A TALK ON FIRE PREVENTION AND PROTECTION.

By Mr. J. Wilkins.

Mr. Wilkins said that the Metropolitan Brigade was the only one in the world to-day which specialised in fire prevention. Only a comparatively few years ago they had little machinery to help them. They depended in a great measure upon the water taken from the mains by gravitation and run through a canvas hose carried on a hand reel. In those days the Brigade was largely composed of ex-sailors, who proved excellent men for the conditions under which the work had to be done. Those were the days of the manual fire engine, which demanded a great deal of exertion on the part of the men to carry on the work.

The Metropolitan Brigade had organised what was termed a special service staff, the members of which, though not firemen, were connected with the Brigade as a branch of the fire-fighting staff. Their duty was to inspect private appliances, particularly at theatres and public places of entertainment. Actors and others were somewhat careless, and it was only by continual watching that theatres and such places were kept safe. There had not been a calamitous theatre fire in Australia yet, and they believed such a thing would not happen while their special service staff was in existence. They were improving and enlarging it from day to day; and the members were engaged in patrolling warehouses and other large places of business. Most fires were caused by carelessness, neglect, or ignorance; and the fireman walking through the place would often point out a source of danger. Many people allowed themselves to be lulled into a sense of false security. Frequently the members of the Brigade advised the proprietors of a warehouse that a certain protective course should be adopted, and were met with the reply that they had been in business for 30 years and had not yet had a fire. But by taking a few simple protective measures they would prevent the fire that otherwise would almost certainly occur. Nearly all fires were preventible. Everything consumed by fires was a loss to the community or nation. It was futile to say that a place was insured, because every member of the community had to pay his proportion towards that insurance. The property of the country belonged to the people inasmuch as the insurance companies collected from
the many and paid out to the few who suffered the loss. Therefore when a fire occurred it was an irretrievable loss. In America the annual fire loss ran into hundreds of millions of pounds, probably on account of the enormous quantity of wood used for ornamental purposes in buildings. Chicago was nearly burned out for the same reason. America was now looking at the matter from the point of view of prevention, and he was sure before long the brigades in America would adopt preventive measures on similar lines to those of Melbourne.

A time check was employed for the purpose of ascertaining whether the watchmen were attending to their duty. At Newport Works a number of men were employed patrolling the works, and as a result the amount of damage by fire over a number of years did not exceed a few shillings. The men were not allowed to go to sleep on duty, for if a watchman failed to go his prescribed round the time check would warn the nearest fire station, where immediate steps would be taken to see that he carried out his work effectively. It had been found very difficult to construct an apparatus which the men could not fake, but the instrument submitted had supplied the need.

Spontaneous ignition had to be reckoned with. That was the point where the slow combustion that was continually going on changed to rapid combustion. In this connection oily rags and other waste material left lying about were a prolific cause of fires.

An effective means of reducing the loss by fire was the use of fire-resisting materials in building construction. Engineers were particularly concerned in reinforced concrete buildings to-day. Ferro-concrete was the best fire resisting building material, because it was not so liable to collapse under heat as other materials. Brick buildings were a source of great danger when a fire was raging inside, because the girders must expand with the increased temperature, and push the walls out; or, on the other hand, the girder would sag and the walls would be pulled in. Sometimes the wall fell rapidly, but if after bulging the wall remained standing for some time, it was almost certain that it would not then fall outwards.

A tremendous amount of loss was caused through water damage. Why could not the floors of large buildings be made watertight, with provision for running the water off without damaging the floors underneath? At present concrete floors were usually constructed without means of conducting the water away.
An effective method of fire prevention was the use of an electric thermostat, which would warn the brigade if a rise in temperature of half a degree in a minute should occur. Variations of temperature due to natural conditions would not affect the apparatus, but a sudden rise of half a degree in a minute would cause the warning signal to be given, and enable the brigade to take such steps as would prevent what might otherwise prove to be a serious fire.

The lecturer exhibited a thermostatic alarm made at their own works and perfected after many years of testing. It was composed of several pieces of bismuth and antimony coupled together in series. It was so sensitive that the warmth of the hand would cause the alarm to operate. In all electrical apparatus there was a danger of the contact being broken by the presence of a little grit or other substance at the contact point, but the thermostat he showed required no contact. It could be painted or whitewashed without in any way affecting its utility. That was a decided advantage over the ordinary thermostat that required a contact to operate.

When once a fire had started there were various means of extinguishing it, but the great extinguisher was water. It was necessary to exclude the oxygen from the burning material, otherwise the fire would still burn. Water acted in two ways. It reduced the temperature of the burning material, and by smothering it excluded the oxygen. For volatile oils they used carbon tetra-chloride, which formed a thick black smoke and excluded the oxygen. This could be used very effectively should a fire occur in a high tension electric installation, where the use of water would be inadvisable. Sometimes sand was used to extinguish an oil fire, but it was not the most effective material, as the oil would rise above the sand and continue burning. Sawdust was a much better extinguisher, as it would remain on the surface and smother the fire.

The automatic water sprinkler was a most effective means of extinguishing a fire in the early stages. A valve was released by the melting of a fuse at a temperature of 150 deg. Fahr. A device had been installed by means of which a call was received by the brigade as soon as the water commenced to run through the main valve, and the notification to the brigade remained in operation as long as the water continued running through that valve. The device had been in use for a number of years, and had required no attention since its installation. It required practically no maintenance.

The water from the mains was depended on principally for extinguishing fires, and Melbourne was fortunate in that respect, as the static pressure was from 125 to 130 lbs.
They could extinguish 90 per cent. of fires without recourse to pumps. But they were equipped with some very fine pumps for those occasions when pumping was necessary. Some years ago they had to depend on a steam fire engine, but this had a serious drawback in that it took 12 to 15 minutes to raise steam from cold water. They found it impracticable to maintain steam continuously owing to the rapid deterioration of the boiler.

The use of foam was a method employed for extinguishing fires in oil tanks. In some of the oil refineries in America the plants were somewhat elaborate. Sometimes the fire would commence with an explosion, when the foam plant would be wrecked, but otherwise the foam was very effective.

It was the duty of everyone to take part in the effort to prevent fire waste. There was no reason why a strong fire brigade should be maintained, because there was no reason why there should be big fires. But as matters were at present, owing to the carelessness of many people, and the inadequacy of the preventive measures employed, the fire brigade, which was a necessary evil, had to be maintained at an effective strength.
DISCUSSION

The CHAIRMAN (Mr. A. CASSON SMITH) said they had listened with great pleasure to the talk on the work of the Fire Brigade, and had learned much. The work of the brigade was very efficient and thorough, and every member was more or less a mechanic. He understood the brigade manufactured their own appliances.

Mr. W. ISON said he wished to express his appreciation of Mr. Wilkins’s lecture. The eminently entertaining manner in which it was delivered made it most interesting and instructive. He moved a hearty vote of thanks to Mr. Wilkins for his lecture.

Mr. A. E. BATTLE asked, in view of the lecturer’s statement that in the early days the brigade was composed mainly of ex-sailors, what type of men was selected now?

Mr. WILKINS said to-day everything was becoming mechanical, and they endeavoured to obtain young fellows who were already motor-drivers. Many were mechanics, and some had served apprenticeships to various trades.

Mr. BATTLE said that since the installation of oil fuel burners on board ship, there was great liability to oil fires. The means used to combat an oil fire on board was either steam or foam. They did not try water.

Mr. WILKINS said the burning oil would float on the water, and the fire would be carried to parts of the ship that otherwise would be immune, but the foam would remain above the oil and smother it.

Mr. BATTLE said the regulations directed that several bags of sand should be kept as a protection against fire.

Mr. WILKINS said sawdust was better than sand. Being lighter, it did not sink through the oil; but smothered it.

Mr. BATTLE said a burning vat of oil was very different from a fire in a small quantity of oil on the floor of a vessel.

Mr. A. CASSON SMITH said dust in a flour mill, or where a fire occurred in a building surrounded by high buildings, might cause an explosion.

Mr. WILKINS said they had experienced that, and had known the same thing from coal dust. They had known buildings practically wrecked through an explosion of carbon monoxide.
Mr. Wm. Chas. Rowe said he had had some experience with powdered coal. With the furnace at a temperature of approximately 5000 deg. Fahr., if the coal were shut off for a quarter of a minute and turned on again it would not light. There must be an actual flame. That being so, what caused the combustion of dust in a flour mill?

Mr. Wilkins said it could be ignited by a spark. Pulverised coal was a very difficult substance to deal with. It refused to absorb water, but when a hose was playing on it, it would fly about, and do a great deal of damage, spreading the fire.

In reply to Mr. Rowe, Mr. Wilkins said fires in motorcars were usually the result of a leakage of petrol through a defective pipe; or a weak mixture might flash back into the carburettor, and if there was a leakage of petrol a serious fire would ensue.

The Fire Brigade had no supervision in the case of new buildings, except by the courtesy of the municipalities. They not infrequently had fires in churches. The dangerous part of a building was between the ceiling and the roof, and this especially applied to churches. If a fire occurred in such a place, it was very difficult to attack it. When once a fire started in a church it usually became a serious one.
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