of physics will find this book an extremely valuable aid, and full of suggestions. The chapters on other forms of heat-engines besides the ordinary steam-engine tend to make the subject more interesting, and place in the hands of the teacher a vast amount of important information.

The Elements of Qualitative Analysis. By WILLIAM A. NOYES. Terre Haute, Ind., Moore & Lanzen. 12°.

PROFESSOR NOYES'S little book on qualitative chemical analysis is a very brief and highly condensed account of ordinary modes of proceeding in qualitative analysis of a simple kind, and the reasons therefor. Of the properties of the elements considered, only such are discussed as are immediately applicable to the scheme of analysis, though the deficiency in this respect is supplied to a certain extent in the table of re-actions, for which the author acknowledges indebtedness to Biedermann's 'Chemiker-Kalender' for 1887. Of course, such a book may serve profitably as the foundation merely, upon which the judicious instructor erects the superstructure of his teaching, and for such use it will doubtless find place. It is clearly written and well arranged.

Elements of Modern Chemistry. By ADOLPHE WURTZ. 3d Amer. ed. Tr. and ed. by W. H. GREENE. Philadelphia, Lippincott. 12°.

THE appearance of the third American edition of this well-known and excellent text-book bears witness to its popularity. The present edition is based upon the fifth French edition, and is brought well down to date.

Quantitative Chemical Analysis by Electrolysis. According to original methods, by DR. ALEXANDER CLASSEN. Tr. by WILLIAM H. HERRICK. New York, Wiley. 8°.

IT is perhaps not unnatural that an author who is also an investigator should attribute to methods of his own finding greater importance than he is inclined to yield to the devices of others. Upon some such presumption only does it seem possible to explain the presence of the phrase 'according to original methods' upon the titlepage of Professor Classen's book. Scarcely more than half the fundamental methods of electrolytical analysis which are described or referred to are the author's own; and even in the schemes for the separation of elements, and in the special applications, where the original methods are employed to the utmost possible extent (and sometimes, it is to be feared, to the exclusion of more suitable ones), recourse has been had in fully a fourth of the cases discussed to the processes of others. For many years a few electrolytical methods have held high rank, and justly, among precise analytical processes, and recently the number of such has increased. To note that these are recognized (though too scantily) in the text, if not on the titlepage, is gratifying. Professor Classen has rendered great and undoubted service to analytical chemistry in arousing and directing attention to the uses of electricity in chemical analysis; but stress of severe experience (to detail which would be out of place here) compels the suggestion with reference to some, at least, of the 'original methods' that, before applying them in work demanding close accuracy of results, to scrutunize carefully and test by experiment is the part of wisdom.

Elementary Trigonometry. By T. ROACH. Oxford, Clarendon Pr. 12°.

THIS work on elementary trigonometry is the result of many years' experience in teaching the subject, both as assistant master in Repton School and as a private tutor. The book-work is divided into short portions, and at the end of each portion is introduced a set of examples illustrating the point just taught. The total number of examples in the text is more than a thousand, and to these is added a graduated collection of two hundred miscellaneous questions. The author expresses a hope to include a collection of more difficult questions on the same part of the subject in a subsequent work on higher trigonometry. At the end of the book is given a collection of papers recently set in some of the principal examinations in England, in which a knowledge of elementary trigonometry is required.

NOTES AND NEWS.

THE interior department of Canada has received advices from the exploratory survey party sent to northern British Columbia, near the Alaska boundary-line. Dr. Dawson, who is in charge, will return to Ottawa before winter sets in. The other section of the expedition, under the direction of Mr. Ogilvie, has been gathering general information regarding the country, and making a general survey. Considerable data have been gathered regarding the disputed boundary-line between the Dominion and Alaska. This, when completed, will be transmitted to Ottawa, when diplomacy will settle the boundary question. Mr. Ogilvie proposed to winter near Fort Reliance, a point about one thousand miles north of Victoria. After obtaining more men, he will endeavor to penetrate across country as far north as the mouth of the Mackenzie. His proposal to increase his party is simply a precautionary measure, as he was informed that the Eskimos on the Arctic slopes are very troublesome. He will start for home by another route, ascending the Mackenzie River, and entering civilization in the North-west Territory. He expects to reach Ottawa next fall.

— The Canadian Government is making an effort to settle the troubles at Metlakahtla, which were mentioned in the last number of *Science*. Mr. A. Vankoughnet, deputy minister of Indian affairs, left on Oct. 4 for British Columbia. He has been intrusted with the task of investigating the troubles among the Metlakahtla Indians, who are removing to Alaska. Bishop Sillitoe of New Westminster, British Columbia, has for the past week been the guest of Sir John A. Macdonald, the Canadian premier. It is understood that he visited Ottawa specially to urge the government to back down with the hope of persuading the Indians to remain on British soil.

— The Nautical Society of Hamburg has offered a prize of 500 marks for the best essay on the subject of calming the sea by the use of oil. An exhaustive description of experiments of the effect of oil made up to the present time is required; also a criticism of the arrangements used so far, and especially complete directions for its use by large steamers and sailing-vessels, as well as small vessels, — pilot, fishing, and life-saving boats, — besides directions for the use of oil at sea and near the coast. The essays are to be written in English or German, and sent before Nov. 1, 1887, to the president of the Nautical Society, director of the Navigation School, Capt. F. E. Matthiesen, Hamburg. Competition is not limited by nationality.

— According to *Nature*, the Syndics of the Cambridge University Press will publish early in October two works on elementary chemistry. One, intended as a companion to lecture-work, is by Mr. Pattison Muir and Dr. Charles Slater: the other, intended to be used along with the book already mentioned, is a course of laboratory work by Mr. Pattison Muir and Mr. Carnegie. Both books deal with the subject of elementary chemistry in a manner somewhat different from that usually adopted in text-books.

— Bulletin No. 35 of the United States Geological Survey, on the physical properties of the iron carburets, by Carl Barus and Vincent Strouhal, is a continuation of the work published in Nos. 14 and 27, and the investigation is still incomplete. This contribution is devoted to the internal structure of tempered steel, and the color-effect produced by slow oxidation of iron carburets. Bulletin No. 36, on the subsidence of fine solid particles in liquids, by Carl Barus, has a more obvious bearing on the proper work of the Geological Survey, since this and kindred investigations have already thrown much light upon the process of sedimentation.

— The 'Digest of the International Law of the United States,' which has been prepared by Dr. Francis Wharton and issued from the government printing-office in three volumes, is a splendid work. The able editor has brought together a most valuable collection of material, and arranged it in excellent order. This work will long remain our standard reference-book on topics of international law.

— The number of steamers existing in the world last year is estimated, says the *Journal of the Society of Arts*, at 9,969, of an aggregate burthen of 10,531,843 tons. The corresponding number of steamers existing in the world in 1885 was estimated at 9,642, of an aggregate burthen of 10,291,241 tons. The total of 9,969 steamers, representing the world's steam-shipping in 1886, was made up as follows: iron steamers, 8,198, of an aggregate burthen of 8,911,406 tons; steel steamers, 770, of an aggregate burthen of 1,206,962