be sent to all persons who have been enrolled as members of the Congress.

H. W. WILEY,
Chairman of American Committee.
U. S. DEPARTMENT OF AGRICULTURE.

ELIZABETH THOMPSON SCIENCE FUND.

ON February 14th last, at the twenty-third meeting of the Board of Trustees, the following new grants were made:

No. 79. $250 to Professor Gustav Hüfner, Tübingen, Germany, for the investigation of hæmin and hæmatine. Application No. 743.

No. 80. $288 to Professor Carlo Bonacini, Modena, Italy, for researches in color photography. Application No. 741.

No. 81. $250 to Professor John Milne, Newport, I. W., England, to aid in a seismic survey of the world. Application No. 750.

Signed:

CHARLES S. MINOT,
Secretary.

SCIENTIFIC LITERATURE.

Text-book of Physical Chemistry. By CLARENCE L. SPEYERS, Associate Professor of Chemistry, Rutgers College. New York, D. Van Nostrand Company. 1897. 8vo. Pp. vii + 224. Price, $2.25.

"I have adopted the view that matter is a collection of energies in space, considering the relations of the energies to be the prime object of investigation. With Ostwald, I feel confident that the materialistic interpretation has passed its prime and has no promise in the future. Still, as this is a text-book, I give the prominent materialistic views of the present time."

These words, taken from the author's preface, make frank avowal of his scientific creed and indicate the point of view from which he proposes to discuss his subject.

Physical chemistry he defines as 'the science which has for its object the investigation of chemical changes by physical methods.' Concerning matter he says: "That which *seems* to cause a direct excitement of our senses we usually call matter." The italics are in the original. And again, "* * * we can define the different forms of matter as collections of forms of energy in space. This definition is free from any speculation; it rests on experimental evidence alone."

Speaking of the seventy-five elements, or, as he terms them, 'collections which do not separate into other collections,' the author says: "We cannot, however, believe that all the seventy-five collections will ultimately be reduced to one or more single separate forms of energy, because in that case we should have nothing left to account for the collection of forms of energy in space. We need energy and a something to enable energy to collect in space before we get a material substance. This something which enables, and perhaps causes, the energy to collect in space we shall call matter. The dissimilarity in the innumerable substances known to us come from the differences in the natures and proportions of the forms of energy collected in space."

Quotation from the work has been made at such length, because, by so doing, the peculiar attitude of its author towards matter and energy could be most clearly depicted.

Undoubtedly in close sympathy with the 'ultra-dynamists,' he nevertheless does not seem wholly prepared to abandon entirely the idea of matter, matter, that 'something which enables, and perhaps causes, the energy to collect in space.'

The topics considered in this volume are: some general remarks on energy, gases, heat, physical changes, equilibrium, chemical kinetics, phases, electro-chemistry, ions.

The order in which these themes are presented appears, to a certain extent, haphazard, as if selected at random. For instance, in spite of the author's introductory lines to his final chapter: "In these last pages we consider some properties of the ions which do not seem to fit in elsewhere," it seems difficult to understand why these properties, alluded to here, were not discussed in connection with the rest of the subject which received full and deliberate treatment in the preceding chapter on electro-chemistry.

As to the manner of treatment accorded to various themes, this may be but the natural outcome of the policy pursued by the author, who in his preface states that he has not attempted to give an historical development of

any subject, but has presented the same "in what I thought the clearest way, sometimes adopting one person's view in one part of the subject, another's view in another part, and, perhaps, my own in still another part."

While this method of procedure unquestionably endows the book with an individuality all its own, the wisdom of adopting such a course, especially in a book intended for 'self-instruction * * * as well as for class-room use,' may well be gravely questioned.

The language employed is, as a rule, clear and to the point, if, at times, unconventional. In some instances, however, the author's meaning is not readily gathered from his statements. Thus, note the second sentence of the following paragraph (p. 61): "There is another way of getting at the molecular weight, which we shall merely state. The theoretical relations are too physical to justify attention in this book." The calculus is freely used in the discussion and elucidation of formulæ and equations; the numerous problems and examples found throughout the book form a valuable feature. Typography and paper are excellent.

The author certainly does not lack confidence in his own judgment and evidently has the courage of his convictions. Thus he says (p. 177): "But in chemical action we meet only heat, light, electricity, mechanical energy or some other well-known energy. So the assumption of chemical energy is strictly gratuitous and not to be advised at all."

The kinetic theory of gases seems to have incurred his special displeasure. He writes (p. 20): "The kinetic theory is a troublesome thing and is becoming an object of ridicule. It has never directed the chemist to any new discovery or idea, unless it may be Van der Waal's theory, and that would probably have come any way." And again (p. 22), in referring to Van der Waal's theory: "Originally derived from the kinetic theory of gases, it has nevertheless none of the absurdities of that theory and will not fall with it."

Contrast with this the words of Sir William Thomson on the same theory ('Popular Lectures and Addresses,' Nature Series, Vol. I., p. 226): "A little later we have Daniel Bernouillis' promulgation of what we now accept as a surest article of scientific faith—the kinetic theory of gases."

Evidently the views of Lord Kelvin will have to undergo a radical change if they are to conform to those of our author.

Ferdinand G. Wiechmann.

Bibliography of the Metals of the Platinum Group, 1748–1896. James Lewis Howe. Published by the Smithsonian Institution. 1897. Pp. 318.

Professor Jas. Lewis Howe, whose initials are familiar to all who read the well selected 'Notes on Inorganic Chemistry' contributed to Science, has placed chemists under a debt of gratitude by a carefully edited volume with the above title. It forms an index to the literature of platinum, palladium, iridium, rhodium, osmium and ruthenium from 1748 to 1896; so extensive is this literature that the list of references occupies no less than 266 closely printed octavo pages. The plan is a slight modification in style of that first followed in the 'Index to the Literature of Uranium,' printed in 1870 by the present writer. Professor Howe has taken great pains to make the work complete at every point; he gives the titles of the one hundred periodicals examined, indicating by asterisks the complete sets, and at the end of the book a classified subject-index and an alphabetical author-index fill over fifty pages. In a series of references to articles dealing with a given topic the reference to the original paper is placed first. So thoroughly has the author ransacked chemical literature that he has probably overlooked very few references to the metals named. Chloroplatinates of organic bases are considered only in the case of those early formed.

To facilitate the use of the indexes the number of each title includes the year; the abbreviations used are chiefly those recommended in 1887 by the Committee on Indexing Chemical Literature of the American Association for the Advancement of Science; and the spelling of chemical terms conforms to the rules adopted in 1892 by the same Association.

For the publication of this valuable bibliography the chemical world is indebted to the Smithsonian Institution; it forms No. 1,084 of the Smithsonian Miscellaneous Collections.