

FRICION AND LUBRICATION. A HANDBOOK FOR ENGINEERS, MECHANICS, SUPERINTENDENTS AND MANAGERS. By WILLIAM M. DAVIS. Second Edition, Illustrated. Pittsburg, Pa.: The Lubrication Publishing Co. 1904. 8vo. 265 pp.

This work considers the subject from the practical or mechanical point of view and, being intended more particularly for the classes of men noted on the title page, is presented in a plain and concise way. The subject is one, as the author notes, which has not received the attention that it deserves or that it would pay to give it.

The subjects treated embrace those of friction and friction losses, the theory of lubrication and the lubrication of different varieties of machinery, as engines of all kinds, mining, refrigerating, textile, flour mill, compressed air, steel works, machinery, cars, etc., etc.; particular attention being paid to cylinder and valve oiling. Bearings, journals and bearing metals receive considerable attention, as do also the testing and properties of the various oils and greases. Oiling devices and a chapter upon oil house methods, oil storage and gauging complete the volume.

The book fills a long-felt want and the reviewer knows of no other treatise in which the difficulties incident to lubrication, as the groaning of valves, the cutting and scoring of cylinders and the various experiences with all sorts of lubrication are so fully and ably considered. The method described for the determination of the percentage of animal or vegetable oil in a compound oil, as described, would give high results, due to the fact that the ether solution of the petroleum oil contains soap not having been washed with water.

The work is a most excellent one and may be recommended to every one having to do with oils.

A. H. GILL.

PERCENTAGE TABLES FOR ELEMENTARY ANALYSIS. By LEO F. GUTTMANN, PH.D., A.C.G.I., A.I.C. London and New York: Whittaker & Co. 1904. 43 pp.

This book gives tables for calculating the percentages of carbon and hydrogen in organic combustions. There are, besides, a table of proportional parts for use in interpolating and a table giving the weight of a cubic centimeter of moist nitrogen at different temperatures and pressures. The latter is based upon Dietrich's table,<sup>1</sup> and the values given are, therefore, about 0.50 per cent. higher than they should be for "chemical" nitrogen.<sup>2</sup> The tables

<sup>1</sup> *Z. anal. Chem.*, **5**, 36 (1866).

<sup>2</sup> *Rayleigh and Ramsay: Z. physik. Chem.*, **16**, 346 (1895.)