

Book Notices.

MEDICAL DIRECTORY OF PHILADELPHIA, PENNSYLVANIA, DELAWARE, AND THE SOUTHERN HALF OF NEW JERSEY. Edition for 1885. Pp. 400. P. Blakiston, Son & Co.

This directory is a great improvement over any directory of its kind that has been issued. In its four hundred pages are found everything pertaining to the medical interests of the State and city. It contains lists of the Physicians in Philadelphia, Pennsylvania, and adjoining States, the dentists and druggists of the city, as well as the details required for a good understanding of the organizations, institutions, and State and city matters connected with medicine. The laws of Pennsylvania bearing upon all matters incorporated in the book are a new feature and of great value. The index, material, and type are well arranged to facilitate reference. F.

THE DESIGNING OF ORDINARY IRON HIGHWAY BRIDGES. By J. A. L. Waddell, C.E., etc. New York: John Wiley & Sons, 15 Astor Place. 1885.

This book is one of the few amongst the great number of scientific books annually published which will receive and which deserves full commendation.

It is invaluable to engineers and students, and to some degree also to municipal and county commissioners, upon whom devolves the duty of selecting new bridges.

The information given therein in regard to the designing of pony trusses and through-bridges built upon the Pratt and Whipple systems—the class of bridges of which it specially treats—is the most thorough and the most practical that was ever published.

As a text-book, in this respect, it does not appear possible that it ever will be excelled.

It is a kind of labor-saving book, presenting the essential points in designing the class of bridges spoken of in a clear, tabulated manner, adding, at the same time, sufficient discussion upon the question of stresses to which the different members of the structure are subjected to prevent the book from assuming the character of a dry and monotonous reference-book.

The author, evidently, is a thorough master of the subject of which he writes.

CURVE TRACING IN CARTESIAN CO-ORDINATES. By William Woolsey Johnson. New York: John Wiley & Sons, 1884.

Professor Johnson has given in this small volume an exposition of a method of tracing plane curves, represented algebraically by equations between two variables and of any degree. He considers especially those rather complicated curves which are studied after the conic sections. His method is very elementary; without the use of the calculus. As a mathematical exercise nothing could be better for the student in technical insti-

tutions than interpreting, on a sheet of drawing paper, the curves in question by any method of interpretation.

That a subject which is grasped most fully with the use of the calculus, may be treated in a really satisfactory manner without such aid, we doubt. We cannot understand the persistence, still lingering, which characterizes the efforts made to dispense with the calculus in practice; an instrument that has proved so grandly useful all through applied mathematics. As a matter of fact, some abstruse problems are capable of solution with the most elementary knowledge of mathematics; but what cumbersome, involved reasoning! Practitioners are said to forget their knowledge of the calculus; but they should not: it is a tool which they need to keep ready for use. When the mathematics have been *thoroughly* learned once, they may lay dormant in the mind for quite a period of time, ready to spring into activity on refreshing the memory by a slight review. C. A. E.

A SIMPLE RULE TO DETERMINE THE LENGTH OF A PENDULUM. By G. Morgan Eldridge.

Set down the number of beats that the pendulum makes to a minute as the denominator of a fraction, and 60 as the numerator. Reduce the fraction to its lowest terms. Square the numerator and denominator by multiplying each by itself.

Multiply the length of a seconds beating pendulum, 39.2 inches, by the squared numerator and divide the product by the squared denominator.

The length of a pendulum is not the length to the end of the ball, but from the point of suspension to the centre of oscillation, which is at some distance above the centre of the ball—this distance depending upon the weight of the pendulum rod in proportion to that of the ball.

To illustrate: a pendulum beating 90, the fraction is $\frac{60}{90}$, its lowest terms are $\frac{2}{3}$, which squared is $\frac{4}{9}$; multiplying 39.2 by 4 and dividing by 9 gives 17.42 inches. A pendulum beating 120, the fraction is $\frac{60}{120}$, its lowest terms $\frac{1}{2}$, which squared is $\frac{1}{4}$; multiplying 39.2 by 1, dividing by 4, gives 9.8 inches. A pendulum beating 30, the fraction is $\frac{60}{30}$, its lowest terms $\frac{2}{1}$, which squared is 4; multiplying 39.2 by 4, dividing by 1, gives 156.8 inches.

[This is not intended for the scientist, but for the practical workman who has forgotten the square root—if he ever learned it—who has no idea of the nature of a logarithm, and to whom a formula is Greek. It will be entirely within the range of his comprehension and application, and the results are correct.—E.]

THE PRINCIPLES OF VENTILATION AND HEATING, and the Practical Application. By John S. Billings, M.D., LL.D. (Edinb.), Surgeon in U. S. Army.

The work under consideration is peculiarly characteristic of a class which has appeared of late years in all departments of study, being designed to bridge the chasm that hitherto divided the branches of knowledge commonly distinguished as scientific and practical—distinctions which works like the present tend to obliterate.

The author states that he was actuated in the production of his work by the endeavor to comply with a request for "some plain, practical directions