SCIENTIFIC CANADIAN.

MECHANICS' MAGAZINE AND PATENT OFFICE RECORD

Vol. 13. MAY, 1884. No. 5.

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

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ARCHITECTURE AS A SCIENCE.*

(With special relation to Construction, Engineering and Modern Requirements.)

BY A. T. TAYLOR, M.R.I.B.A.

(Continued from page 99.)

This is unhappily what has been done to a large extent in buildings, especially in the States. I think that for buildings for commercial purposes, for exhibitions, and such like, and in crowded cities where space is valuable and light precious, entire iron construction will be more and more used. I cannot see that it will even be wholly successful artistically, as there will be none of that substantial appearance or breadth of effect, which is so necessary, but if such buildings are designed in a common-sense way, *i. e.*, recognizing the fact that the material is wrought and cast-iron and obtaining such embellishments as may be desired, in a way to bring out the legitimate capabilities of the material, then a certain amount of success will be achieved.

One great objection to such buildings is they are not fireproof—if they are cast-iron they get heated, and when cold streams of water are thrown on them they crack and break, or if of wrought-iron, they bend and twist under great heat, and even in ordinary circumstances the metal is so affected by the changes of temperature, in the way of expansion and contraction. that it is much more difficult in a building to allow for this than in a bridge or railway station roof.

Iron columns, girders, etc., in internal construction, ought, as a rule, to be encased in some non-conducting material, such as terra cotta, plaster of Paris, etc., and if they can be kept from rusting, they are otherwise safe.

In arranging one's materials for the construction of a building, it is necessary that not only must each be sufficient for its purpose and the weight it has to carry, but it must also convey the impression to the beholder that it is sufficient, otherwise there is left on the mind a feeling of insecurity and dissatisfaction which is fatal to the artistic success of a building. It is no uncommon thing to see a high block of heavy stone buildings apparently standing on the edge of a few sheets of plate glass in the windows of the shops below. It is not sufficient for us to reason thus and say:—Now, I know behind that plate glass there must be iron columns, or uprights, with cross girders on top to carry that immense weight. To satisfy the artistic needs of such a building it is necessary that there be *visible* a sufficiency of pier or support to carry the superstructure; and this can generally be obtained (but it takes a little more trouble to design), without materially reducing the clear space, which is such a desideratum to the modern shopkeeper and salesman, in order that he may by the exhibition of the latest fashions in his windows, or the announcement of great bargains at ruinous prices, allure those not over-wise people who are ever on the watch for bargains, even if they be of things they have no possible use for.

To see an elephant going on high and slender stilts would not be more preposterous than are some of the modern buildings. In what I am saying I trust you will not misunderstand me and think I am alluding to Montreal buildings. I am rather referring to what is too common in England and other countries.

If the engineer, but especially the architect, will be but content to sit humbly at the feet of Nature, and watch her methods and principles, whether it be in the construction of animal or plant life, or in the wonderful instinct with which many of the creatures are endowed, it will be the best training college, and there they will obtain the noblest degree. The cells of the honey bee are marvels of mathematical accuracy (without these little mathematicians having had the advantage of a course of lectures in applied science at McGill College), and the shape of these cells are so adapted as to unite the strongest form, with the greatest capacity for storage.

The web of the despised and much persecuted spider is a magnificent engineering work, where the little engineer not only designs the structure and executes

*A lecture delivered before the Faculty of Applied Science, McGill University.