

the isopyrine and pseudoisopyrine of Hartsen, the base has been called isopyroine.

ISOPYROINE METHYL IODIDE, $C_{28}H_{46}(CH_3)NO_5I$.

The powder was treated with methyl iodide for two hours on a water-bath with reflux condenser and at the end of that time, the substance, which at first dissolved, formed a yellow residue in the bottom of the flask. The iodide was removed and reprecipitated from an alcoholic solution with water. The substance thus formed was of a yellow color and almost insoluble in water, ether and chloroform. An iodine analysis gave the following numbers:

I. 0.2204 gram of the substance gave 0.0758 gram of silver iodide.

	Calculated for the formula, $C_{28}H_{46}(CH_3)NO_5I$.	Found.
Iodine.....	18.62	18.8

In addition to the iodide, the chloride and the platinum double salt have been made and are in process of analysis.

NEW BOOKS.

THE ELECTRO-PLATING AND ELECTRO-REFINING OF METALS. BY WATT AND PHILIP. New York: D. Van Nostrand Company. 680 pp. Price, \$4.50 net.

This new and revised edition of Watt's "Electro-deposition" will be most heartily welcomed by all persons interested in the art of electro-plating and electro-refining. The editor has carefully revised the original work, incorporating in it the most modern advancements in the art, and by the addition of entirely new material has expanded the volume by more than 200 pages.

Two chapters are devoted to preliminary considerations: primary and secondary batteries, and thermopiles, dynamos, the cost of electrical installations of small output for electroplating, etc., etc. A most interesting historical review of electrodeposition constitutes the third chapter, which is followed by 50 pages upon the electro-deposition of copper. Most minute and exhaustive instructions are given. These show everywhere the touch of a master-workman. Gilding also receives ample consideration. Then follow directions for the electro-deposition of

silver, nickel, iron, tin, zinc, platinum, brass, bronze, etc. The chapter on the cost of electrolytic copper refining will appeal to many who are now conducting experiments on this and other metals for commercial purposes.

Thoroughness in detail and exactness in statement of procedure characterize the book. It will prove most helpful to all who use the current for the purposes it so exhaustively treats.

EDGAR F. SMITH.

HIGHER MATHEMATICS FOR STUDENTS OF CHEMISTRY AND PHYSICS, with special reference to practical work. BY J. W. MELLOR, D.Sc., of Owens College, Manchester, England. Longmans, Green & Co. 1902. xxi + 543 pp. Price, \$4.00.

To any one who has followed the latest development of theoretical chemistry, it is clear that the chemist of the future must be also a practical mathematician. The recent successive appearance of several volumes having as one object the application of mathematics to the scientific development of chemistry shows the general recognition of this condition.

Among all these books, none seems to the reviewer more complete or adequate than that at present under discussion. The importance of a concrete conception of mathematical expression is fully realized and continually exemplified, and the arrangement is progressive and logical. "The student of this work is supposed to possess a working knowledge of elementary algebra so far as to be able to solve a set of simple simultaneous equations, and to know the meaning of a few trigonometrical formulas."¹ This scanty foundation is gradually amplified and built upon until the student should find himself a master of practical calculus, and capable of integrating differential equations derived from his own experimentation. Analytical Geometry, Functions with Singular Properties, Hyperbolic Functions, Fourier's Theorem, Determinants, and the Theory of Errors all receive extended discussion. The last-mentioned subject is treated in a particularly lucid and just manner, with especial emphasis upon its limitations, which are too often ignored. At the end of the book are given a collection of useful formulas and tables of reference, including a table of natural logarithms. No space is given to vector analysis, but most chemists will not be troubled

¹ Prologue, p. xx.