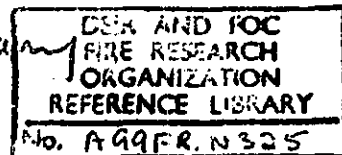


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DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH AND FIRE OFFICES' COMMITTEE
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A VISIT TO THE SCENE OF A FIRE AT THE GOODYEAR TYRE & RUBBER CO.,
WOLVERHAMPTON

by

H. L. Malhotra

July, 1957.

Fire Research Station,
Borcham Wood,
Herts.

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Introduction

A visit was made on 17th April 1957 to the scene of a fire, which had occurred on 12th April at the Goodyear Tyre & Rubber factory at Wolverhampton, in order to examine the effect of the fire on the building. Chief Fire Officer Jessop and the Deputy Chief Officer of the Wolverhampton Fire Brigade were present to give assistance and the description of the fire is based on information they supplied.

Description of the building

The fire occurred in one of the new buildings only recently occupied and used for the production and curing of rubber fabric and hoses. The building which runs North East and South West is built on a sloping site and consists of a basement for one half of its length. It is a steel framed building 550 ft x 250 ft having five bays with external walls of brick. Unprotected steel columns and beams supported a 4 in. concrete floor of floating type over the basement half of the building. The floor was finished with mastic asphalt 1 in. thick. The roof consisted of bitumen protected corrugated steel sheets, with full length monitor lights for each of the five bays. The roof of the single storey portion was lined with 1/2 in. fibre insulation board covered with bitumen, whereas the roof of the two storey part was covered with two thicknesses of fibre insulation board on the top and finished with bitumen. There was no compartmentation in the building and the ventilators in the monitor roof lights were mechanically operated and of a sliding type.

Description of the fire

The basement part of the building was used for the storage of finished products and the fire is stated to have started there in a stack of rubber hose. When the Fire Brigade was called about 15 minutes from the start of the fire it had gained a good hold in the basement. The smoke and the rapid spread of fire in the stored goods made fire fighting extremely difficult. The fire appears to have spread to the first floor, probably by the way of service ducts in the floor, and within a short time to the underside as well as the top surface of the roof. In just over an hour from the start of the fire collapse of the concrete floor over the area of the origin of the fire occurred due to the failure of the unprotected steel columns and beams. This resulted in further parts of roof becoming involved in fire. The opening of windows and doors in the basement at this stage by the order of the C.F.O. provided good venting and resulted in the abatement of smoke and helped the fire brigade to bring the fire under control.

Effect of fire on the building

There was complete collapse of the structural steel work in the basement for an area of approximately 70 ft x 100 ft resulting in the breaking up of the concrete slab floor supported by the steel member. The bitumen coating on large areas of the roof sheeting was burnt off in the affected bays and the monitor lights damaged. The bitumen on

top of the roof had softened and flowed down the gutters and there was evidence of molten bitumen having dripped inside the building. The lining of fibre insulation board in the single storey part did not become involved in the fire.

Observations on the fire

1. This fire provided another example of the hazard of buildings having large floor areas undivided by fire resisting partitions.
2. There was no provision for venting a fire.
3. The ignition of the combustible roof covering added greatly to the volume of smoke in the building and caused a diversion of fire fighting personnel and facilities.
4. The unprotected steel stanchions and beams were responsible for the collapse of the concrete floor which should otherwise have provided a fire resistance of at least one hour more than that given by the structural steelwork.