

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