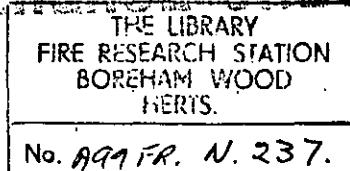


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F.R. Note No. 237
February, 1956

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(Telephone: Elstree 1341 and 1797)

FIRES IN DWELLINGS 1950-54

by

Mrs. J.E.L. Hinton and J.F. Fry

An attempt has been made to analyse reports of fires in dwellings with a view to showing any differences between the fire risks associated with houses and flats. The data have been tabulated from samples of reports received from Fire Brigades in England and Wales and Scotland in the period 1950-54.

Table 1 shows the extent of fire in dwellings reported as being of pre-war construction. The frequencies were obtained by multiplying the figures found in the sample by the corresponding sampling fraction. (In the years 1950-52 a one-in-four sample of reports was used, in 1953 a one-in-five sample, and in 1954 a one-in-two sample).

The numbers of incidents where fire spread beyond the room of origin but was confined to the building of origin are probably on the high side because of the inclusion of many in which the damage caused by the spread was negligible. Between 80 and 90 per cent of the fires in both houses and flats were confined to the room of origin in the period considered.

A very small percentage of the incidents spread beyond the building of origin.

Table 2 shows the numbers of persons rescued and escaped, and the numbers of fatal and non-fatal casualties in some incidents in houses and flats reported as being of pre-war construction. The incidents considered were those which spread beyond the room of origin in samples of the reports for the years 1950 to 1954.

Table 3 shows the number of incidents and the extent of fire in post-war non-traditional dwellings, and Table 4 the numbers of fires in flats reported as of post-war construction in the years 1950-54.

It is probable that the numbers of incidents reported as occurring in flats of post-war construction include a large proportion which occurred in buildings of pre-war origin but post-war conversion, and also that a number of post-war traditionally built dwellings were returned as pre-war.

In 1953 a revised form for reporting fires was introduced, using a different device for stating whether buildings were constructed during the pre-war or the post-war period, and it is possible that although the figures for incidents in post-war flats may still include a number of post-war conversions, a more accurate estimate of the numbers of incidents that actually occurred in post-war flats has been obtained.

In Tables 5 and 6 the causes of fires in all dwellings are shewn, together with the totals for each cause. The percentage of the total fires in houses and flats separately due to each cause are also given.

An analysis of all reports of fires in which fatal casualties occurred was made for the year 1953⁽¹⁾, and more detailed information has been extracted from those dealing with incidents in dwellings.

There were 121 fires in dwellings in 1953 in which there were fatal casualties other than those due solely to ignition of clothing. Of the 121 incidents 87 (72 per cent) were in houses and 34 (28 per cent) in flats.

The distribution of casualties according to the number of stories in the dwellings is given in Table 7. The bulk of the casualties occurred in 2-storey dwellings but this is clearly because of the preponderance of dwellings of this type.

In Table 8 the floor of origin of these fires which occurred in dwellings of 2 or more storeys is shown, together with details of those fires which spread beyond the room of origin.

More than half the fires causing fatalities in 2-storey dwellings started on the ground floor. About one-third of those in dwellings of 3 or more storeys originated on the second floor and about one-third on the ground and first floors.

Table 9 shows the numbers of persons who were rescued or escaped from fires in buildings of all types in 1953. Of those achieved with the assistance of the Fire Brigade about 64 per cent involved the use of escapes or ladders. About 42 per cent of those achieved without Fire Brigade assistance involved the use of ladders, lowering from windows, roof, etc. and jumping sheets. Among the escapes by emergency means, 88 per cent involved climbing over roofs, jumping from upstairs windows or roofs, sliding down drainpipes, sheets or ropes, and the use of fixed fire escapes and ladders.

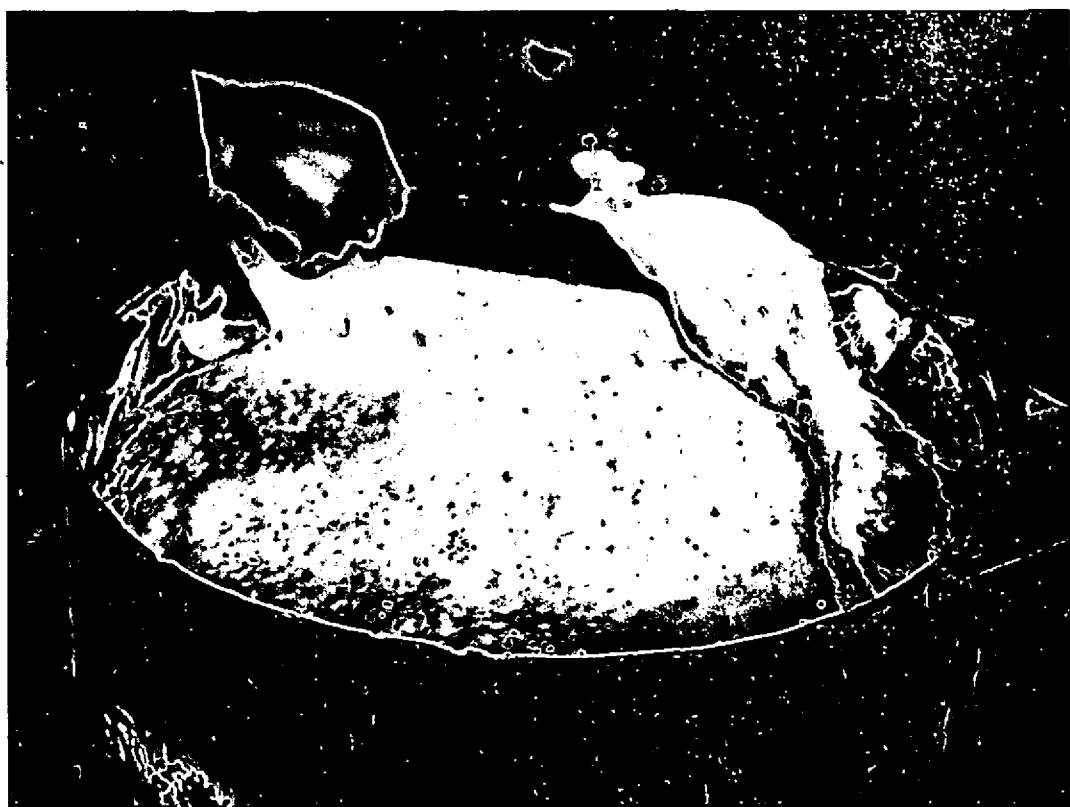
In 1953, 85 per cent of the fatalities in fires in buildings occurred in houses and flats⁽¹⁾, and when those deaths due to the direct ignition of clothing have been excluded there is still a large proportion of the fatalities which occurred in houses and flats. Therefore it is probable that a large proportion of the rescues and escapes also occurred from houses and flats.

This note has been compiled from data that is readily available and cannot be assumed to give a complete picture of fires in houses and flats. It is hoped to make a comprehensive analysis of fires in all types of dwellings in the future.

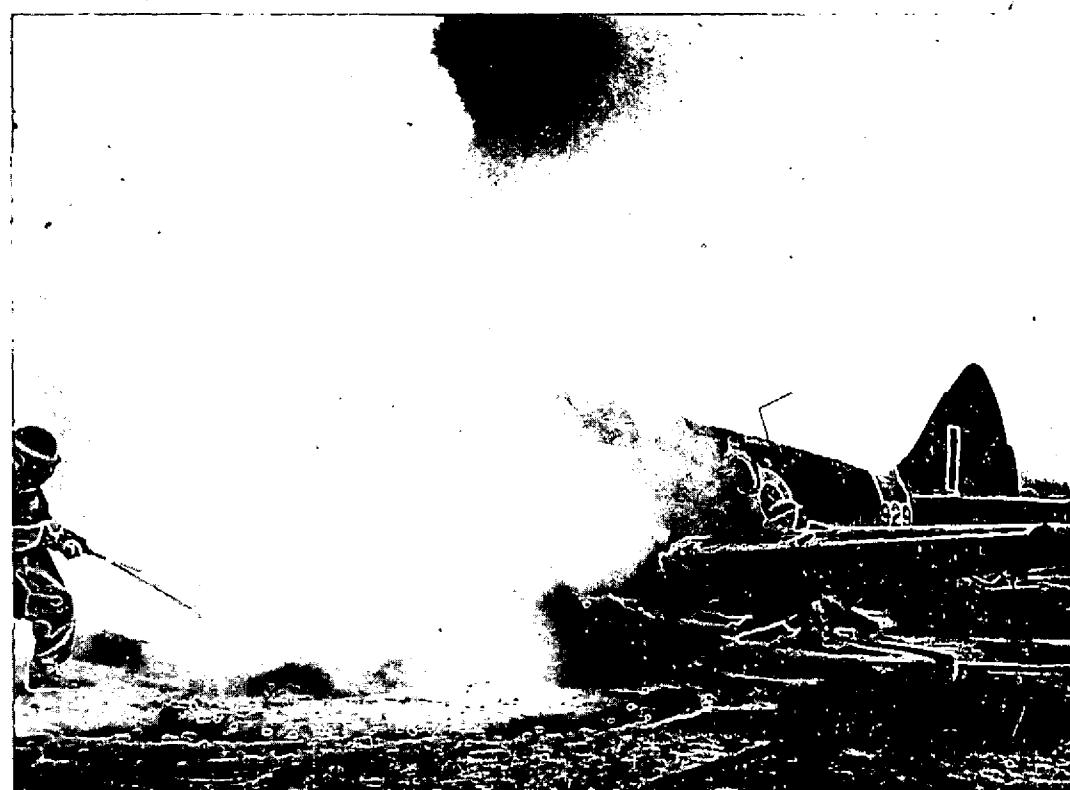
Reference

1. FRY, J.F. and HINTON, J.E.L. Deaths due to fire in 1953. Department of Scientific and Industrial Research and Fire Offices' Committee Joint Fire Research Organization F.R.Note No.136/1954.

Statistical Unit,
19 Cornwall Terrace,
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London, N.W.1.
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SAMPLE OF BASE-INJECTED FOAM LAYER SHOWING PETROL GLOBULES



EXTINGUISHING AN AIRCRAFT FIRE WITH DRY POWDER

TABLE 1
FIRES IN DWELLINGS REPORTED AS PRE-WAR, 1950-54

England and Wales

Type of dwelling	Year	Confined to room of origin Percentage of total	Confined to building of origin Percentage of total	Spread beyond building of origin Percentage of total	Total fires Percentage of total
Houses	1950	12 306	1 796	164	14 266
	1951	11 884	1 796	132	13 812
	1952	13 612	1 788	128	15 528
	1953	12 775	1 700	100	14 575
	1954	13 536	1 708	156	15 400
Total houses	1950-54	64 113	8 788	11.9	73 581
					100.0
Flats	1950	1 892	408	-	2 300
	1951	2 176	368	12	2 556
	1952	2 584	464	-	3 048
	1953	2 365	475	5	2 845
	1954	2 558	568	12	3 138
Total flats	1950-54	11 575	2 283	16.4	13 887
					100.0
<u>Scotland</u>					
Houses	1950	606	136	32	774
	1951	608	144	12	764
	1952	700	136	8	844
	1953	680	125	15	820
	1954	598	128	16	742
Total houses	1950-54	3 192	669	17.0	3 944
					100.0
Flats	1950	1 798	240	4	2 042
	1951	1 512	336	8	1 856
	1952	1 580	272	-	1 852
	1953	1 510	170	10	1 690
	1954	1 553	238	5	1 796
Total flats	1950-54	7 953	1 256	13.6	9 236
					100.0

TABLE 2
FIRES IN DWELLINGS REPORTED AS PRE-WAR, 1950-54

Details of persons rescued and escaped and of non-fatal and fatal casualties in fires that spread beyond the room of origin in pre-war houses and flats

England and Wales

Type of dwelling	Year	Total fires in sample	Persons rescued	Persons escaped	Non-fatal casualties	Fatal casualties	Non-fatal casualties per 10 fires	Fatal casualties per 10 fires
Houses	1950	490	33 (13)	19 (10)	68 (42)	10 (9)	1.4	0.2
	1951	482	42 (21)	25 (12)	99 (62)	20 (10)	2.0	0.4
	1952	479	33 (15)	8 (4)	68 (43)	16 (10)	1.4	0.3
	1953	365	35 (18)	21 (11)	76 (45)	5 (4)	2.1	0.1
	1954	932	79 (34)	45 (22)	175 (109)	27 (21)	1.9	0.3
Flats	1950	102	10 (4)	2 (1)	23 (16)	1 (1)	2.3	0.1
	1951	95	15 (15)	7 (3)	17 (10)	6 (3)	1.8	0.6
	1952	116	6 (4)	1	24 (13)	2 (2)	1.8	0.2
	1953	96	6 (4)	2 (1)	14 (10)	4 (4)	1.4	0.4
	1954	290	13 (6)	6 (1)	39 (23)	9 (5)	1.3	0.3
<u>Scotland</u>								
Houses	1950	42	1 (1)	2 (1)	3 (3)	1 (1)	0.7	0.2
	1951	39	-	-	5 (3)	-	1.3	-
	1952	41	6 (2)	3 (1)	8 (5)	7 (2)	1.9	1.7
	1953	28	1 (1)	-	3 (2)	1 (1)	1.1	0.4
	1954	72	5 (3)	9 (2)	8 (7)	3 (3)	1.1	0.4
Flats	1950	61	4 (3)	-	2 (2)	-	0.3	-
	1951	86	2 (2)	-	10 (8)	2 (2)	1.2	0.2
	1952	68	8 (3)	-	12 (9)	1 (1)	1.8	0.1
	1953	36	2 (1)	-	1 (1)	-	0.3	-
	1954	122	-	1 (1)	6 (3)	1 (1)	0.5	0.1

Note. The figures in brackets are the numbers of fires where rescues and escapes were necessary and where casualties occurred.

TABLE 3
FIRES IN POST-WAR NON-TRADITIONAL DWELLINGS, 1950-54

Year	No. of incidents	Number of damaged dwellings				Number of damaged dwellings per 10 000 at risk			
		Total	Confined to room of origin	Spread beyond room of origin		Total	Confined to room of origin	Spread beyond room of origin	
				Less than half dwelling	More than half dwelling			Less than half dwelling	More than half dwelling
1947	10	10	8	1	1	9.1	7.3	0.9	0.9
1948	67	71	54	9	8	12.6	9.5	1.6	1.4
1949	118	130	89	23	18	11.0	7.5	1.9	1.5
1950	144	165	124	26	15	10.6	8.0	1.7	1.0
1951	186	192	161	24	7	10.3	8.7	1.3	0.4
1952	234	248	215	27	6	11.3	9.8	1.2	0.3
1953	213	218	194	11	13	8.1	7.2	0.4	0.5
1954	286	296	253	17	26	8.8	7.5	0.5	0.8

TABLE 4
FIRES IN FLATS REPORTED AS POST-WAR CONSTRUCTION, 1950-54

Year	Number of damaged dwellings							
	Total damaged dwellings	Confined to room of origin	Confined to building of origin	Spread to other hazard	Confined to room of origin	Confined to building of origin	Spread to other hazard	%
<u>England and Wales</u>								
1950	32	27	5	-	84.4	16.6	-	
1951	25	24	1	-	96.0	4.0	-	
1952	27	20	7	-	74.1	25.9	-	
1953	50	49	1	-	98.0	2.0	-	
1954	153	149	4	-	97.4	2.6	-	
Total	287	269	18	-	93.7	6.3	-	
<u>Scotland</u>								
1950	10	8	2	-	80.0	20.0	-	
1951	14	11	3	-	78.6	21.4	-	
1952	14	12	2	-	85.7	14.3	-	
1953	15	12	3	-	80.0	20.0	-	
1954	86	70	15	1	81.4	17.5	1.1	
Total	139	113	25	1	81.3	18.0	0.7	

TABLE 5

FIRES IN ALL TYPES OF Dwellings IN ENGLAND AND WALES, 1950-54

Cause of fire	1950		1951		1952		1953		1954		Total 1950-54		Percentage of total	
	Houses	Flats	Houses	Flats	Houses	Flats								
Ashes, soot	620	110	474	55	134	95	100	70	118	64	1 576	396	2.0	2.7
Candle	226	36	202	36	204	36	205	25	210	26	1 047	161	1.4	1.1
Chimney fire (not confined to chimney)	302	24	574	68	1 616	124	1 690	160	2 078	216	6 350	592	8.2	4.0
Chimney, spark from outside building	268	14	162	10	240	20	325	10	178	20	1 181	74	1.5	0.5
Electric cooker	302	118	534	126	560	136	645	160	652	138	2 901	678	3.0	4.5
fire	532	110	622	119	548	140	470	150	603	184	2 780	702	3.6	4.7
wire and cable	704	106	936	146	1 032	152	975	195	952	182	4 529	783	5.0	5.2
other apparatus	864	198	934	222	1 032	192	945	215	1 098	220	4 873	1 047	6.3	7.0
Fire in grate igniting														
bedding, clothing, linen	914	146	842	114	844	112	810	130	916	124	4 326	626	5.6	4.2
timber under hearth	1 616	654	1 022	308	1 392	504	390	140	1 540	534	5 960	2 140	7.7	14.3
other materials	3 156	486	2 803	338	3 164	524	3 200	585	2 580	380	14 958	2 313	19.4	15.5
Flue	238	26	254	22	248	15	405	25	342	36	1 557	125	2.0	0.8
Gas cooker	492	156	520	166	576	203	630	205	660	206	2 078	943	3.7	6.5
fire	100	30	98	48	92	28	70	35	98	34	458	175	0.6	1.2
other apparatus	276	106	314	124	244	104	355	70	312	100	1 431	504	1.9	3.4
Hatches	214	42	220	45	235	60	230	95	200	58	1 240	301	1.6	2.0
Hatches, children playing with	266	46	265	55	226	56	245	70	275	72	1 281	310	1.7	2.1
Oil blowlamp	464	58	470	23	350	44	420	70	524	68	2 266	268	2.9	1.8
lamp or stove	332	42	360	45	384	60	260	45	382	80	1 633	275	2.1	1.8
other	44	2	38	4	26	-	40	-	26	-	204	6	0.3	-
Slow combustion stove igniting														
structural woodwork	54	10	36	10	60	12	30	10	48	8	228	50	0.3	0.3
other materials	162	16	142	24	234	3	125	25	160	20	843	93	1.1	0.6
Smoking materials	790	192	834	216	904	133	855	185	884	226	4 247	1 007	5.5	6.8
Taper, lighted paper or sticks	120	18	94	15	148	12	150	15	124	26	636	87	0.8	0.6
Taper, lighted paper or sticks, children playing with	40	4	42	12	16	4	45	5	54	16	197	41	0.2	0.3
Other causes	870	82	846	70	892	112	740	95	668	84	4 016	443	5.3	3.0
Unknown cause	592	170	632	142	728	164	750	155	622	142	3 354	773	4.4	5.2
Total all causes	14 768	3 002	14 376	2 584	15 236	3 112	15 295	2 945	16 420	3 268	77 095	14 911	100.0	100.0

TABLE 6

FIRES IN ALL TYPES OF DWELLINGS IN SCOTLAND, 1950-54

Cause of fire	1950		1951		1952		1953		1954		Total 1950-54		Percentage of total	
	Houses	Flats	Houses	Flats	Houses	Flats								
Ashes, soot	13	134	16	56	8	32	20	40	8	36	70	303	1.5	3.3
Canal Chimney fire (not confined to chimney)	6	20	10	10	8	-	20	-	22	24	72	0.5	0.8	14.9
Chimney, spark from outside building .	82	175	112	200	163	368	132	380	176	404	673	1 526	14.9	16.1
Electric cooker	28	20	12	10	24	4	5	5	16	3	85	47	1.9	0.5
Electric cooker	24	26	20	26	32	20	20	30	34	32	130	134	2.9	1.4
fire	32	28	28	28	36	8	25	30	12	12	133	106	2.9	1.1
wire and cable	72	64	64	83	72	76	110	80	84	82	402	390	8.9	4.1
other apparatus	44	62	30	50	56	72	65	85	36	74	231	343	5.1	3.6
Fire in grate igniting														
bedding, clothing, linen	40	52	42	42	20	32	40	40	34	50	176	216	3.9	2.3
timber under hearth	88	440	70	270	84	292	30	95	82	248	354	1 345	7.0	14.2
other materials	172	448	164	528	192	406	200	365	124	268	852	2 015	18.8	21.3
Flue	14	8	12	8	16	4	10	15	18	2	70	37	1.5	0.4
Gas cooker	38	116	26	86	48	112	20	120	28	118	160	552	3.0	5.8
fire	-	6	6	2	-	-	-	-	4	10	10	10	0.2	0.2
other apparatus	10	56	8	38	4	24	-	20	10	36	32	174	0.7	1.8
Matches	8	36	6	38	16	44	5	30	16	38	51	186	1.1	2.0
Matches, children playing with	8	36	18	32	8	28	-	15	14	50	48	161	1.1	1.7
Oil blowlamp	32	18	36	16	28	16	65	20	22	6	183	76	4.0	0.8
lamp or stove	26	12	26	6	24	16	10	15	14	16	100	65	2.2	0.7
other apparatus	4	4	6	2	-	-	-	-	4	-	14	6	0.3	0.1
Slow combustion stove igniting														
structural woodwork	2	-	6	4	4	-	-	-	2	2	14	6	0.3	0.1
other materials	4	2	5	6	4	8	-	-	6	2	20	18	0.4	0.2
Smoking materials	42	104	46	136	32	108	50	135	50	144	220	627	4.9	6.6
Paper, lighted paper or sticks	2	14	6	28	8	24	5	25	-	36	21	127	0.5	1.3
Paper, lighted paper or sticks, children playing with	4	16	2	20	-	24	-	10	-	20	6	90	0.1	0.9
Other causes	40	94	45	78	44	78	75	105	54	90	259	445	5.7	4.7
Unknown cause	32	58	34	60	40	84	45	100	36	64	187	356	4.1	3.9
Total all causes	872	2 050	858	1 878	976	1 830	935	1 760	824	1 870	4 525	9 458	100.0	100.0

Table 7

NUMBER OF STOREYS IN DWELLINGS IN WHICH FATAL CASUALTIES OCCURRED IN 1953

No. of storeys in dwelling	No. of dwellings	No. of flats	No. of fatal casualties
1	12	-	14
1 and attic	3	3	3
1 and basement	-	-	-
1 and 2	1	1	1
2	77	8	88
2 and basement	4	4	4
3	11	8	11
3 and basement	3	-	3
4	7	7	7
4 and basement	2	2	5
6	1	1	1

Table 8

FLOOR OF ORIGIN OF FIRES IN WHICH FATAL CASUALTIES OCCURRED IN DWELLINGS
(OTHER THAN SINGLE STOREY)

Floor on which fire originated	Two storey dwellings			Dwellings of 3 or more storeys		
	No. of fires	No. spreading beyond room of origin	No. of fatal casualties	No. of fires	No. spreading beyond room of origin	No. of fatal casualties
Basement	2	2	2	-	-	-
Ground	49	12	57	5	1	5
First	25	6	27	4	-	4
Second	-	-	-	9	7	12
Third	-	-	-	4	-	4
Fourth	-	-	-	1	-	1
Fifth	-	-	-	1	-	1
Sixth	-	-	-	-	-	-
Other and unknown	5	-	6	-	-	-

Table 9
RESCUES AND ESCAPES FROM FIRES IN BUILDINGS
All incidents reported by Fire Brigades in 1953

	England and Wales	Scotland	United Kingdom
<u>With Fire Brigade assistance</u>			
Escape (hand operated)	14	3	17
Ladder, extension	38	7	45
1st Floor	10	-	10
turntable	9	9	18
other	58	-	58
Ladder and line	3	-	3
Line	3	-	3
Other apparatus	5	8	15
Without apparatus	43	23	68
	183	50	237
<u>Without Fire Brigade assistance</u>			
Carried or assisted	119	32	153
Jumping sheet	2	3	5
Ladder	58	5	63
Lowered from windows, roofs, etc.	55	5	62
Other and undefined	23	1	24
	257	46	307
<u>Escape by emergency means</u>			
Climbing over roof	18	-	18
Fixed fire escape	1	-	1
Jumping from upstairs window, roof, etc.	131	8	140
Ladder	9	-	9
Drainpipe, sheets, rope	31	-	31
Through ground floor windows	8	4	13
Other and undefined	14	1	15
	212	13	227
Grand total	652	109	771