

CANADIAN MAGAZINE

OF

Science and the Industrial Arts.

Patent Office Record.

Vol. 18.

FEBRUARY, 1884.

No. 2.

Communications relating to the Editorial Department should be addressed to the Editor, HENRY T. BOVEY, 31 McTavish Street, Montreal.

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NEW BOOKS.

Fire Protection of Mills, by C. J. H. Woodbury. (New York : John Wiley & Sons.)

This work is one of especial value to mill-owners and indeed to all who have to do with the management with mills. The annual fire tax in this country amounts to more than \$125,000,000, and for the most part is paid for incompetency and defective construction. How to diminish this large sum is a matter of considerable importance, and, as competition has reduced the cost of insurance in respect to the actual risk involved, to a minimum, it only remains to take such precautionary measures as will lessen the risk. The question is carefully discussed by Mr. Woodbury, who divides the subject into two parts, in the first of which he deals with the most efficient methods of equipment and general management. He classifies arrangements for the defence of property from fire in four divisions, viz :

First. The anticipating of all preventable causes of fire.

Second. The preparation of methods of fighting fires, by fire organization of the men.

Third. The provision of a water-supply for fire purposes, and of the best apparatus for mill-protection.

Fourth. The most effective elements of construction.

The author discusses each of these divisions in detail. After giving an account of the various fire apparatus such as fire pails, different kinds of pumps, valves, hydrants, stand-pipes, etc., he goes on to consider the causes of mill fires, and enumerates 575 cases which occurred between the years 1851 and 1882, of which 114 were due to the spontaneous combustion of oils, dyed cloth or yarn, and bituminous coal, 27 to sparks and defective chimneys, 40 to matches, 138 to foreign substances in picker, 134 to friction, 36 to lighting apparatus and the remainder to fireworks, stoves, pipes, cigars, lightning, broken lanterns, etc. He describes the fireproof doors for use in picker buildings, and concludes this portion of the work by a state-

ment of the advantages of electric lighting, of the precautions to be adopted in its use, and by a brief notice of other important points.

It must be remembered, however, as Mr. Woodbury remarks, that the value of the best apparatus is limited by the competency with which it is managed; and it is generally worthless, except when its use is directed by the wise, cool head of the leader.

In the second part, defective features of construction are pointed out, attention is drawn to principles of sound construction, and the author explains how iron columns should be protected and how the roofs should be covered. He carefully considers the strength, stiffness, and nature of the floors, and gives very valuable and original tables of tests of full size timber columns. Abstruse mathematical formulæ are avoided, and the subject is perfectly intelligible even to a man of the most ordinary mathematical attainments.

The book is interesting, well printed, and well illustrated.

The Air we Breathe and Ventilation, by H. A. Mott, Jr. Ph. D. and C. (New York : John Wiley & Sons.)

The problem of providing proper ventilation for dwelling houses and public buildings is confessedly a most difficult one, and one which has not yet been well solved. Information respecting all undertakings of this kind is very important, whether it may serve as a guide for showing courses to be followed with advantage in the future or to indicate what should be avoided. In the little book before us, Mr. Mott first considers the composition of the atmosphere, and points out the various characteristics of its constituent elements (oxygen, ozone, nitrogen, ammonia, carbonic oxide, etc.) and their relative influence. He then carefully discusses what is called the aspirating system of ventilation, being convinced that this system is founded on a correct principle. The impure air is drawn or aspirated out of a room, and its place is replaced by fresh air admitted through cracks and pores in the walls, doors, windows, etc. Instead, however, of relying on such modes of admission, it would be both advisable and preferable to provide suitable ducts, the openings of which could be regulated at will. The author describes the Cameron, Gouge and other systems, and refers at some length to the application of the former to railroad cars. The question of fans, air-meters, etc. is also dealt with, and the work is illustrated by several clear and carefully executed diagrams.