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NEW YORK, SATURDAY, JULY 14, 1900.

FIRE-PROOF DOCKS—THE MORAL OF A GREAT CALAMITY.

The tragedy of June 30 has taught us that we may no longer associate ideas of absolute security with the wharves and piers at which shipping loads and unloads in the interim between its various deep sea voyages Three costly steamers, four large piers, and a pitiful death roll of over three hundred souls sent to swift destruction, is a record that may well shake our confidence in the safety of the system of dock construction now in vogue in the port of New York. It would be the blindest folly, and would betoken a criminal indifference to the value of human life, to ignore the obvious lesson of this disaster, which teaches us that wooden docks and pier sheds of the kind that were consumed like tinder around the imprisoned unfortunates have no lawful place among the buildings of a great metropolitan city.

There is a certain sense in which it is fortunate that the disaster was as great as it was. Had it been less, we might have settled down into the old methods of construction, and continued to build piers and sheds that are a positive disgrace to the capital city of the New World. As it is, the devouring fire did its work so completely and with such portentous suggestion of what might have happened, had the calamity taken place an hour or two earlier, when one of the trans-Atlantic ships was just setting out on her voyage, to the usual accompaniment of crowded docks and crowded decks—that only one result seems possible, and this is, that steps will forthwith be taken absolutely to prohibit for the future the construction of wooden piers and pier sheds.

One of two things will occur, either the horror of that Saturday afternoon will pass only too swiftly out of the public mind and our wharves will continue to invite another holocaust whenever a steamer loads and unloads at this port, or we shall accept and put at once into practice the imperative lesson that has been taught us.

To be sure, it is out of the question to advocate the wholesale pulling down of the existing docks and their rebuilding with concrete or masonry. On the other hand, laws should certainly be passed regulating the construction of all future docks, and specifying that they shall be as secure as the latest methods of fireproofing can make them. At present there are scores of wharves and sheds that are eminently qualified, not to retard, but to assist the spread of fire. Standing upon piles which allow a free draught of air to pass beneath and up through a burning structure—constructed with wooden floors, wooden posts and framing, and wooden roof-trusses—with dust lying thick in every corner and on every beam and rafter—with floors that are frequently oil-soaked and strewn with combustible fragments worn off from the floors themselves, and torn from the goods in transit—these huge tunnel-like piers and sheds, reaching, as they do, anywhere from 600 to 800 feet into the river, without a single partition to stay the sweep of the hot gases and flying débris of a fire, seem to possess every element that could conduce to just such a prairie-like rush of fire as occurred in the recent disaster.

Of course, the piers are not all equally perilous, the new docks occupied by the White Star and Cunard Lines on the New York side, and one, at least, of the destroyed docks of the North German Lloyd Company, were of greatly superior construction to the many fire-traps along the water front which only await an opportunity to repeat the Hoboken disaster. Nevertheless, it is a fact that with the exception of the two masonry docks at the Battery, there is not a pier in the harbor that can be called strictly fireproof.

Why is it, we ask, that with all the care and expense which have been lavished in producing fireproof buildings on shore, we have practically made no effort to apply fireproofing to our docks? The North German Lloyd calamity has proved, surely, that the call for fireproofing is as urgent, nay, more urgent, for wharves and piers, crowded as they are at steamer sailings, than it is in the less densely populated buildings on shore. If the cost of masonry construction is considered to be prohibitive, it is surely not too much to ask that all timber used shall be thoroughly fireproofed; and, indeed, in view of the comparatively small difference in cost between a timber and a steel pier-shed, it would be no great hardship to insist that all future sheds shall be steel-framed, and sheathed with corrugated iron.

Another important lesson of the fire is the necessity of organizing a separate river fire department, whose plant, organization and training shall be specially qualified to cope with fires of this kind. Without in any way detracting from the excellent work done by the fireboats and the various tugs on that fatal afternoon, it cannot be denied that a thoroughly organized floating fire department would have done more in the way of saving life and the salvage of ships than was accomplished by the well-meant but disorganized efforts of the river tugboats. A special department of this kind should have a half dozen fireboats for every one that the city now possesses.

A further lesson is suggested by the fate which overtook the unfortunates imprisoned within the steamer "Saale," whose lives might have been saved had the portholes been a few inches larger. It is true that the latest steamships (the "Saale" was built in 1886) have larger portholes than were found in this vessel, and only a slight increase in diameter would be necessary to allow egress from a burning or sinking ship. The modern steamship carries a towering mass of upper works, the whole of which, because of its open construction, is liable, if ignited in a strong breeze to be rapidly converted into a sea of fire—as actually happened in the case of the burned ships. With these upper works on fire, escape by hatchways and stairways is impossible, and the only means of exit is by the portholes, coal-ports and gangways.

We are aware that sudden disasters are liable to provoke a hasty condemnation of existing conditions and a demand for the most extreme and impossible preventive measures. If any of our readers are disposed to consider our suggestions as being of this class, we ask them calmly to consider what would have been the loss of life had the Hoboken fire started say five minutes before a departure of the "Kaiser Wilhelm der Grosse," when possibly from two to three thousand souls would be crowded on the ship, the gangways and the piers?

AN IMPROVEMENT IN RADIOGRAPHY.

In a paper lately presented to the Académie des Sciences, Dr. T. H. Guilloz describes a series of experiments which he has recently made which show the remarkable diffusion of the X-rays by the surrounding objects, and the importance of this action in radiographic work. It is, in fact, difficult to obtain a good radiograph of the thicker portions of the body which will have a good contrast, and the plates thus obtained generally show more or less fog in the development. This cannot be explained by a pure and simple absorption of the rays; it has been supposed by some that the action was due to the diffusion of the rays by the air, but this is, in fact, so small as to be entirely negligible in practical work, and could not produce the effect observed. After a number of experiments Dr. Guilloz seems to have established the fact that this action is due to the diffusion of the rays by the surrounding objects, such as the supports, containing apparatus, walls of the room and tissues of the subject, and in some cases by the body of the operator.

The following experiment shows how strongly worked is this secondary action or diffusion of the rays, The vacuum tube emitting the rays is placed above a large plate of lead about one meter square and two millimeters thick. The plate has a rectangular opening in the center, 4 by 10 centimeters, which allows the rays to pass. In order to have a region which is entirely shielded from the action of the rays passing through the opening, a steel plate, 15 millimeters thick, is placed over the lead plate, having one side in line with the side of the opening. The region below the steel plate is thus entirely protected from the action of the rays which proceed directly from the source, this being verified by using a fluorescent screen of platinocyanide of barium, and it was found that it was impossible to obtain a silhouette of the hand or other object when placed against it. If now an attendant covers with his hand the opening through which the rays pass, or if the hand is placed in the path of the rays near the opening, the silhouette of the hand appears on the fluorescent screen. In fact, it is only necessary to place an object in the path of the rays, at any point where it may be viewed from the screen, to cause an illumination of the latter. It seems, therefore, that in taking a radiograph of a thick part of the body, secondary or reflected rays are produced, not only at the surface of the body, but throughout its whole thickness, and the experimenter shows several radiographic plates which he has obtained by an exposure of two minutes under the action of the rays diffused by the body.

The negatives were obtained by placing a photographic plate in the position previously occupied by the fluorescent screen; the plate was wrapped with black paper, and one-half of it covered with tinfoil. An exposure of two minutes was made, placing before the uncovered half of the plate a pocketbook, the fingers, etc., this being done after all objects were carefully removed from the path of the rays. The tinfoil was then transferred to the other half of the plate and a second exposure made, while an attendant covered the opening with his hand. Upon development, the plate showed on the first half a scarcely perceptible image, this being, no doubt, due to a slight diffusion from surrounding objects; the other half, on the contrary, showed a vigorous impression, caused by the rays diffused from the hand. The experimenter lays stress on the fact that in taking a radiograph the operator should consider all the surrounding objects as capable of diffusing the rays, which strike the plate and produce a fog, especially with long exposure. In the case of those parts of the body which have but little thickness, this action may not be very perceptible, but for the trunk of the body, for instance, where a long exposure is necessary, these secondary rays play an important part, and the surrounding objects may give off rays which have the same order of intensity as those which have passed through the body. The best method of avoiding this action is probably to surround the subject by a lead plate which follows the contours of the part in question; a metal diaphragm may be used to advantage in front of the tube.

CURIOUS CHEMICAL COMPOUND.

M. Maurice Francois has succeeded in producing a compound which has been hitherto looked upon as somewhat hypothetical, namely, the iodide of dimercurammonium. He has recently undertaken a series of experiments in which he forms this body in the amorphous and also in the crystalline form. The only previous work in connection with this body is that carried on by Weyl, who claims to have obtained the anhydrous iodide by treating, under pressure, mercuric iodide by liquefied ammonia; he considered it a very unstable body, and, in fact, scarcely to be perceived in the reaction. This body has been considered as taking the hydrated form, and its formula has been given as Hg_2NI, H_2O, or else, by considering that the oxygen enters into its constitution, the formula is written:

$$\begin{array}{l} \mathrm{H\,O\,Hg} \diagdown \\ \quad\;\; \mathrm{Hg} = \mathrm{N} - \mathrm{I} \\ \quad\;\; \mathrm{H} \;\; \diagup \end{array}$$

in which H O Hg is considered as a monatomic group. The experimenter states in a communication made to the Académie des Sciences, that his observation of the body leads him to conclude that it is always anhydrous and that it corresponds to the formula Hg_2NI. As he produces it, it appears to be a very stable body, taking the amorphous or the crystalline form, according to the process of preparation.

After some preliminary work, he finds that the amorphous form is best prepared by the following process: 30 grammes of mercuric iodide are carefully mixed in a glass mortar with 30 c. c. ammonia (D = 923), and the soft paste thus formed is transferred to a flask containing emery. It is left to stand for twenty-four hours, and at the end of that time the white mass is placed in a mortar and 90 c. c. of a soda solution of 25 per cent strength is added. It is well mixed and left under a bell-jar for five days, the mass being stirred from time to time. The clear liquid is then poured into a funnel whose neck is stopped with cotton, the remainder is added and the whole filtered. The matter is then mixed in the mortar with 90 c. c. soda solution, and left as before for five days, after which it is again filtered. It is treated a third time in the mortar by the same quantity of soda solution and then placed in a porcelain dish and heated for two hours in a water bath kept at the boiling point. It is then washed by decantation and dried at 50° C. One thus obtains 18 grammes of the iodide of dimercurammonium, which gives by analysis nearly the theoretical values corresponding to the formula Hg_2NI.

To produce the crystalline form of iodide, which the experimenter now obtains for the first time, its formation must be carried on very slowly, in which case the crystals are deposited. The experiment is carried out as follows: 10 grammes of mercuric iodide are mixed in a mortar with 50 c. c. of ammonia and left to stand for eight days, it being agitated once or twice a day. The liquid is filtered and is mixed in a dry flask with two volumes of ammonia. In this case there is produced, after 24 to 48 hours, a deposit of small crystals, which appear almost black. This deposit increases during ten days or more. The crystals are collected on a filter, and after drying in air they are washed with ether. The weight of crystals given with the above proportions is about 0·8 gramme. The iodide thus obtained in the crystalline form has a dark purple color when viewed in the mass; the crystals observed under the microscope are a dark reddish brown when seen by transmitted light. They are very well formed, with faces and angles of a remarkable clearness