving their services to the value of tens of thousands of dollars and conducting investigations of very great extent and of immense value without charge. The costs incurred were defrayed by individuals who voluntarily advanced the money, and only about one-third of the total had been received from subscriptions at the date of the publication of the reports. The public spirit of the average citizen of New York is as remarkable for its diminutiveness as is that of a few individuals for liberality and self-sacrifice.

Thirty-three men of distinction in their several professions constituted the General Committee, and such men as Messrs. Bannin and Deming, Professor Goodnow, and Mr. LeGendre were on the Executive Committee; Messrs. Clarke, Hering, North, Stauffer, Prout, Bowker, Towne, Dresser, Olcott and Haines constituted the Engineering Committee and Deming, Sterne, Hinrichs, Dr. Edson, Fowler, Albert Shaw, Schiff, Maltbie and Mayo-Smith that on Finance and Public Policy. The Counsel were Messrs Dill, Peckham, McCurdy and Conklin. Mr. James H. Fuertes was employed to report on 'Sources of Future Supply' and valuable reports were obtained from Mr. Rafter on the 'Adirondack Supply,' Mr. Croes on 'Past and Present Supply,' from Mr. Crowell on 'Auxiliary Salt Water Supply,' and from Mr. Ward on 'Pumping Stations and Water Distribution.' Mr. Coler, the Comptroller, gave the committee most valuable assistance. The engineering, legal and commercial lines of business were thus well represented, and it is doubtful if any private enterprise could have brought together such an array of professional talent or secured so complete and useful a study of the situation and its demands.

The gist of the matter is that New York

needs to begin immediately preparations for extension of its water-supply on an enormous scale, if it is to be permitted to grow and to remain a safe and wholesome place of residence and a great business center. This fact has been pointed out by authority frequently and for years past, but no action has been taken by the usually inefficient city government. The supply immediately available will be exhausted in 1903, at present rates of impairment of margin, and by 1910 if the best methods are at once adopted to reduce wastes to a minimum.

The region of the Housatonic cannot be relied upon, it being outside the jurisdiction of the State. The Hudson may be availed of by establishing pumping stations well up the river and securing any needed filtration and purification. A supply from the Adirondacks would cost ten per cent. more but would be pure, or might be made so.

The Ramapo 'job' is discussed. The contract was to compel the City of New York to pay *seventy* dollars a million gallons for water which is now, and can in any quantity later, be had for *thirty* and less. The contract was to continue in force for forty years, and the property then still to remain in the hands of the company. By 1937, were the city to do its own work, its whole system would be paid for, principal and interest. Under municipal ownership there would be a cash profit over the contract work up to 1945 of nearly *fifty millions of dollars*. Under the Ramapo contract there would be a net *loss* of sixty millions and the total difference in favor of the City of New York would be *over one hundred millions of dollars*.

What wonder that the Ramapo scheme was so urgently and insidiously promoted!

The conclusions of the Committee are that no contract should be made with the Ramapo or other private parties; that supply by contract should be opposed by citizens of New York, individually, collectively and in their corporate capacity, with the utmost energy of which they are capable and by every possible means; that the Legislature should give the city power, if further authority is needed, to provide itself with a full supply of pure water, by condemnation as far as required, and should protect the city against further assault by individuals, corporations or traitorous officials. Steps should be at once taken to check all wastes and to provide for a constant and large increase in the supply of wholesome water.

This report is exceptionally important and every citizen of city or State should secure the opportunity to read it from beginning to end. Every good citizen will be glad to give credit to the few intelligent, enterprising and liberal citizens who have here struck hands in the endeavor to protect this national metropolis from possible piracy in view of the proven stupidity and worse of many of its own officials and of other political leeches.

R. H. Thurston.

GENERAL.

Professor William B. Scott, of Princeton University, has in preparation an elaborate work in seven volumes entitled 'Reports on the Princeton Expedition to Patagonia in 1899.' The work, which it is estimated will cost over $25,000, will be published by Nägeli, in Germany, but arrangements have not yet been made with an American publisher. The edition will be limited to about 500 sets, and the cost of the seven volumes, which will be subdivided into separate books, will be about $100. It is expected that the volume on invertebrate fossils by Dr. Ortman will be published early next year. The subjects of the volumes and the authors are as follows:

Volume I.—'Botany,' principally by Professor George Macloskie, of the department of biology, of Princeton. The 'Contributions on the subject of Mosses,' by Professor Dusen, of Sweden.

Volume II.—'Recent Mammals,' by Dr. Merriman, of the Department of Agriculture in Washington.

Volume III.—'Birds,' by Professor William E. D. Scott, of Princeton.

Volume IV.—'Zoology of the other groups,' by Dr. Ortman, curator of invertebrate paleontology in Princeton, and Dr. Rankin, of the department of biology of the University.

Volume V.—'Invertebrate Fossils,' principally by Dr. Ortman.

Volumes VI. and VII.—'Vertebrate Fossils,' principally by Professor William B. Scott, of Princeton, with contributions by Mr. Hatcher.

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