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THE FIRE HAZARD OF THE DOMESTIC CARPET

by

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Summary

In the one-in-four sample of reports of fires attended by Fire Brigades in the United Kingdom during 1955 there were 184 incidents in which carpets or rugs were believed to be the materials ignited first. Eighty two (50 per cent) of the incidents in which the carpet or rug was in normal use were caused by embers and sparks from domestic fires and a further 25 per cent by soot falling from chimneys. Thirty per cent of the incidents did not spread beyond the carpet, 42 per cent spread through the carpet, and 28 per cent of the incidents involved objects on or near the surface of the carpet.

July, 1957

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INTRODUCTION

An analysis has been made of incidents attended by Fire Brigades in the United Kingdom during 1955 in which the materials first ignited were reported to be carpets or rugs. In the one-in-four sample of all reports of fires attended by Brigades there were 184 such incidents.

CAUSES OF FIRE

Table I shows the causes of the fires and the extent of the damage. One hundred and sixtythree fires involved carpets or rugs in normal use as floor coverings and a further 6 incidents were due to rugs or carpets being hung too dry near a source of heat. About 75 per cent of the fires were caused by embers or sparks from domestic fires and soot falling from chimneys.

EXTENT OF FIRE

Fifty incidents, 30 per cent of those which involved carpets or rugs in normal domestic use, were confined to the carpet or rug first ignited and in 31 of these fires the damage to the carpet was slight. In 37 incidents fire spread through the carpet or rug and involved the material underneath, e.g. linoleum and floorboards, but did not spread to the contents or to other parts of the structure of the room. Seventysix incidents (46 per cent) spread to other contents or structure of the room and in 32 of these fire also spread through the carpet or rug and involved the material underneath.

EXTENT OF FIRE IN INCIDENTS WHERE FIRE DID NOT SPREAD THROUGH THE CARPET

There were 44 incidents in which fire spread beyond the carpet, but not through it to the material underneath, and in 27 (61 per cent) of these the fire was sustained long enough to damage furniture, contents or structure in close proximity. In 6 incidents there was severe damage to the contents of the room only, and in a further 4 cases the fire involved structural materials other than floor and contents. In 7 incidents the fire spread beyond the room of origin.

EXTENT OF FIRE IN INCIDENTS IN WHICH FIRE SPREAD THROUGH THE CARPET AND ALSO INVOLVED OTHER MATERIALS

In twentyfive of the incidents in which fire spread through the carpet and involved flooring as well as other materials on or around the carpet, the only constructional material involved was floorboards. In 14 of these latter incidents the damage was to less than 10 square feet of flooring. The fire in a further 3 incidents spread through to the ceiling below, and in another case fire spread to the neighbouring rooms and involved one floor.

CONCLUSIONS

It is apparent that the ignition of carpets or rugs is in the main a hazard of the domestic fire. There is some evidence that carpets and rugs are normally difficult to ignite and if ignited do not readily cause a continuing fire⁽¹⁾. The carpet and hearthrug in a living room, however, is invariably well warmed and dried and the fire in the grate can provide both a source of ignition and some supporting radiation, so that, under these favourable conditions, it may be possible for a fire to be sustained long enough to burn through to more combustible material underneath the carpet, or to ignite articles of furniture close to the seat of the fire. The actual risk of such an incident occurring is small. If it is assumed that there is only one carpet or rug at risk per dwelling the known frequency of such incidents, about 700 per year, gives a rate of incidence of such fires

of only about 0.5 incidents per 10 000 carpets at risk. The true rate of incidence is probably very much smaller than this. Despite the small likelihood of a fire being caused in any individual dwelling, it should be noted that these fires give rise to about 3 per cent of the Fire Brigade attendances at fires in dwellings. Greater use of spark guards when rooms are unoccupied would reduce the frequency of incidents which develop to an extent necessitating Fire Brigade assistance.

Reference

1. MCGUIRE, J.H., LAW, M. and MILLER, J.E. The domestic fire hazard created by flying coals and sparks. Department of Scientific and Industrial Research. Joint Fire Research Organization F.R. Note No.252. June 1956.

Table I

FIRES IN WHICH CARPETS OR RUGS WERE FIRST IGNITED

(Frequencies in the one-in-four sample of reports from Fire Brigades in the United Kingdom, 1955)

Cause of fire	Confined to carpet with slight damage	Confined to carpet	Spread through carpet to material underneath	Spread through carpet and also involved other materials	Involved other materials (no spread through carpet)	Involved other materials (slight damage to carpet)	Total
Embers, sparks, etc. from domestic fire	5	5	16	25	29	2	82
Soot from chimney	23	10	5	1	5	-	44
Gas or electric fire	-	2	-	-	2	-	4
Gas or electric fire fallen on carpet	1	-	7	2	1	-	11
Oil stoves	1	1	-	-	-	1	3
Smokers' materials and matches	-	-	4	2	2	-	8
Other causes	1	1	5	2	2	-	11
Total	31	19	37	32	41	3	163

In addition

Six incidents involved rugs or carpets hung to dry near a source of heat
 Seven incidents were caused by smoking materials dropped on car rugs
 Two incidents were caused by rugs spread on hot car engines
 Two incidents involved stored carpets
 One incident involved rolled carpet falling on fire
 One incident was caused by a short in a car heater
 One incident was caused by matting dropping over exhaust
 One incident was caused by match dropping on carpet spread in open air.