Der Wert der Wissenschaft. Von HENRI POINCARÉ. Uebertragen von E. WEBER, mit Anmerkungen und Zusätzen von H. WEBER. Zweite Auflage mit einem Vorwort des Verfassers. Leipzig, Teubner, 1910. 8vo. viii + 251 pages. 3 Marks.

THIS edition of the second volume in Poincaré's series of three volumes dealing with the fundamental concepts of science appeared after the book had reached its fourteenth thousand in the French editions. This fact indicates the widespread interest which it inspired. The masterly way in which the real significance of scientific facts and theories is brought out, and that which is permanent and abiding in the shifting lights of the new discoveries of science made evident, appeals to every philosophic mind.

This particular edition is enriched with a preface by Poincaré, in which he considers the service that industrial science renders to pure science. After speaking of the amazement of the multitude that the truth of today in science becomes so easily the error on tomorrow, and their consequent belief that the discoveries of science are after all of less significance than we suppose, he continues thus:

"And I am not speaking here of those abstract truths that have become so general that they have lost all precise significance; truths spelled in capitals and a source of wonder, but of whose meaning we can say nothing. The permanent truths of science are the facts, not only the crude facts but also the true relations between the facts; what changes is the language in which the facts are expressed; the mode of expression changes because on the old facts falls the light reflected by the new, which are discovered every instant and which must be expressed as well as one can, not only in their own light but in the significance of the illumination from many sources.

"Happily science is needed for its applications, and this fact silences the sceptic. If he desires to use some new discovery and convinces himself that it is a success, he must indeed admit that there is more there than an idle dream. Thus we perceive the blessing in the development of industry.

"I do not wish to say that science is made for its application, far from it; one must love it for its own sake; but the recognition of its uses protects us from the sceptic.

"And then too the enemies of science produce another argument: they observe that many discoveries are made by

men of no great education; that the learned receive these discoveries at first with shrugs of the shoulders, and prove that there is nothing in them; but after the discoverer has persevered, and even come to success through a kind of contempt for science, then the learned demonstrate the possibility of success.

"And it is often partially true; bold undertakings are frequently due to those who are free from dizziness, and to prevent dizziness one must not see too clearly. Of these adventurers only the successful are counted, not those who break their necks.

"Not the less true is it that modern industrial development, considered as a whole, would have been impossible but for the advance of science. The unlearned live daily in an environment created by science, and unconsciously receive the benefit. It is science that gives a form to their dreams, which in other centuries would have been very different. Many bring to their applications ideas of scientific origin, but which their discoverer looked upon as only the mind's play, and impractical, because he foresaw a thousand difficulties. Every inventor has had predecessors whose great merit was the fact that they did not halt at difficulties, which they did not perceive simultaneously, but conquered one at a time."

There are thirty-seven pages of notes by H. Weber. These consist of explanatory remarks, historical notes on the original text, and some philosophical considerations. They will be particularly useful to the general reader. The last note closes with a quotation ascribed to Novalis:

"The life of the Gods is mathematics. All divine messengers must be mathematicians. Pure mathematics is religion. Mathematicians are the only fortunate ones. The mathematician is naturally an enthusiast. Without enthusiasm no mathematics."

JAMES BYRNIE SHAW.

Spezielle Flächen und Theorie der Strahlensysteme. Von Rektor Dr. V. KOMMERELL und Prof. Dr. K. KOMMERELL. Sammlung Schubert LXII. Leipzig, Göschen, 1911. vi+171 pages.

DURING the preparation of the second edition of the authors' Allgemeine Theorie der Raumkurven und Flächen,* it was

* Sammlung Schubert, XXIX and XLIV. First edition 1903; second edition 1910–11.