

tity of material and the labor required, in carefully checked and prepared form.

In this present edition, all prices have been corrected, and about 250 pages of new matter covering reinforced concrete, measurement of building work, comparative costs, sprinkler systems, valuations, railroad figures, grain elevators, square foot costs, cost of wood trusses, equipment of buildings, apartment houses, etc. The style of binding has been much improved by the use of gilt-edged flexible leather in place of the previous stained edges and cloth covers.

In every way this book on estimating can be recommended both to the engineer and the architect. Certainly no engineer should be without a copy for ready reference.

Book of Standards. Published by the National Tube Company, Pittsburg, Pa.; 1913 edition. Pages. 559. Size, 4 x 6½ ins. Price, \$2.

The 1913 edition of the Book of Standards has just been received from the press. The present edition, which is the first since the 1902 edition, is much larger and more complete than the older one. It is printed on Canterbury Bible paper, the book, including the binding being not quite five-eighths of an inch thick and will fit the pocket readily.

The information incorporated has made it strictly a pipe handbook, and as such, it is believed, will find an immense use with the trade. The index of the book will be found to be very complete, all headings being thoroughly cross indexed. There are approximately 4,000 references found in the index. Several pages are devoted to a descriptive article covering the main process of manufacturing both welded and seamless tubes, also giving information in regard to the threading, durability and physical properties, etc., of both "National" pipe and Shelby seamless steel tubes. There are a number of pages which give weights, dimensions, threads per inch, test pressure, sections of joints, specifications, etc., of the various kinds of pipe and tubing made.

An article on Protective Coating, Matheson Joint Pipe, and Converse Joint Pipe contains desirable information on these subjects. Tubular electric line poles receive considerable attention, the information given will help an engineer in understanding more about tubular poles which are being used by many of the larger cities as a medium for better service, better appearance, etc. Various types of joints are described and illustrated. Full tabular information is given for poles from 22 to 40 feet, showing lengths of sections, size of butt, weight, thickness, greatest load pole will carry, etc. Several pages describe, illustrate and contain tables in regard to lapweld and seamless tubes, upset and expanded, wrought pipe bends, butted and strapped joints, bump joints, valves and fittings, including various kinds of nipples and flanges, band railings and ladders, working barrels, cylinders, Shelby seamless specialties, Shelby seamless cold drawn trolley poles, tables of various physical properties of Shelby seamless steel tubes, physical properties of carbonic acid gas, Briggs' Standard, holding power of boiler tubes, thermal expansion of iron and steel tubes.

Considerable prominence is given to articles on strength of tubes and cylinders under internal fluid pressure and collapsing pressures. Both of these papers are very complete and have been extracted from papers by Prof. R. T. Stewart, Dean of Mech. Engr. Dept., University of Pittsburg, and read by him before the A.S.M.E. Several of the formulae are compared and results of actual tests are given. Tables are given which show the probable collapsing and bursting strengths of standard tubes. These articles and tables will prove of immense benefit to the mechanical engineer, especially in the connection with boiler engineering problems. An article covering pipe used as columns is given, tables are

supplied showing the use of standard, extra strong, and double extra strong pipe based on the New York Building Code as well as the Chicago Building Ordinances.

Considerable attention is given to the mechanical properties of solid and tubular beams, of usual and unusual shapes. As tubing is finding considerable usage in the mechanical field, notably in automobile construction, this data is particularly useful. This article is accompanied by tables giving the mechanical properties of solid and tubular beams of uniform cross section, various conditions of loading are illustrated and formulas are shown to secure their physical properties values. Unusual shapes are illustrated and formulae given to secure their properties as beams or columns.

An article on safety factors and safe working stresses is given which shows through what ranges values should be used for safe operation. Chapters are supplied giving information in regard to water, gas, steam and air. It has not been the intention to go very deeply into these various subjects, only in so far as they concern tubular products. Perhaps the scope of these articles is best shown by giving a list of some of the headings, information in regard to which is given in detail:

Water.—Properties, Boiler Incrustation and Corrosion, Flow in Pipes, Measurement of Flowing Water, Water Power, Tables.

Gas.—Physical Properties of Cases, Flow of Gas in Pipes at both High and Low Pressure.

Steam.—Properties, Superheated Steam, Flow of Steam, Loss of Heat from Steam Pipes.

Air.—Properties, Expansion, Compression, Flow of Air.

A large collection of tables in conjunction with explanatory articles is given; an idea of the extent of which can be secured from the following list:—Fifth roots and fifth power; decimals of a foot for each 1-64 of an inch; decimals of an inch for each 1-64; wire and sheet metal gauges in approximate decimals of an inch.

Proportions of screw threads, nuts and bolt heads, illustrated explanatory article accompanied by tables showing dimensions of screw threads, nuts and bolts. Several pages are devoted to area and weight factors for tubes and pipes by means of which it is readily possible to figure the area and weight of various kinds of tubing. A special table is shown by means of which it is possible to find directly the weights of nearly all sizes and thickness of steel tubing up to 36 inches in diameter. By means of factors weights of various other metallic tubing can be found. A table showing properties of tubes and round bars is given with an explanatory article. This table gives various physical properties, including circumference, area, weight, surface in square feet, volume, moment of inertia, radius of gyration, etc., for tubes and round bars up to and including 36 inches. This data is given in increments of .01 inches up to 16 inches and increases from there by ⅜ inch increments to 36 inches.

The metric system is included with conversion methods for most of the more commonly used measures, including temperatures. A glossary of terms used in the pipe and fittings trade will be found in the back of the book, and in many instances the meanings of many of the more or less well-known words used in this trade are defined.

Practical Mathematics for the Engineer and Electrician.

By Elmer E. Burns and J. G. Branch, B.S., M.E., Member of the Board of Engineers for the city of St. Louis, Member of the American Society of Mechanical Engineers. 8 x 5½ in.; cloth; 143 pages. Price, \$1.00. The J. G. Branch Publishing Co., Chicago.