chloric acid solution gave, with mercuric chloride, a very perceptible cloudy appearance in a few seconds. Some of the iron solutions yielded heavy precipitates at once.

The unsaturated hydrocarbons, liberated by the action of the acid on the iron carbides, seem to be the cause of this precipitation, and it is, roughly estimated, proportional to their odor. This odor is moreover destroyed by an excess of mercuric chloride, and further, if the solutions be previously heated until odorless, there is no precipitation.

Whatever be the cause, the action here is one of reduction and the precipitate formed is essentially mercurous chloride. Made in quantity, it was a dense, pure white, crystalline substance. When volatilized, a slight black residue generally remained. 0.8592 gram material gave 0.27 per cent. C. The action of such reagents as ammonium and potassium hydroxide, iodine and potassium iodide left no doubt as to its essential character, and a chlorine determination gave 14.93 per cent.; theory, 15.04 per cent.

In conclusion it may be said that, if the iron gives more than a faint "hydrocarbon odor" with hydrochloric acid, its solution will give a precipitate with mercuric chloride, and so interfere with the test for tin. Common wire nails may generally be used. Although their solutions have a reducing action, it is usually very slight and requires some time to develop sufficiently to be recognized.

R. B. RIGGS AND E. S. MERRIAM.

NEW BOOKS.

THE CHEMISTRY OF PIGMENTS. BY ERNEST J. PARRY AND JOHN H. COSTE. First edition, 1903. London: Scott, Greenwood & Co. New York: D. Van Nostrand Co. 275 pages, illustrated. Price, $4.50 net.

This volume treats of the chemistry of pigments used for protective, decorative and artistic purposes. A brief introduction describes in a popular way the elements of the science of color, the spectrum and absorption spectra. In the second chapter are discussed the uses of pigments, the forms and combinations in which they are applied, and the mal-influence of air, moisture and gases on the paints. A number of tests are given that show the comparative resistance of the various paint-skins to these

agents, but there is no mention of the important precautions in applying the paint, etc., whose neglect so often results in unsatisfactory or contradictory deductions.

The following section deals with the inorganic pigments. Some eighteen pages are devoted to white lead and its manufacture. The authors adopt the theory of a chemical combination between white lead and linseed oil, a point that has been disputed by several investigators. The iron oxides, lead, chrome and copper compounds, and the carbon pigments are described in turn. Under the head of organic pigments are Prussian blue and the lakes of carmine, Brazilwood, and other animal and vegetable colors, and a number of the coal-tar dyes. An account of indigo and some minor organic pigments closes the volume.

The work can be commended for what it essays, to both the general reader and the chemist whose work is mainly in other departments. The space allotted to the description of the various pigments appears, on the whole, to be fairly well distributed, though the paragraphs on the vermillionettes, red lead and asphalt could have been amplified with advantage; on the other hand, the methods of chemical analysis of certain pigments might well have been omitted, since one competent to make such analyses always has access to detailed descriptions of the most recent and approved methods.

The book has a good index, and the print and binding are satisfactory. FRANK JULIAN.

THE PRINCIPLES OF LEATHER MANUFACTURE. By H. R. PROCTER, F.I.C., F.C.S. London: E. and F. N. Spon, Limited. New York: Spon and Chamberlain, 1903. xvi + 512 pp. Price, $7.50.

The well known "Text-Book of Tanning," by the same author, having been long out of print, it was desirable to issue a revised edition which, however, takes the form of two books. The present volume contains a very satisfactory discussion of the principles on which the manufacture of leather is based, details of working processes being in the main excluded. Analytical processes and operations of chemical control for the tannery are found in the volume already published as the "Leather Industries Laboratory Book," a work now well known to chemists. To complete the series, a third volume, dealing with manufacturing processes, is desired.