additions have been counter-balanced by the elimination of material which could be spared, and the volume, therefore, remains of practically the same size as in the first edition.

At this time when physiological facts and methods are becoming more generally recognized for their importance in experimental pathology and surgery it is highly gratifying that so excellent a treatise as Professor Howell's can be placed in the hands of students who are to become the future investigators and practitioners of scientific medicine. So few text-books are written now-a-days by men who are themselves active in research that the spirit of research rarely is expressed in them. This book, however, is an exception to the rule. Professor Howell has not hesitated to bring before his readers phases of physiology in which the conclusions are not yet settled; the student is thus made to see that there are live issues in the determination of which he may himself engage. Other evidence of the hand of the scholar in this book is the presence of numerous references to the original sources. This feature, likewise, is so unusual in the conventional text-book that it is worth noting and commending as admirable. By these methods the student may be led to take no secondary account as final authority, but to base his judgment on the weighing of first evidence. It is a real pleasure to find these scholarly qualities in an American text-book widely used by American students.

WALTER B. CANNON

The Microscopy of Technical Products. By Dr. T. F. HANAUSEK, Director of the Gymnasium at Krems on the Danube; Member of Various Imperial Commissions and Learned Societies; formerly Professor of Natural History at Vienna, Analyst of the Government Food Laboratory at Vienna, etc. Revised by the author and translated by Andrew L. Winton, Ph.D., Chief of the Chicago Food and Drug Laboratory, Bureau of Chemistry, U. S. Department of Agriculture; formerly in charge of the Analytical Laboratory of the Connecticut Agricultural Experiment Station, with the collaboration of Kate G. Barber, Ph.D., Microscopist of the Connecticut Agricultural Experiment Station. With 276 illustrations. New York, John Wiley & Sons; London, Chapman & Hall, Limited. 1907. Cloth, $5.00.

With the development and application of scientific methods in all lines of industry and with the increasing use of the microscope in the analysis of various raw and manufactured products, the need for books dealing with its application in this field is being felt in this country as well as abroad, and we in this country are highly indebted to Dr. Winton for making available first the valuable work of Moeller on food products and now the work by Hanausek on technical products.

As stated in the preface, Hanausek's work is intended on the one hand as a text-book for the "student entering the field of technical microscopy," the requirements being that he shall possess a general knowledge of the natural sciences, particularly the morphology and histology of organisms, and shall also be familiar with the principles of chemistry; and on the other hand, as an aid in the solution of practical problems. Thus, as stated by the translator, the book "is unique in that it teaches the microscopic identification of technical products and at the same time the fundamental principles of vegetable histology and the histology of certain animal materials" as well.

The author's reputation as a teacher, investigator and technical expert, and the translator's ability and experience as an analyst, assure at once the high character of the work and bespeak for it a wide use in this country.

The book covers some 471 pages, and is divided into two parts. Part I. includes three chapters and deals with the microscope, microscopic accessories and micro-technique. Part II. embraces nine chapters, and treats of the microscopy of the most important types of technical raw materials under the following heads: (1) Starch and Inulin; (2) Vegetable Fibers, including hairs, the fibers of monocotyledonous and dicotyledonous stems, and the microscopic examination of paper; (3) Animal Hairs, Silk and Silk Substitutes, Mineral Fibers, and Microscopic Examination of Textile

Fabrics; (4) Wood of Dicotyledons and Gymnosperms, Monocotyledonous Stems, Subterranean Organs, Barks, and Practical Examples; (5) Leaves of Different Varieties of Sumach; (6) Pyrethrum or Insect Powder; (7) Technical Fruits and Seeds, Oil Cakes, Myrobalans, Ivory Nut; (8) True Bones, Teeth, Horn, Tortoise-shell and Whalebone; (9) Micro-chemical Analysis.

The reviewer is using both the work on "The Microscopy of Vegetable Foods" and on "The Microscopy of Technical Products" in the laboratory, and finds them very helpful. Pure botanists would do well to have these books in their laboratories where plant histology is considered, as there is no doubt but that much of the work on the anatomy of plants has been developed by the investigators in technical histology.

Henry Kraemer
Philadelphia College of Pharmacy

Archiv für Optik; Internationales Organ für Experimentelle, Theoretische und Technische Optik. Erster Band; Erstes Heft, Oktober, 1907. Herausgegeben von Dr. Alexander Gleichen, Kaiserl. Regierungsrat in Berlin, unter Mitwirkung von (some twenty astronomers, physicists and optical specialists). Verlag von Veit und Comp. in Leipzig, Preis des Bandes. 20 Mark.

The establishment of an international journal in any important field of scientific activity is nowadays a decided step toward that internationalism in science and that pure human cooperation which are earnestly desired by the best and brightest people of all lands. Astronomy has for two centuries led the way in this genuine internationalism, but many other sciences are now enlisting under the same standard.

As a general rule the journal of international scope should be published in the country which may naturally be expected to contribute most efficiently to its pages. A fine type of such a publication is the *Astrophysical Journal* published in America, where astrophysical science flourishes most luxuriantly. It has, however, received the hearty support of men of science in all lands. Its pages are enriched by the world's best thought in the great field of astrophysics.

The *Archiv für Optik,* as an international organ, ought naturally to be published in Germany. In many respects German thought has led in theoretical optics, and the German hand executed some of the finest experimental and technical results in all optics. To-day no great general treatises in technical optics exist outside the German language. It is also peculiarly fitting that the same international cooperation should be given the *Archiv für Optik* that has in the collateral field been accorded the *Astrophysical Journal.*

Dr. Alexander Gleichen, if we may judge from the theoretical thoroughness and practical tone of his writings, is well equipped to guide so difficult and important an undertaking as a world-journal in general optics. His "Lehrbuch der Geometrischen Optik," Leipzig und Berlin, 1902, has an international reputation. His "Vorlesungen über Photographische Optik," Leipzig, 1905, is indispensable to technical students in optics, and his "Leitfaden der Practischen Optik," Leipzig, 1906, is an excellent introduction to the fundamental theory necessary in optical practise.

The first number of the *Archiv* contains "Tatsachen und Fiktionen in der Lehre von der Optischen Abbildung," by Allvar Gullstrand, of Upsala; "Über ein neue Verfahren der Körpervermessung," by C. Pulfrich, of Jena; and "Patentschutz für Optische Systeme," and "Zum Gedächtnis von Siefried Czapski," by Dr. Gleichen. Then follow trenchant reviews of eighteen current articles on physical optics; of two on astronomical and meteorological optics; of one on medical and biological optics; and of one on technical optics. Dr. Lummer's new volume on optics receives detailed notice; and a complete list of optical articles read before various scientific academies is presented. F. Plehn makes a valuable contribution to the history of optics by reviewing Kepler's "Paralipomena ad Vitellionem seu Astronomiae pars optica." Then follow interesting selections from scientific societies, namely, Max Wolf "On the