clear plastic base sheet to which the map copy is photographically transferred is first coated with an opaque material, usually yellow paint. Using a metal stylus ground to the width of line desired, the draftsman traces the copy, cutting out the opaque coating along the lines that are to be printed. The product is a line negative that the photoengraver can use directly to make the printing plate.

The principal advantage of scribing is that the width of a line is determined entirely by the scribing tool used, in contrast to pen-and-ink drafting where line-weight depends on the size of the pen point, the fluid qualities of the ink, the surface paper, and on the pressure on the pen. The map scriber has few critical factors to control, and he can devote his full attention to productive work. The training period for new employees is relatively short, and their output is superior, both in quantity and quality, to pen-and-ink drafting.

For the "gadgeteer," scribing has opened up a new field of activity—the design of special tools for the various symbols and types of lines on topographic maps. The usual tool is made from a phonograph needle ground to a chisel-shaped point and held in an ordinary pen-holder, but many others have been developed for particular purposes. A swivel-head scriber cuts two parallel lines at the same time to trace double-line roads; a special templet is used to cut rectangular building symbols; and there is even a motor-driven scriber to produce small circles representing oil or water tanks. There is still an unfilled need for a device to scribe dotted lines conveniently and accurately.

The most critical problems in the introduction of scribing techniques concern the materials—the base sheets and the opaque coatings. The base sheet must be transparent, dimensionally stable, and have a smooth surface hard enough to prevent scratching by the scribing tool. Glass is the ideal material so far as these qualities are concerned, but it is fragile and heavy, and the problems of transportation and storage are formidable. After considerable experimenting, a type of vinyl plastic sheeting was selected as the most satisfactory, although there is still room for improvement.

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Book Reviews

Geology of India. Rev. ed. D. N. Wadia. London: Macmillan; New York: St Martin's Press, 1953. 552 pp. Illus. + plates. $10.00.

This reviewer, quite lacking in knowledge of India, found the revised edition of *Geology of India* by Wadia, both pleasant to read and instructive. Persons acquainted with Indian geology perhaps could find gaps in the descriptions and might disagree with some of the interpretations offered or with the emphasis given certain topics. After all, India is nearly half the size of the United States and it would be next to impossible to obtain agreement about the items that should be emphasized in 550 pages describing the geology of half this country.

The first 57 pages describe the physical features, including the physical geography of the three great physiographic divisions of India, the drainage system, lakes, glaciers, coasts, true volcanoes, mud-volcanoes, earthquakes, tilt records, isostasy, climatic conditions, soils, erosion, and résumé of the history of major drainage changes.

The main part of the book (354 pp.) is devoted to a description of the formations, geological history they record, and some of their unsolved problems. This description is apportioned as follows: General introduction to the stratigraphy, 17 pages; pre-Cambrian formations, 62 pages; Paleozoic formations, 95 pages; Mesozoic formations, 58 pages; Deccan trap, 13 pages; and Cenozoic formations, 109 pages.

Following the stratigraphic descriptions and history is a 26-page chapter on physiography. The last chapter (76 pp.) describes the mineral resources and soil.

Accompanying the book is a 1 : 6,000,000 geologic map of India in colors. It would have been helpful to have had additional larger scale maps showing the locations of the many places referred to by name in the text. Too, this reviewer would not share Wadia's pessimistic view (p. 439) that "Chances of discovery of new mineral deposits of any extent and richness by ordinary geological methods are not many. . . ." The book itself refers to the gross inadequacies in knowledge about the geology of India, and as long as this situation continues we can be rather confident that major mineral discoveries are still to be made in that vast area. At least, this has been the history of progress in geological knowledge everywhere else, why not in India?

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Krankheiten und Schädlinge der Kulturpflanzen und ihre Bekämpfung. 7th ed. H. Braun and E. Riehm. Berlin, Germany: Paul Parey, 1953. 339 pp. Illus.

In 1910, Dr. Riehm published a small handbook dealing with the diseases and insect pests of crops in Germany. Since then six additional editions have appeared, each one a little larger and more detailed. The later ones had H. Braun as the senior author.

In the present edition are 28 pages of general discussion, followed by those for 23 special crops or

groups of crops. Cereals and potatoes include nearly one-third of the text. The life histories, 290 good illustrations, and descriptions of symptoms and causal organisms are valuable to the American entomologist and plant pathologist. But the control recommendations, based on a much lower economic scale than those of the U.S., have for the most part little value for the grower or the agricultural representatives in countries other than those of Europe. Because of the scope, ease in reading for the authors, and local adaptability of the German literature on the subject, nearly 600 of the 636 references are from German sources. The paper is of good quality, and the printing and general arrangement of the book are excellent.

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Bacterial Genetics. Werner Braun. Philadelphia–London: Saunders, 1953. 238 pp. Illus. $6.50.

Microbial genetics is advancing at a fast rate. Catcheside's *The Genetics of Micro-Organisms,* published in 1949, is already sadly out of date. Hence, Braun's *Bacterial Genetics,* as the second book in the field, is welcome. It does not replace Catcheside's book, however, because it is concerned with the genetics of bacteria alone, and because it is written at a different level. The student is likely to find Catcheside's work more demanding and, as a consequence, intellectually more stimulating. In *Bacterial Genetics* he will find clarity and pleasant reading. In this regard Braun comes close to his objective inasmuch as his book, like Catcheside's, is directed primarily to the nonmicrobial geneticist.

Braun apologizes in his preface for preoccupation with problems that he has illuminated by his own research. The reader will readily excuse him for, as a consequence, the book partakes of the flavor of those written by investigators and not mere reporters of the work of others. Despite this the coverage is good. There is an introductory chapter on some general genetic principles and one on the history of the field. Then follow chapters on bacterial cytology, mutation, mutagens, and representative types of mutants. There are also treatments of population changes brought about by mutation and selection and by other causes, of recombination, transformation, and transduction and a final chapter on the relation of bacterial genetics to general bacteriological problems. There are some omissions that might be rationalized, like the absence of a discussion of lysogenesis. In most cases where more rigorous theoretical treatments of problems are omitted, like Lea and Coulson's mathematical analysis of mutation, an illuminating reference is found in the text.

The specialist will find little in *Bacterial Genetics* with which to argue. He may, of course, have occasion to raise a point here and there but not with an unusual frequency. For example, he may regret that the word "adaptation" is not used in its broader biological context but is rather restricted to describe changes not brought about by mutation and selection. Or he might be surprised at the statement that it would be "extremely difficult" to reconstruct the selective conditions that exist where the frequency of mutants is as small as 10^{-8}—this can be done by the reciprocal use of marked stocks. He might object to the obsolete diagram of crossing over, to the confusion of the frequency of bacterial fusion with the frequency of recombinants, or to the suggestion that, for repetition of experiments, inocula should consist of single colonies. But it is likely his objections will be of a similar minor nature.

Braun's *Bacterial Genetics* is a good textbook for the student and for bacteriologists, biochemists, and geneticists who would desire a clear introductory statement about this rapidly growing field.

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New Books

Sergei N. Winogradsky: His Life and Work. Selman A. Waksman. New Brunswick, N.J.: Rutgers Univ. Press, 1953. 150 pp. + plates. $4.00.

Standard Methods of Clinical Chemistry, Vol. I. By the American Association of Clinical Chemists, Miriam Reiner, Ed. New York: Academic Press, 1953. 142 pp. Illus. $4.50.

Electrical Methods of Blood-Pressure Recording. Frank W. Noble. Springfield, Ill.: Thomas, 1953. 56 pp. Illus. $3.00.

Einführung in die Lehre vom Adaptationssyndrom. Hans Selye; ed. and trans. from *The Story of the Adaptation Syndrome* by Heinz Köbcke, assisted by Rudolf Hoene and Gunnar Heuser. Stuttgart, Germany: Georg Thieme, 1953. 164 pp. Illus. DM 16.50.

A Simple Guide to Modern Valency Theory. G. I. Brown. London–New York: Longmans, Green, 1953. 174 pp. Illus. $2.50.

The Proteins: Chemistry, Biological Activity, and Methods, Vol. I. Part B. Hans Neurath and Kenneth Bailey, Eds. New York: Academic Press, 1953. 567 pp. Illus. $13.00.

Discontinuous Automatic Control. Irmgard Flügge-Lotz. Princeton, N.J.: Princeton Univ. Press, 1953. 168 pp. Illus. $5.00.

Biologia Generale. Emanuele Pàdoa. Torino, Italy: Edizioni Scientifiche Einaudi, 1953. 707 pp. Illus. L. 8000.

An American in Europe. The Life of Benjamin Thompson, Count Rumford. Egon Larsen. New York: Philosophical Library, 1953. 224 pp. + plates. $4.75.

Silicones and Their Uses. Rob Roy McGregor. New York: McGraw-Hill, 1954. 302 pp. Illus. $6.00.

Magnetic Amplifiers. George M. Ettinger. London: Methuen; New York: Wiley, 1953. 88 pp. Illus. $1.50.

Strahlenschutz und sonstiger Arbeitsschutz bei der medizinischen Anwendung von Röntgenstrahlen. Wilhelm Ernst. Stuttgart, Germany: Georg Thieme, 1953. 97 pp. Illus. DM 7.80.

Practical Methods in Biochemistry. 6th ed. Frederick C. Koch and Martin E. Hanke. Baltimore, Md.: Williams & Wilkins, 1953. 537 pp. Illus. $5.00.