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A VISIT TO A FIRE AT MESSRS. LEBENKIN BROS. LTD. EDMONTON.

by

K. H. Palmer

Summary

A fire in a factory roof space is described which is believed to have originated from a small source of ignition which fell on to the roof, but did not enter the roof space.

October, 1955.

File No. F. 1000/32/8

Fire Research Station,
Boreham Wood,
Herts.

A VISIT TO A FIRE AT MESSRS. LEBETKIN BROS. LTD. EDMONTON.

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General details

The premises of Messrs. Lebetkin, Commercial Road, Edmonton, Middlesex, furniture manufacturers, were visited by the author and A.D.O. Squire, of Middlesex Fire Brigade, on September 2nd, 1955. A fire had occurred in the roof of the single storey factory, the alarm having been given at about 9 p.m. on September 1st, 1955, and had been extinguished before much fire damage had developed. The roof, of the north light type with valleys, was covered by asbestos tiles on one side and was of glass on the other; the fire had developed on the side covered by asbestos tiles, which sloped at about 30° to the horizontal.

Construction of the roof

The tiles were laid so that about half the length of each (i.e. 26 cm.) was exposed and they were fixed to a close boarded backing which was in turn fixed to wooden purlins. Asbestos boarding fixed to the underside of the purlins formed the ceiling of the factory. Deposits of wood dust had collected along the edges of the tiles to a depth of 1 cm. and width of 4 cm. and had also penetrated between the tiles forming deposits up to 0.6 cm. in thickness. It was known that sawdust deposited during dry weather would expand in the rain and force the tiles further apart; on drying out more dust could enter and the cycle would be repeated. The close boarding on which the tiles rested was about 1 in. thick and 4 in. wide, with $\frac{1}{4}$ - $\frac{1}{2}$ in. gaps between the boards, and was fixed to purlins 6 in. deep and $1\frac{1}{2}$ in. thick spaced 3 ft. apart. There was thus an air gap 6 in. deep between the close boarding and the $\frac{1}{2}$ in. thick asbestos ceiling. A sprinkler system was installed about 6 in. below ceiling level.

Details of the fire

The alarm was raised by the night watchman who saw flames outside, on the roof; no smoke had penetrated below the ceiling into the factory. There were also a few smouldering fires in the sawdust collected in the roof valley. After the fire was extinguished it was found that damage was restricted to an area about 8 x 6 ft. halfway up the roof. The asbestos tiles were broken and the close boarding and purlins were heavily carbonised. A wooden cat walk on the roof had been burned away where it crossed the damaged area; the cat walk was fixed to the roof and extended about $1\frac{1}{2}$ in. outwards from the roof. At the time of the visit much of the dust deposited on the roof had already been removed during salvage operations; a sample of dust was obtained from underneath an asbestos tile near the affected area and was later shown to smoulder readily.

There was no fire damage below ceiling level in the factory; none of the sprinkler heads had operated.

Cause of the fire

It seems highly probable that the fire originated on the outside of the roof and was the result of a spark from a boiler chimney igniting a dust deposit, possibly that which had collected against the side of the cat walk. A boiler fed with sawdust and shavings had been in operation earlier on the day of the incident and the smoke from the chimney would pass over the area of the fire.* The chimney was about 120 ft. away from the fire area and its top was about 20 ft. above the area. The wind speed was about 10 knots.* After ignition of the external dust

*Based on information supplied by the Weather Bureau, Meteorological Office.

smouldering could then spread through the dust trapped between the asbestos tiles and then ignite the close boarding under the tiles; there would be sufficient air between the purlins to enable smouldering to continue in the roof space. The final stage was probably the cracking of the asbestos tiles by heat and the development of visible flaming.

The incident was of particular interest since it showed how a small source of ignition dropping upon a roof could lead to a fire within the roof space, without the source itself entering the interior. It also showed that in furniture factories, and other premises where wood dust deposits may accumulate, a high standard of housekeeping is required if smouldering fires are to be avoided. In the present incident it is fortunate that no burning material had fallen into the factory during the fire, otherwise considerable damage could easily have resulted.