Brief mention should be made of some of the salient points brought out by the survey. On the basis of expenditures, more than two-thirds of the research was in the fields of forest products and utilization. Forestry schools play a major role in training research personnel and in the conduct of basic research. There is need for fellowships of $3000 to $4000 per year to attract qualified men for graduate training in sciences basic to statistics, silviculture, and other specialties. Agencies with adequate financing were conducting more quality research than those with limited funds. A serious shortage of qualified and well-trained personnel is critical in most fields, especially genetics, soils, and and wood technology. Cooperation in research dealing with forestry and related fields is as yet poorly developed. There appeared to be no lack of publication outlets for short papers, but a serious problem exists with long papers. Most scientific journals have considerable backlogs of manuscripts. Without reservations, I believe that this book will offer to all foresters, as well as to specialists in related fields, a rich background in the research that will be needed for the future development of one of the nation's greatest resources.

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The History of the Telescope. Henry C. King. Sky Publishing, Cambridge, Mass.; Griffin, London, 1955. xvi + 456 pp. Illus. $12.50.

A number of books, both popular and advanced, have included sections on the history of the telescope. However, H. C. King's book is the first major work devoted exclusively to its history. In 19 chapters averaging more than 20 pages each, King covers astronomical observations from pretelescopic times to the latest developments in optical and radio-telescopes. The book is profusely illustrated with drawings and photographs. Detailed references at the end of each chapter (for example, 90 at the end of Chapter I, 42 at the end of Chapter II) make the work invaluable for any professional astronomer or serious amateur.

Chapter I is a discussion of observational astronomy prior to the invention of the telescope, which culminated in the monumental work of Tycho Brahe. Chapter II is a discussion of the history of optics. Here King tries to evaluate the evidence regarding the identity of the true inventor of the telescope. Chapter III describes Galileo's construction of the first astronomical telescope and the work he did with it. Chapter IV and the following chapters describe the inventions and technologic improvements that have led to the large telescopes of the present day. Attention is paid to the specialized optical needs of different branches of observational astronomy. The book concludes with a 13-page index.

Everyone who is interested in the history of the telescope is indebted to King for writing such a fine book and to the Sky Publishing Corporation for producing it in such attractive form.

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Problems and Control of Air Pollution. Proceedings of the First International Congress on Air Pollution held in New York City, 1–2 March 1955 under the sponsorship of the Committee on Air-Pollution Controls of the American Society of Mechanical Engineers. Frederick S. Mallette, Ed. Reinhold, New York; Chapman & Hall, London, 1955. vi + 272 pp. Illus. $7.50.

In recent years, the interest of scientific and technical groups in air pollution has increased rapidly, resulting in an epidemic of symposia at which the expanding activities in this field are reported and discussed. The proceedings of many of these meetings have been published as pamphlets, as special sections of technical magazines, and occasionally in book form, as in the present instance. F. S. Mallette has assembled the 25 papers presented at the First International Congress on Air Pollution, held at the American Society of Mechanical Engineers 75th anniversary meeting in New York, 1–2 March 1955.

The book was therefore written by 30 authors in addition to the editor, since several of the papers were written by two or more persons. Each paper comprises a chapter in the book. Four of the authors are from England, two from Canada, two from the Netherlands, and one each from Portugal, Italy, and France, and the rest from the United States. The group consists of distinguished experts.

The first two chapters deal with the history of the subject, with public opinion, and with the role of industrial management. The next five chapters were grouped together by the editor because they all stress the gaps in existing knowledge regarding air pollution and the need for futher research. However, these five chapters are very diverse, dealing with biological, geographic, engineering, meteorological, and health aspects of air pollution.

The next four chapters describe current developments, again in diverse fashion, from diesel exhaust and incinerators to optical measurements of aerosol particle size, and an atmospheric survey of Sarnia, Ontario.

The next eight chapters are less diversified, for they all relate to sulfur, sulfur dioxide, and hydrogen sulfide. Three discuss power plant stack gases, one deals with oil refineries, one with the steel industry, one with coke ovens, and one with the chemical industry. The initial chapter in this group is concerned simply with the world supply of sulfur, with air pollution as an incidental consideration.

The final five chapters relate to experience in air pollution abroad, in Holland, Portugal, Italy, and France. The first chapter in this group connects the the efficiency of a Cyclone with the size of its outlet pipe. The third chapter describes forest damage by air pollutants from a smelter and from oil engine exhaust. The other three chapters are more general in scope.

The book should be a valuable and convenient reference for the large and growing group interested in this subject.

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Chemistry and Chemical Technology of Cotton. Kyle Ward, Jr., Ed. Interscience, New York–London, 1955. xix + 782 pp. Illus. $20.

Textile technologists have been exceptionally fortunate in the past 2 years in having had made available to them three quite exceptional surveys of the properties of textile fibers. The first of these, *Textile Fibers, Yarns & Fabrics,* by Ernest R. Kaswell, presented a broad review of fiber properties in relation to the functional characteristics of textiles with special reference to wool. The second, *Harris' Handbook of Textile Fibers,* is more a compendium of data from various sources on fiber and fabric properties without special orientation toward particular materials. The third, which has now become available, is, in a sense, a corresponding volume on cotton fibers and fabrics.

A comparative study of the three works shows interesting relationships as well as contrasts. The Kaswell book places much emphasis on the physical and mechanical properties of textile fibers. The new book by Kyle Ward on cotton, in contrast, is focused to a large extent on the chemistry of cotton. Perhaps this is the more important approach to the study of cotton, and readers will certainly be grateful to Ward for the comprehensiveness with which he has surveyed the field and brought together

in such a useful volume so much about the cotton fiber that is actually related to industrial practices and processes.

The book follows a sequential treatment of the processing of cotton, starting with the chemistry of the raw cotton, then following with a discussion of the weaving, followed by a discussion of wet process finishing, including bleaching, dyeing, and printing, and then discussions of special functional finishes.

A symposium of this type, in which the work of some 20 different authors is represented, shows actually more uniformity of treatment than one might expect. This is a credit to the editor and his associates, who have done a fine job of editing.

A book of this kind will be very useful to technical people in the industry itself. Through books of this technical level, industry is being provided with a type of technical literature of a high order, which will add to the stature of textile technology as a professional field. Such books also introduce students coming into the profession to the many great technical contributions that have been made during the past two decades.

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Petrographic Mineralogy. Ernest E. Wahlstrom. Wiley, New York; Chapman and Hall, London, 1955. vii + 408 pp. Illus. $7.75.

This is the fourth book by Ernest Wahlstrom, of the department of geology of the University of Colorado. The first three—namely *Optical Crystallography, Igneous Minerals and Rocks,* and *Theoretical Igneous Petrology* — were needed to fill gaps in the ranks of elementary textbooks in their respective fields and have been well received. *Petrographic Mineralogy* consists in the main of selected portions of Wahlstrom's earlier works, together with a small amount of material that he has not previously presented.

In the preface, the author states that "The book is designed for a semester course of the type that normally would follow a course in the theory and operation of the polarizing microscope." Thus the book attempts to summarize information on the following: petrographic techniques, both microscopic and otherwise, including the universal stage; petrogenetic calculations; most of the rock-forming and the more common accessory minerals; and the compositions, properties, and classifications of igneous, sedimentary, and metamorphic rocks. This is not only a heavy load to be borne by the average student during a single semester, but it is likewise an inordinate burden for a textbook of 408 pages.

Chapter 1, "The collection and preparation of samples," is largely new. Chapter 2, "Petrographic techniques," describes mineral separation by means of magnetic methods, electrostatic methods, heavy liquids, and so forth. Most of this material is taken verbatim from *Igneous Minerals and Rocks,* pages 42 to 46. Also in this chapter, the section on physical characters in hand specimens, x-ray examination, staining techniques, and so forth, largely comes from Chapter 3 of *Igneous Minerals and Rocks.* Additions here mention examination by means of the electron microscope and differential thermal analysis.

"Microscopic examination of minerals and aggregates" is the title of Chapter 3. The introduction to this chapter is very similar to the introduction to Chapter 2 of *Igneous Minerals and Rocks.* The second part of this chapter, "Micrometric methods," is a somewhat revised version of what appears on pages 255 to 257 of *Igneous Minerals and Rocks.* In the third part, "Physical properties of minerals under the microscope," the description follows essentially that presented in *Igneous Minerals and Rocks* starting on page 10. Here also begins the repetition of many of the photographs previously used.

In Chapter 4 are presented descriptions of the universal stage and universal stage techniques. Some of this material has not been included in any of the previous books, but much of it represents an expansion of Appendix A in *Optical Crystallography.* It seems to me that the inclusion of this technique is not appropriate to an elementary course in microscopic petrography. Similarly in Chapter 5, which is entitled "Graphical presentation of data and common petrographic calculations," material is taken in large part from *Igneous Minerals and Rocks* and also to some extent from *Theoretical Igneous Petrology.*

The description of the rock-forming minerals begins with Chapter 6 (silicates), continues through Chapter 7 (nonsilicates) and concludes with Chapter 8 (Tables for Mineral Identification). Most of this material has been presented in similar form in *Igneous Minerals and Rocks.* Also, most of the illustrations have appeared before in the earlier book; only a few are new. One photomicrograph of labradorite not only has been used before but appears twice in *Petrographic Mineralogy* (pages 27 and 111). The tables for identification likewise are similar, except that some nonigneous minerals have been added. In *Igneous Minerals and Rocks,* Table 2 was presented as a series of descriptive listings; in *Petrographic Mineralogy* it is presented in a more abbreviated semidiagrammatic form. Chapter 9, "Composition, properties and classification of igneous rocks," stems almost directly, in abbreviated form, from Chapters 7 to 11 of *Igneous Minerals and Rocks*; but Chapter 10, "Composition, physical properties and classification of sedimentary rocks," and Chapter 11, "Composition, properties and classification of metamorphic rocks," have not been presented previously. Together these two chapters include about 65 pages. In contrast to the chapter on igneous rocks, that on sedimentary rocks presents almost no photomicrographs.

The book is uneven in the instructional level of its various parts. The quality of the petrographic descriptions hardly matches the higher horizon of the optical crystallographic work set by the inclusion of the universal stage methods.

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Chemotherapy of Malaria. Gordon Covell, G. Robert Coatney. John W. Field, Jaswant Singh. World Health Organization Monogr. Ser. No. 27. World Health Organization, Geneva, 1955. 123 pp. Illus. $3.25.

This book, written conjointly by four experts who reside in different parts of the world, brings together in a compact form factual information on the properties and usefulness of drugs commonly used in the treatment of malaria.

Chapter 1 describes the enormous strides that have been made in the chemotherapy of malaria since the time during World War II when quinine became unavailable to the Allies. The first phase involved intensive studies in this country of the physiological disposition of quinacrine (Atabrine) that led to the adoption of improved dosage schedules and raised the status of quinacrine from that of a poor substitute for quinine to that of a drug superior to it. With application of the new knowledge to the Pacific area, malaria soon ceased to be a major threat to the Allied troops. The second phase, the search for a better drug, culminated in chloroquine, a safer and more effective drug than quinacrine as a suppressive agent and for the treatment of the acute infection. At about the same time, British scientists produced proguanil (Paludrine), a radically new type of compound. The third phase, the development of compounds that would prevent relapses by eradicating the tissue forms of the malaria parasite, yielded primaquine, which has proved to be successful in the radical cure of the disease.

Chapter 2 reviews the basic features of