

unless it is treated in an approved manner. The subject of making soft fibre boards fire-resistant is one which should, we think be submitted to the Department of Scientific and Industrial Research as a matter of urgency.

226. We consider that no openings should be cut in concrete and brick walls between compartments of buildings or adjoining buildings unless such openings are provided with fire doors complying with the fire underwriters' specification, and, furthermore, we consider that, in the class of building under consideration where such openings have been cut and are not provided with such fire-doors, the fire-doors should be provided forthwith. Compensating factors in the case of individual buildings where automatic sprinklers are installed can, as we have suggested, only be left to the discretion of the local authority engineer.

227. Since records show that a large number of major fires arise from carelessness, it is felt that publicity should be given to the question of fire-prevention and that the means of ensuring publicity under Government control be made available for this purpose.

This policy has been adopted in overseas countries and is conducted through the usual channels open to such a purpose. In particular, the dangers of smoking and the improper uses of electrical appliances have been stressed. Careful housekeeping on premises is of the utmost importance as it eliminates undue collections of rubbish, and enables easy inspection and movement within the premises.

228. In our report we have drawn attention to the difficulties of the type of veranda over the footpath on Ballantyne's building at the time of the fire. It is recommended that all new verandas should be constructed of the flat suspended type without any undue obstructions thereon. They should be free of signs on their roof so as to permit free movement. All signs which would, in the opinion of the engineer, be a source of obstruction on existing verandas, having regard to the construction of the building and means of egress, should be removed. All existing verandas which do not conform to the flat-roofed type should be examined and altered where necessary to make them suitable for escape purposes. As these verandas are suspended over the streets of the municipality there should be no difficulty in asking the owner to do what is necessary.

229. Of all the professional people connected with the construction of buildings, the architect is in a unique position for advising the owner, and it is surprising that he has not exerted greater influence towards bringing about better fire-prevention practice in the construction of existing buildings.

230. Special mention of basements is necessary as they are recognized as being a frequent and particularly difficult source of fires. Basements usually contain large quantities of materials in storage, and a fire is difficult of location and difficult to attack because of obstruction by smoke. A basement is particularly dangerous at night-time because the fire can proceed to a considerable size before discovery, but in Ballantyne's fire we have a fire which occurred in the daytime in a building occupied throughout, and yet it defeated any steps which were taken to control it, and developed into a major conflagration with dire and disastrous results.

231. The fact that this was a concealed fire seems to have been one of the greatest factors operating against the realization of its potentialities. Because of the heavy fire loads in basements, and because fire often spreads undetected therein until smoke or flame burst through to street-level, and because of the difficulty in locating and attacking fires therein, we are of the opinion that special protection should be given preferably by the installation of automatic sprinkler alarm systems in every case.

There can be cases for making an exception, as, for instance, when the building is designed throughout of reinforced concrete and is constructed in accordance with the Means of Egress Code and the basement has alternative means of egress opening to the outside of the building.