FIELD TESTING FOR GOLD AND SILVER. A Practical Manual for Prospectors and Miners. By W. HAMILTON MERRITT. London: Crosby & Lockwood; New York: D. Van Nostrand Co. 16mo. x + 144 pp. Illustrated. Price, $1.50.

This is a book for the prospector and contains full directions for such rough tests as can readily be used in the field. Part I (72 pp.) is devoted to assaying, Part II to practical mineralogy and geology, and Part III contains a glossary of useful mining terms and a list of common rock-forming minerals and rocks. The booklet is bound in flexible leather, and is of a size suitable for pocket use. E. H.

THE MANUFACTURE OF VARNISHES: OIL CRUSHING, REFINING AND BOILING. From the French of Ach. Livache, extended and adapted to English practice by John Geddes McIntosh. London: Scott, Greenwood & Co. 1899.

This book contains some information about raw materials which may interest the novice, nearly half the space being devoted to this, the greater part of which is reasonably correct. The author has collected a good deal of somewhat antiquated chemical literature on resins, the value of which is well indicated by the luminous observation on p. 18 that "The data are of no value, except in regard to the variety of copal which is referred to; and this is exactly the point which the investigators have almost invariably omitted to supply;" and "of little or no value to the practical varnish maker." The book is equally remarkable for what it contains and what it leaves out. For example, no reference is made to the almost universal practice of hardening rosin with lime; and it would be hard to compress more ignorance of the facts and of modern literature on asphaltums into a sentence than the following: "In its composition this mineral (Manjak) is similar to the pitch of Trinidad, to the gilsonite of Utah and the Canadian albertite." Nothing is said about oil-soluble aniline colors, but the incorrect statement is made that indigo-carmine is soluble in oil (p. 86). The present reviewer is not competent to criticize the chapter on spirit varnishes, except on one or two points. Shellac varnish is said to be made by dissolving one part of shellac in 5 to 12 parts of alcohol; such a solution can not be sold in this country, and probably not in England; regular shellac varnish is made with

5 pounds of shellac to $6\frac{1}{2}$ pounds of alcohol. Much is said about wax in shellac but none of the practical modern methods of removing it are given. A brief and valueless section is given to the important subject of asphaltum varnishes. The preparation of raw linseed oil is well described; but a lot of venerable and worthless recipes for bleaching it are given, reference being sometimes made to "water-white" or "colorless" oil, something never yet produced, even approximately. The author seems ignorant of modern methods of oil-treatment, the most recent one referred to being Hartley's, which had been known and abandoned in this country before Hartley patented it.

Aside from references to Mulder and Chevreul (not very new) the treatment of the subject of driers is unsatisfactory. The fact is that the essential thing is to get a certain amount of lead or manganese into the oil, it makes no difference whether we use oxides, borates, or anything else; the other factor is the temperature needed. Zinc and magnesia salts are of no value, and are long out of date. Contrary to the statement on pp. 263–4, this reviewer has made excellent driers of nickel and cobalt, but they are too costly.

The section on oil and resin varnishes is especially unsatisfactory. It seems as if the translator ought to have been able to get some valuable matter for this, since the English varnish-makers produce varnishes which are up to date and of great excellence; but such does not appear to have been the case. The curious statement is several times made that in melting resins it is better to work with small quantities, 3 to 5 pounds, because the discoloration, produced by contact with the metal of the melting-pot, is less. Both theory and practice ought to show that the larger the vessel and the amount of resin the smaller is the heating surface per pound of resin, and the less the discoloration. It is, therefore, possible to melt 125 pounds at a time, which is the common American practice, and make a paler product than can be made in the laboratory. Before the use of the thermometer in this work the varnish-maker had various tests of heat, such as dropping in a bit of onion peel, which would brown and shrivel, or a feather, which would curl up with the heat when the temperature had reached a certain

point; but this fried-onion and burnt-feather business has now gone out of practice, notwithstanding what is said about it in this treatise.

One of the chief authorities quoted is Violette. Now Violette worked about half a century ago, and if he ever knew anything about practical varnish-making, which is doubtful, his book is out of date; and this is the general verdict to be passed on this book. It is misleading to the student, and of no value to the varnish-maker. A. H. SABIN.

BOOKS RECEIVED.

The Manufacture of Varnishes. Oil crushing, refining, and boiling, and kindred industries; describing the manufacture and chemical and physical properties of spirit varnishes and oil varnishes; raw materials; resin; solvents and colouring principles; drying oils, their extraction, properties, and applications; oil refining and boiling; the manufacture, employment, and testing of various varnishes. Translated from the French of Ach Livache, Ingenieur civil des mines. Greatly extended and adapted to English practice with numerous original recipes by John Geddes McIntosh. London: Scott, Greenwood & Co.; New York: D. Van Nostrand Co. 1899. vii + 403 pp. Price, $5.00.

Commercial Fertilizers. By J. H. Stewart and B. H. Hite.—Bulletins Nos. 63 and 65. Sugar Beet Investigations in 1899. By J. H. Stewart and B. H. Hite.—Bulletin No 64. West Virginia Agricultural Experiment Station, Morgantown, W. Va. 82 pp.

Field Testing for Gold and Silver. A Practical Manual for Prospectors and Miners. By W. Hamilton Merritt. London: Crosby & Lockwood. New York: D. Van Nostrand Co. 16 mo. x + 144 pp. Illustrated. Price, $1.50.

Charbon (Anthrax). Further investigations and suggestions, with summary and conclusions. Second series No. 60, Bulletin of the Agricultural Experiment Station of the Louisiana State University and A. & M. College, Baton Rouge, La. 28 pp.

Bulletin No. 57.—The Smuts of Illinois' Agricultural Plants. 72 pp. Bulletin No. 58.—Composition and Digestibility of Corn-fodder and Corn Stover. 10 pp. Bulletin No. 59.—Orchard Management. University of Illinois Agricultural Experiment Station, Urbana, Ill. 26 pp.

Gardening under Glass. Bulletin No. 170. The North Carolina College of Agriculture and Mechanic Arts, Agricultural Experiment Station, West Raleigh, N. C. 24 pp.

Proceedings of the Twenty-fourth Annual Meeting of the Pharmaceutical Association of the State of South Carolina, held in Charleston, S. C., May 17, 1900. 30. pp.