

ELIMINATION OF FIRE RISK.

It is now universally recognized that no material is so thoroughly fireproof as reinforced concrete. Steel construction, although not itself inflammable, is of all materials most disastrously affected by heat. In fact, the supporting members of such a building, with their thin webs and flanges, could hardly be designed to be more readily susceptible to the effect of heat, whereby their strength is suddenly and greatly decreased.

Even steel protected with wood is better than the naked steel, but reinforced concrete with all steel enclosed is resistant to any fire if the protection be of sufficient thickness.

In a recent discussion, Mr Leonard C. Wason, president of the Aberthaw Construction Co., Boston, Mass., pointed to the fact that, even though the building itself may be absolutely fireproof, and hence that sprinklers may appear unnecessary, its contents may be so much more valuable as to make it poor business policy to omit them. The total cost of initial installation of a complete sprinkler service is, roughly, four cents per square foot of floor. Mr. Wason referred to the recent Deering-Cousens fire in Portland, Maine, where the contents were worth fully ten times the cost of the building, and showed that to use sprinklers and extinguish the fire before the contents were entirely consumed would under such circumstances show a vastly greater saving than to omit them and lose the contents of even a single room in a building so fire-resisting as to prevent its spread. Of course, in mill construction such relations between cost of building and contents seldom exist except possibly in storehouses. Hence, the more general use of the unsprinkled reinforced concrete building. But, as Mr. Wason further showed, the merit of reinforced concrete is not alone in its fireproof qualities. It has in addition a degree of permanence possessed by no other type of construction which warrants its general use.

TABLE MANILA ROPE.

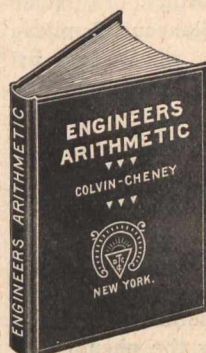
SIZE.		Weight	Feet	Safe
Cir.	Dia.	Per Coil (1,200 feet).	Per Pound.	Working Load.
1/2 in.	3-16 in.	35 lbs.	50 ft.	183 lbs.
3/4 "	1/4 "	45 "	40 "	207 "
1 "	5-16 "	50 "	30 "	333 "
1 1/8 "	3/8 "	55 "	24 "	425 "
1 1/4 "	7-16 "	65 "	20 "	625 "
1 1/2 "	1/2 "	85 "	14 "	800 "
1 3/4 "	9-16 "	120 "	10 "	1,100 "
2 "	5/8 "	160 "	7 1/2 "	1,333 "
2 1/4 "	3/4 "	200 "	6 "	1,567 "
2 3/4 "	7/8 "	300 "	4 "	2,167 "
3 "	1 "	350 "	3 1/2 "	2,500 "
3 1/4 "	1 1-16 "	420 "	2 7/8 "	2,967 "
3 1/2 "	1 1/8 "	480 "	2 1/2 "	3,500 "
3 3/4 "	1 1/4 "	560 "	2 1/8 "	4,167 "
4 "	1 5-16 "	640 "	1 9-10 "	4,667 "
4 1/4 "	1 3/8 "	720 "	1 3/4 "	5,133 "
4 1/2 "	1 7-16 "	800 "	1 1/2 "	5,400 "
4 3/4 "	1 1/2 "	900 "	1 1/3 "	5,667 "
5 "	1 5/8 "	1,000 "	1 1-5 "	6,667 "
5 1/2 "	1 3/4 "	1,200 "	1 "	8,333 "
6 "	1 7/8 "	1,440 "	10 in.	9,167 "
6 1/4 "	2 "	1,550 "	9 3-10 "	10,000 "
6 1/2 "	2 1/8 "	1,675 "	8 3-5 "	11,000 "
7 "	2 1/4 "	1,950 "	7 2-5 "	12,333 "
7 1/2 "	2 3/8 "	2,240 "	6 1/2 "	14,333 "
8 "	2 9-16 "	2,540 "	5 3/4 "	16,667 "
8 1/2 "	2 3/4 "	2,880 "	5 "	18,667 "
9 "	2 7/8 "	3,200 "	4 1/2 "	20,667 "
9 1/2 "	3 "	3,600 "	4 "	22,667 "
10 "	3 3-16 "	4,000 "	3 3-5 "	25,000 "

Taylor Eng. Co., New York.

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BOOK REVIEWS.

Books reviewed in these columns may be secured from Vannevar & Co., 438 Yonge Street, Toronto, Ont.



Engineers' Arithmetic.—By Fred. H. Colvin. Publishers, the Norman W. Henley Publishing Co., 132 Nassau Street, New York. Pages, 122. Price, 50 cents.

A pocket book, containing the principles involved in making such calculations as come into the practical work of the stationary engineer. This is the second edition of this concise and useful publication, which is a companion to Machine Shop Arithmetic by the same author. Besides many formulæ and explanations there are several convenient tables, such as properties of metals, circumferences and areas of circles and properties of saturated steam. The glossary of terms used in steam engineering, though brief, is as complete as a pocket edition can be.

Electrical Energy.—By Ernst J. Berg. Published by the McGraw Publishing Co., New York. Pages, 184; 129 illustrations. Price, \$2.50 net.

The book is compiled from a series of lectures delivered to the engineering students at Union University for the purpose of bridging the theoretical instruction given in the university and the practical problems of commercial engineering. The book consists of two sections. The first forms an accurate and convenient solution of transmission line problems, discussing the choice of frequency, arrangement of circuits, most economical voltage, line constants, transformer connections, and treating fully the effects of short circuits, open circuits, and accidental grounds on the line. It also deals with the inductance and capacity of cables, with the effects of sheathing on the same, inductance and static effects of telephone lines under various practical arrangements. The section is treated mathematically, but the systematic substitution of actual constants in equations allows the physical relations involved to be readily followed. Live phenomena are graphically illustrated. The second section deals with the power station. Generators are discussed, giving their characteristics, and describing several types. Transformers, connections, losses, and regulation and efficiency are treated of, with solution of problems. As in the former section, practical examples have been used freely for illustrating the theoretical deductions. The book will be found useful to the instructor and student as well as to the electrical transmission engineer.

F. A. G.

The Standard Handbook for Electrical Engineers.—Written by a staff of specialists. Pages, xx.+1283; 1,271 illustrations; flexible leather binding, 4 x 7 inches. Published by McGraw Publishing Co., 239 West 39th Street, New York. Price, \$4.

A great deal of credit is due for the painstaking way in which the immense amount of data and figures has been collected and its presentation in a rational and consecutive order. The entire field of electrical engineering has been covered, and the subject matter divided off into twenty sections, each section being complete in itself, forming a condensed treatise of the subjects covered by its title. The use of heavy type for drawing attention to the subject matter of each paragraph is excellent, and is carried out consistently. The list of sections and authors is as follows: