CANADA

Department of Northern Affairs and National Resources

FORESTRY BRANCH

FOREST FIRE LOSSES IN CANADA

1957

Issued under the authority of
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AREA BURNED BY FOREST FIRES IN CANADA

(YUKON AND NORTHWEST TERRITORIES NOT INCLUDED)

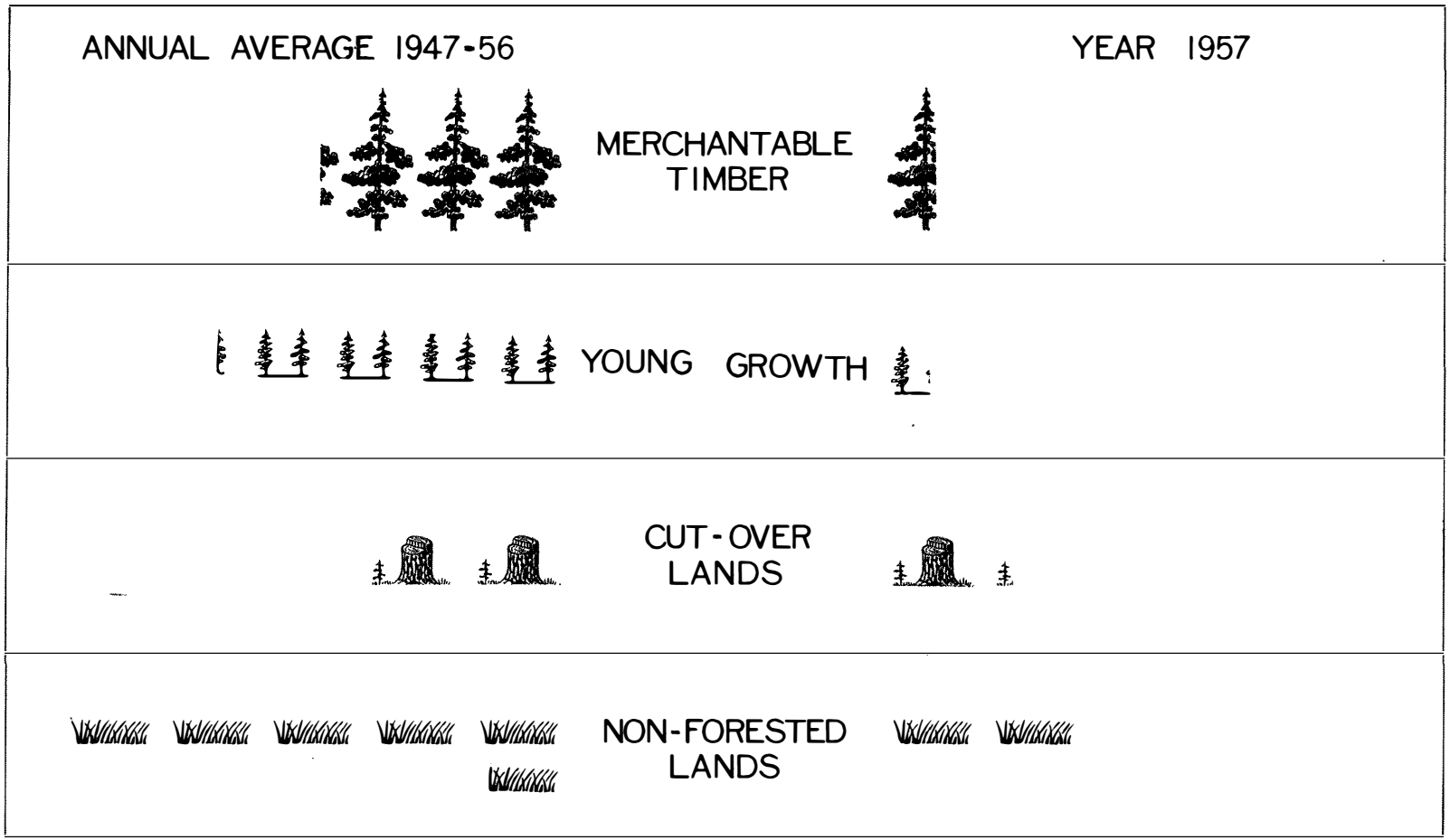

FIGURE 1

EACH SYMBOL REPRESENTS 100,000 ACRES

FOREST FIRE LOSSES IN CANADA - 1957

INTRODUCTION

The 1957 forest fire season will be remembered, by most Canadians who think of it at all, as a good one. Although there was an increase in the number of fires, 6,080 as compared to the annual average of 5,325 for the previous 10 years, less than one half of the average area was burned, some 900,000 acres compared to more than 2,000,000 acres (see Table 1). Canada can point with pride to the protection against fire afforded her forests. There is no doubt that there will be bad years in the future but the fact remains that, with respect to losses, there is a definite trend for the good years to increasingly out-weigh the bad ones.

There would be no bad years, so far as losses are concerned, if suppression crews could attack all forest fires soon enough after their ignition. Such a statement may sound trite, but many people lose sight of this fact. Arguments to the effect that roads constructed in undeveloped forest areas would lead to increased numbers of fires and increased forest losses are frequently heard. It is true that an increase in forest accessibility may lead to an increase in the number of fires, but if organized protection is afforded areas as they are opened to travel, losses from forest fires may be expected to show a decrease because speed of attack should be correspondingly greater.

There is little or no direct relationship between numbers of fires and areas burned. The figures mentioned above for 1957 illustrate this point, and statistics for 1948 provide an example of a large loss being attributable to a moderate number of fires -- 3,185,000 acres burned by 5,368 fires.

It was noted in the forest fire loss report for 1956 that statistics for the Yukon and Northwest Territories were available for the previous 10-year period and could be included with those for the provinces for computing averages for Canada as a whole. However, fire loss figures for the Territories are still listed separately in

MERCHANTABLE TIMBER AND OTHER PROPERTY BURNED
BY
FOREST FIRES IN CANADA
(YUKON AND NORTHWEST TERRITORIES NOT INCLUDED)

ANNUAL AVERAGE 1947-56 YEAR 1957

EACH SYMBOL REPRESENTS 100,000 M. FEET B.M.

EACH SYMBOL REPRESENTS 1,000,000 CORDS

EACH SYMBOL REPRESENTS $200,000

FIGURE 2

Table 1 for two principal reasons. First, a much higher percentage of the burned area in the Territories is classified as non-forested -- 93 per cent in 1957 compared with 43 per cent for the provinces, and secondly, the very thinly populated, vast areas of the Territories cannot be given the same degree of forest protection afforded many other regions of the country.

Nevertheless, it should not be construed that protection from fire is not given serious attention in the far north. Despite the comparatively low value of timber to the current economy of the Territories, some $8.75 per capita was expended there on forest fire protection in 1957 (costs of actual fire suppression are not included), while approximately $12.75 per person was spent for similar purposes in the provinces. On an area-protected basis for the same period, about $2.20 per square mile was spent in the Territories for fire protection and almost $17.00 per square mile in the provinces.

Total costs of forest fire control in Canada, inclusive of the extra costs of protection attributed to actual fire suppression, continue to rise, the figure for 1956 being a little more than $20,600,000. This represents an increase of more than one and one-half million dollars over the record high set the previous year. There was only a slight increase in the total area afforded organized protection, which now amounts to some 1,333,000 square miles.

FIRE LOSSES

All provinces and territories enjoyed a reduction in forest values lost through fire in 1957 as compared with those for the previous decade -- less than one quarter of the average acreage of merchantable timber and less than one sixth of the average area of young growth were burned during the year. Reduction of acreages burned in the other two major categories of forest land, cut-over and non-forested, was noteworthy but not so striking (see Figure 1).

Young growth, as referred to here, may be composed of trees ranging in size from seedlings two or three years old, to immature stands not quite large enough to be classified as merchantable. Tomorrow's timber supplies will come from today's young growth, and in some areas it is considered that this category should be afforded a greater degree of protection than any other.

Losses of sawtimber, small material such as pulpwood and firewood, and other property such as logging camps, bridges, dams, and telephone lines are represented in Figure 2. When large fluctuations occur in fire loss figures from one year to the next, graphical representations of this type may appear incongruously lopsided. However, the unbalanced appearance in this instance is welcomed because it is caused by small, rather than large, losses for the year.

Other references to values lost in 1957 may be found in Tables 4 and 6. No attempt is made in this report to assess fire damage related to intangible values such as recreational facilities, stream-flow, soil and site quality, and wildlife. Although very real, and frequently more serious than timber losses, there is no known way of adequately evaluating these items.

CAUSES OF FIRES

A surprisingly large increase in the percentage of forest fires attributed to railways was reported in the fire loss statistics for 1956, when 24 per cent of the outbreaks, rather than the usual 10 per cent, were listed under this heading. The increase, which was due almost entirely to a change in the reporting practice of one province, seriously upset the picture so far as fire-cause statistics for that year were concerned. The province involved attributed slightly more that 39 per cent of its fires for 1956 to railways, compared with a previous average for this cause of 14.6 per cent. In 1957, the same province listed 29.5 per cent of the fires as being started by railways. One other province reported a large increase in railway fires -- 17 per cent falling into that class in 1957 whereas the average for the previous 10 years was 5.6 per cent. For the country as a whole, 904 fires, or 15 per cent, were caused by railways (see Table 2).

Smokers, campers and settlers, in that order, accounted for 43 per cent of the total number of fires in 1957, and lightning, the only significant natural cause of fire in the forests, started 828 fires, or 14 per cent of the total. Not since 1951 had the percentage of lightning fires been so low, but this year's figure does not approach the record low of 7 per cent reported in 1935. Each forest fire in Canada is attributed to one of ten general classifications; the distribution of fires within these categories is represented graphically in Figure 3.

Canada is fortunate, in comparison with other countries having major forest fire problems, in that only three per cent of the fires are set deliberately. Twenty years ago, approximately three times that percentage of the fires were attributed to incendiarism, but the number dropped steadily during the following ten years to about the present figure. This trend is represented graphically in Figure 5.

MONTHLY OCCURRENCE OF FIRES

During the ten years ending in 1956, 79 per cent of all forest fires occurred in the months of May, June, July and August. The current year was average in that respect, there being exactly the same percentage of the year's fires occurring in that same four-month period (see Table 3 and Figure 4). It will be noted, however, that there is not a similar agreement in the figures for the individual months.

Once again there was no month in the year entirely free from fire, the four burns reported in January being twice the average number recorded for that period.

LEGAL PROCEEDINGS

There were fewer prosecutions for infractions of the fire laws during the year than there were on the average during the previous decade -- 269 compared to 289 -- but the ratio of convictions to prosecutions remained high at 93 per cent (see Table 5).

In a country the size of Canada, it might be expected that legal action would be taken against thousands, rather than against merely some 300 offenders, each year. The fire laws are, indeed, broken thousands of times annually, but there are several reasons why many perpetrators are not prosecuted. In the first place, it would be prohibitively expensive to provide intensive patrols for the great forest areas the public is privileged to use recreationally or for operations; unless their activities have resulted in damage, or unless gross or wilful negligence has been shown, people caught breaking the fire laws for the first time are frequently let off with a warning; offenders who have the opportunity to do so, often settle their charges out of court; and finally, it is usually so difficult to procure the evidence necessary to obtain a court conviction that only those cases offering a good

chance of success are prosecuted.

No deaths were attributed to forest fires in 1957.

WEATHER CONDITIONS IN RELATION TO FOREST FIRES

Newfoundland

The month of May, cool and sunny, opened the fire season. Seventy-five fires were recorded in this month, well above the average for the past 8 years. This pattern of sunny weather with little rain continued in most areas of the province until the latter part of July when skies became overcast. Warm sunny weather returned in August but was accompanied by scattered precipitation in the form of numerous thunderstorms. The weather turned quite cool in the latter part of the month and September began a period of stormy weather and heavy rains with the passage of hurricane "Frieda" off Cape Race, on the 26th, bringing exceptionally heavy rains to most areas. Only one fire was recorded in September. Temperatures were normal in October, but several snowfalls ended the fire season in most areas.

Nova Scotia

Early April was stormy and wet with sufficient rain falling in the first part of the month to raise the rainfall totals well above normal. Despite this the latter part of the month was almost rain-free and 143 forest fires were reported -- the greatest number on record for this month. During May, snow was reported in many areas, and cool weather prevailed until June when the temperature rose and the weather became unusually dry. July and August were cool and most precipitation was accompanied by thunderstorms. September was cool and dry; October was cloudy and warm, though little rain fell. The fire season ended in November when frequent influxes of moist maritime air brought heavy rains to all areas.

New Brunswick

As in Nova Scotia, April began wet and stormy, but rainfall was light in the northern areas of the province. The rest of the spring season was cool, gradually warming as summer approached. The southern areas of the

FOREST FIRES IN CANADA BY CAUSES

(YUKON AND NORTHWEST TERRITORIES NOT INCLUDED)

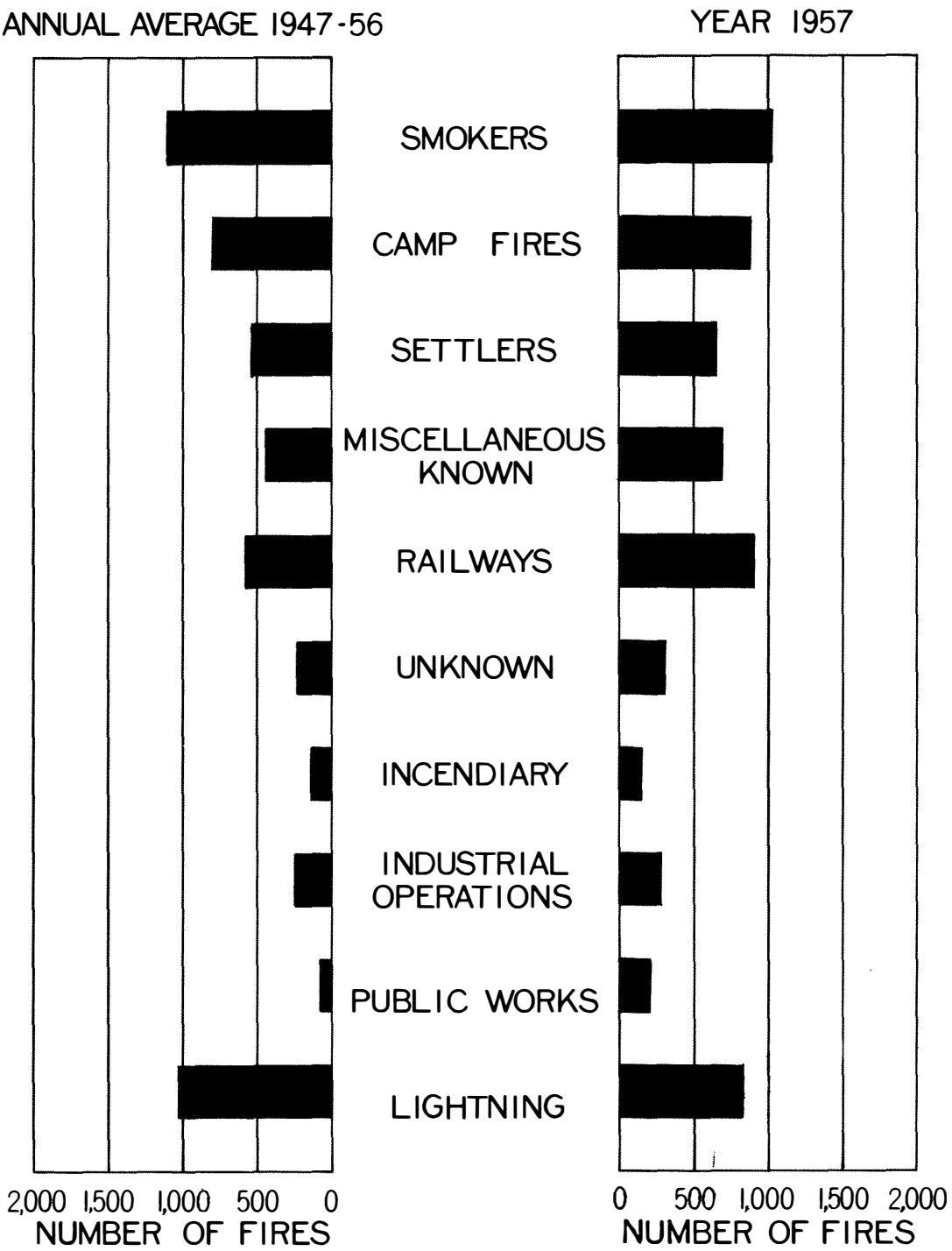

FIGURE 3

FOREST FIRES IN CANADA BY MONTHS

(YUKON AND NORTHWEST TERRITORIES NOT INCLUDED)

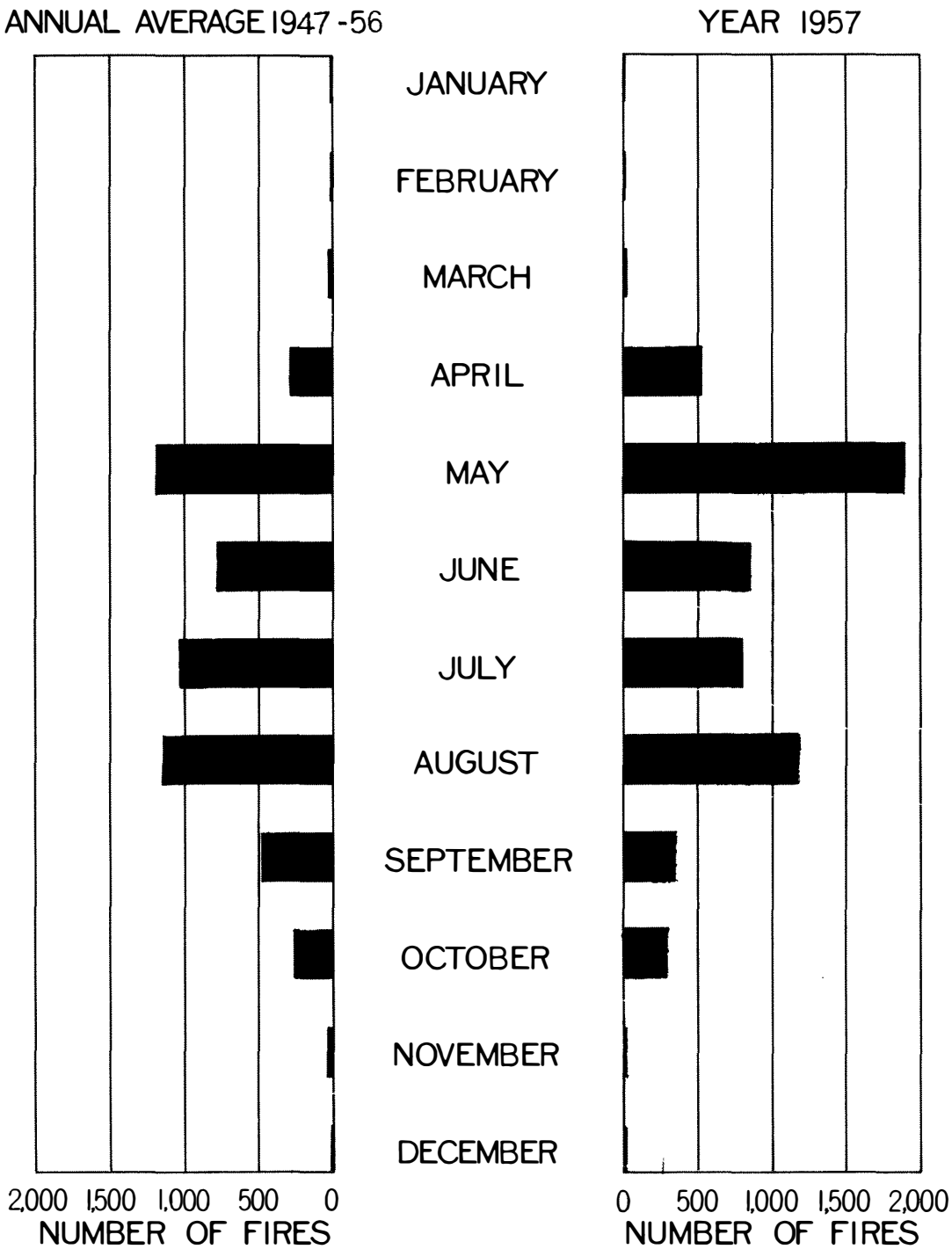

FIGURE 4

province were dry, but northern sections received normal rainfall. Cool weather returned in July with frequent light showers. A mass of cool dry air covered the province during most of August and September, and the precipitation pattern was very irregular. October was generally warm with overcast skies; the heavy November rains brought the fire season to a close.

Quebec

Rain in early April removed much of the snow cover and warm dry weather in the early spring gave fire fighters a busy time; 80 fires were reported -- the highest number in April since 1941. A pattern of cool dry weather prevailed until the latter part of June, then warm humid weather took over. There were numerous local showers and thunderstorms during the summer but few general rains. The early fall was warm but by the end of September cool rainy weather held fires in check. October was warm and dry but heavy rains occurred on the 23rd and 24th, ending the fire season.

Ontario

Forest fires were reported in March of this year and although some rain fell in April the weather turned warm in the latter part of the month boosting mean temperatures 3 to 6 degrees above normal in most areas. The warm weather continued into May and 533 fires were reported during that month -- more than in any other month for the year. June was marked by heavy precipitation as a result of hurricane "Audrey". July and August were good holiday months for all but fire fighters, but heavy general rains in September helped reduce fire losses. October and early November were warmer than usual and less than normal rainfall was recorded in October. Only one fire was reported in November as the autumn rains brought the fire season to a close.

Manitoba

The 1957 weather could best be described as variable throughout the fire season. Both excesses and deficits in precipitation were recorded in various regions, while the temperature varied from below to above normal. Generally the spring and early summer were dry -- what rain fell accompanied thunderstorms. August began warm but turned cool with heavy rain. September rainfall was very spotty in distribution. October temperatures were normal in most areas but November was mild with little rain recorded.

Saskatchewan

Spring began with wet cool weather in April, changed to sunny and dry in May and ended with numerous thunderstorms in June. This cyclic pattern continued through the summer and early fall, July warm and dry, August cool and rainy, and September warm and dry. October was marked by unusually hot weather in the early part of the month and by very cold weather in the latter half, with snow recorded in many areas. November was warmer than usual and deficiencies in rainfall were recorded in several regions.

Alberta

April weather was decidedly cool, and snow fell in many areas. Precipitation totals for the month were generally above normal in the northern regions of the province. Although May was generally warm and dry there were two periods of cold weather with widespread frost on the 7th and 8th, as well as on the 21st and 22nd. During June and July temperatures were normal and the weather was generally dry; most rainfall was in the form of local thunderstorms. August was cool and rainfall was spotty, again accompanied by thunderstorms. The early fall weather was warm and dry, but a cool spell brought heavy snowfalls; warm weather returned the latter part of the month and continued on into November. Heavy rainfalls were recorded during November.

British Columbia

Fine weather prevailed in the early spring, but in the latter half of June unsettled weather moved in and brought heavy rain. This cool wet weather continued until the middle of August, raising precipitation totals to above normal levels. The weather changed in the latter part of August and a "fair and warm" pattern prevailed until broken by a cold snap on September 17th. An area of high pressure off the coast brought back clear skies and warm dry weather that continued into November. This month was warmer than normal but well distributed rainfall reduced the fire danger in all regions except the coastal areas.

Yukon

Normal spring weather prevailed during April and May, but temperatures rose in June to above normal levels. July was cool but dry and August brought a return of warm weather. The 34 fires recorded in August, the largest monthly

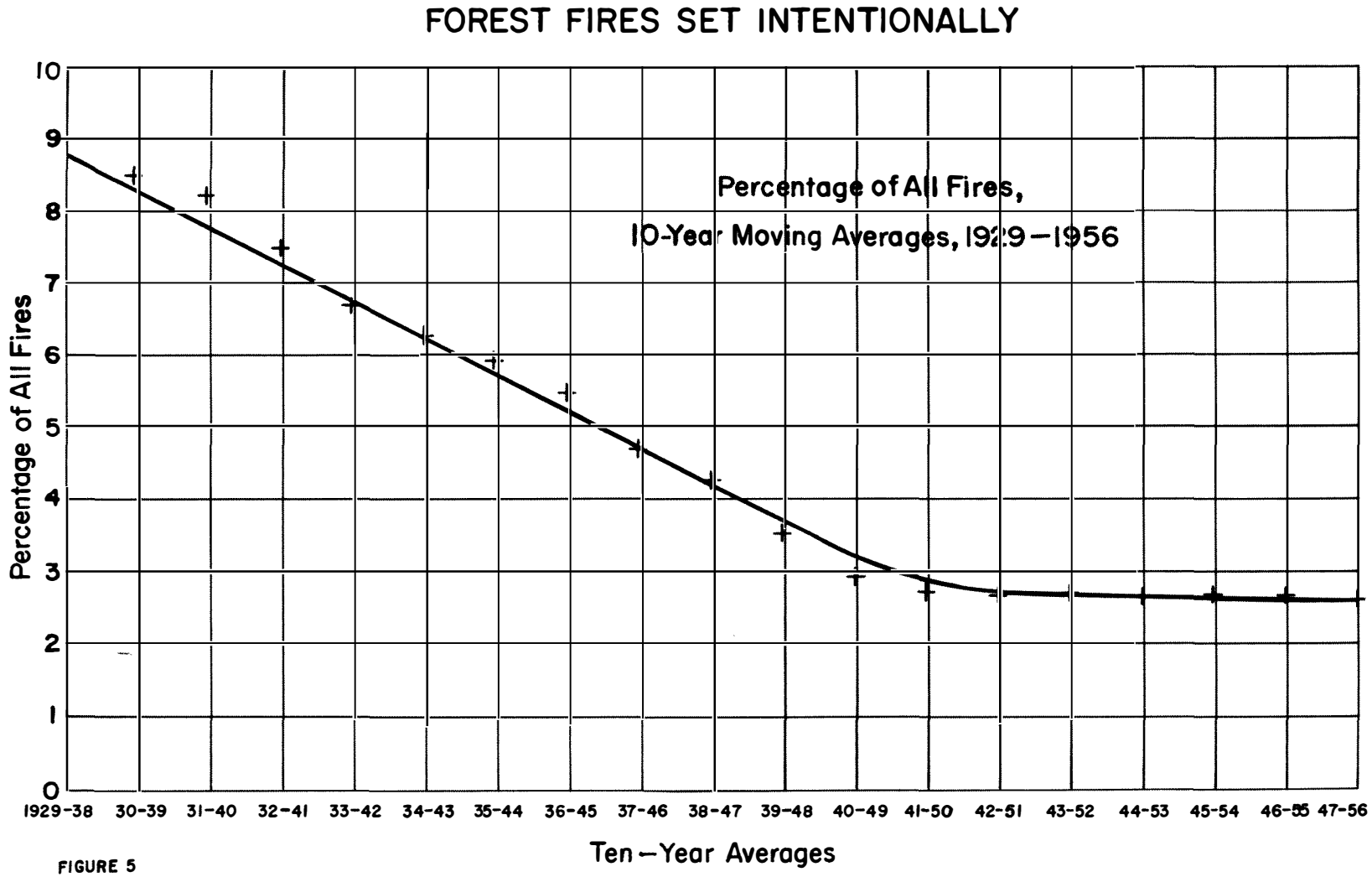
FOREST FIRES SET INTENTIONALLY
Percentage of All Fires,
10-Year Moving Averages, 1929–1956
Percentage of All Fires
10
9
8
7
6
5
4
3
2
1
0
1929-38
30-39
31-40
32-41
33-42
34-43
35-44
36-45
37-46
38-47
39-48
40-49
41-50
42-51
43-52
44-53
45-54
46-55
47-56
Ten–Year Averages

FIGURE 5

total for the year, were an indication of the fire danger conditions. The fall weather was generally fair, and unusually mild weather was recorded in November. Rainfall during the entire fire season tended to be localized and variable. During December, nine forest fires were recorded, a late ending to the fire season.

Northwest Territories

A cool dry spring was followed by heavy rains in July, with temperatures remaining low for the month. Warm weather arrived in August, bringing an increase in the outbreak of fires -- more were recorded in August than the total for the rest of the season. This was one of the few areas in the country where August temperatures much warmer than normal were recorded. A "fair and warm" weather pattern continued through September and only light rainfall was recorded in October. In November, heavy rains brought an end to the forest fires for the year.

TABLE 1

SUMMARY OF FOREST-FIRE LOSSES IN CANADA, 1957
Compared with 10-year Average, 1947-1956

Item		Provinces (1)		Yukon and Northwest Territories	
		Annual Average 1947-1956 (2)	Year 1957 (3)	Annual Average 1947-1956	Year 1957
Fires under 10 acres	number	4,053	4,909	48	72
Fires 10 acres and over	"	1,174	1,041	50	58
Total number of fires	"	5,227	5,950	98	130
Area burned -					
Merchantable timber	acres	327,311	71,430	39,714	14,242
Young growth	"	407,841	66,161	40,496	14,543
Cut-over lands	"	201,134	118,037	4,576	504
Non-forested lands	"	599,599	196,728	469,234	421,615
Total area burned	"	1,535,885	452,356	554,020	450,904
Size of average fire	"	294	76		
Merchantable timber burned -					
Saw timber	M ft.b.m.	383,419	175,629	12,571	83
Small material	cords	1,886,964	442,206	178,044	26,198
Estimated values destroyed (4)					
Merchantable timber	$	3,021,133	769,368	220,781	19,293
Young growth	$	1,209,125	222,434	138,603	29,086
Cut-over lands	$	190,807	115,522	1,477	504
Other property burned	$	976,236	358,154	20,042	83,945
Total Damage	$	5,397,301	1,465,478	380,903	132,828
Actual Cost of Fire-fighting	$	2,843,147		46,139	55,042
Total damage and fire-fighting cost	$	8,240,448	3,525,247	427,042	187,870
Other fire protection costs	$	14,135,484	20,512,055(5)	111,475	275,382
Area under protection	sq.miles		1,208,170		125,000

(1) Includes federal lands within provincial boundaries.
(2) Does not include Newfoundland.
(3) Newfoundland included.
(4) Wood values are based on prevailing stumpage rates only; damage to soil, site quality, stream flow regulation, wild life, recreational and similar values is not included.
(5) Estimated charge for new equipment, improvements, maintenance, salaries, etc., for year 1956.

TABLE 2

Forest Fires in Canada, 1957, by Causes
Compared with 10-year Average 1947-56

Cause	Provinces (1)				Yukon				Northwest Territories			
	Annual Average 1947-56 (2)		Year 1957 (3)		Annual Average 1947-56		Year 1957		Annual Average 1947-56		Year 1957	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Camp-fires	807	15	886	15	17	43	30	34	18	31	17	40
Smokers	1,096	21	1,030	17	8	20	8	9	1	2	4	10
Settlers	538	10	651	11	1	2	2	2	1	1	-	-
Railways	582	11	904	15	2	5	-	-	-	-	-	-
Lightning	1,048	20	828	14	4	10	34	39	23	40	12	29
Industrial Operations	252	5	281	5	1	2	-	-	1	2	1	2
Incendiary	137	3	157	3	-	-	2	2	-	-	-	-
Public Works	89	2	206	3	-	-	-	-	-	-	-	-
Miscellaneous Known	458	9	691	12	1	3	3	4	2	3	-	-
Unknown	220	4	316	5	6	15	9	10	12	21	8	19
Total	5,227	100	5,950	100	40	100	88	100	58	100	42	100

(1) Includes federal lands within provincial boundaries.
(2) Does not include Newfoundland.
(3) Newfoundland included.

TABLE 3

Forest Fires in Canada, 1957, by Months
Compared with 10-year Average 1947-56

Month	Provinces (1)				Yukon				Northwest Territories			
	Annual Average 1947-56 (2)		Year 1957 (3)		Annual Average 1947-56		Year 1957		Annual Average 1947-56		Year 1957	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
January	2	-	4	-	-	-	-	-	-	-	-	-
February	3	-	2	-	-	-	-	-	-	-	-	-
March	17	-	15	-	-	-	-	-	-	-	-	-
April	290	6	532	9	1	2	-	-	-	-	-	-
May	1,192	23	1,894	32	5	13	6	7	6	10	4	10
June	781	15	850	14	13	33	28	32	13	22	8	19
July	1,018	19	802	14	8	20	5	6	26	45	5	12
August	1,145	22	1,185	20	7	17	34	38	11	19	20	47
September	467	9	349	6	5	13	5	6	2	4	4	10
October	270	5	304	5	1	2	1	1	-	-	1	2
November	39	1	10	-	-	-	-	-	-	-	-	-
December	3	-	3	-	-	-	9	10	-	-	-	-
Total	5,227	100	5,950	100	40	100	88	100	58	100	42	100

(1) Includes federal lands within provincial boundaries.
(2) Does not include Newfoundland.
(3) Newfoundland included.

TABLE 4

Fire Season 1957 - Comparative Statement by Regions
Increase or Decrease in Relation to Previous 10-year Average and to Previous Year

Region	Number of Fires		Area Burned, Acres		Fire-fighting Cost Plus Damage	
	Average 1947-56	Year 1956	Average 1947-56	Year 1956	Average 1947-56 $	Year 1956 $
British Columbia	- 15	- 1,246	- 199,596	- 401,914	- 772,339	- 1,102,850
Alberta	- 5	- 79	- 421,000	- 679,194	- 2,051,549	- 9,287,164
Saskatchewan	+ 17	- 24	- 88,212	- 10,704	+ 37,715	+ 41,079
Manitoba	+ 68	+ 9	- 77,162	- 366,134	- 126,876	- 941,421
Ontario	+ 252	+ 652	- 156,926	- 166,287	- 792,981	- 2,602,112
Quebec	- 238	+ 479	- 147,516	+ 41,546	- 1,088,680	- 215,409
New Brunswick	+ 36	+ 118	- 8,604	+ 2,845	- 124,278	+ 34,265
Nova Scotia	+ 286	+ 366	+ 1,770	+ 10,872	- 22,767	+ 16,938
Newfoundland	-	+ 159	-	+ 26,070	-	+ 251,469
Yukon	+ 48	+ 33	+ 45,210	+ 113,504	- 45,562	+ 42,025
Northwest Territories	- 16	- 2	- 148,326	+ 244,981	- 193,610	- 15,015
Other Federal Lands	+ 57	+ 30	- 15,263	- 18,787	- 28,334	- 29,744
Canada	+ 723	+ 464*	- 1,083,529	- 1,561,687*	- 4,715,201	- 13,834,949*

* Does not include Yukon and Northwest Territories.

TABLE 5

Fire Season 1957 - Comparative Statement by Regions
Legal Actions; Fatalities

Region	Proceedings under Fire Laws						Number of Fatalities	
	Number of Prosecutions		Number of Convictions		Ratio of Convictions To Prosecutions			
	Annual Average 1947-56	Year 1957	Annual Average 1947-56	Year 1957	Annual Average 1947-56	Year 1957	Annual Average 1947-56	Year 1957
					Per Cent	Per Cent		
British Columbia	48.8	44	44.4	40	91	91	1.6	0
Alberta	76.9	62	70.6	61	92	98	0.1	0
Saskatchewan	14.3	19	13.8	19	97	100	0.0	0
Manitoba	7.2	1	6.2	0	86	0	0.4	0
Ontario	58.5	55	51.8	41	89	75	1.7	0
Quebec	36.3	49	34.2	49	94	100	0.0	0
New Brunswick	29.9	27	28.2	27	94	100	0.0	0
Nova Scotia	16.7	9	16.1	9	96	100	0.1	0
Newfoundland	-	2	-	2	-	100	-	0
Yukon	1.0	2	0.5	2	50	100	0.1	0
Northwest Territories	2.3	0	1.9	0	83	-	0.0	0
Other Federal Lands	0.3	1	0.2	1	67	100	0.0	0
Canada	288.9	269*	265.5	249*	92	93*	3.9	0*

* Does not include Yukon and Northwest Territories.

TABLE 6

Statistics of Forest Fires by Regions, 1957
Shown with Averages for the 10-year Period 1947-56

		British Columbia		Alberta		Saskatchewan		Manitoba		Ontario		Quebec	
		Average 1947-56	Year 1947	Average 1947-56	Year 1957	Average 1947-56	Year 1957	Average 1947-56	Year 1957	Average 1947-56	Year 1957	Average 1947-56	Year 1957
Fires -													
Total number.....		1,554	1,539	184	179	142	159	273	341	1,389	1,641	1,101	863
Caused by lightning...	%	26.1	19.4	8.7	17.9	14.1	32.1	23.8	24.3	25.3	15.2	13.8	7.6
Area burned -													
Merchantable timber...	acres	10,557	1,802	104,935	1,207	13,619	5,761	46,258	37,944	107,286	10,800	38,960	7,363
Young growth.....	"	31,538	4,131	161,828	9,567	46,195	4,132	61,706	24,260	35,122	6,350	63,065	12,083
Cut-over lands.....	"	29,173	59,133	10,815	785	5,755	110	7,076	777	42,645	8,671	99,226	46,571
Non-forested lands....	"	194,537	1,143	158,708	3,727	70,423	37,777	118,560	93,457	18,416	20,722	18,040	5,758
Total area burned...	"	265,805	66,209	436,286	15,286	135,992	47,780	233,600	156,438	203,469	46,543	219,291	71,775
Damage.....	$	735,678	249,964	2,142,892	123,187	70,967	37,360	323,665	169,364	1,111,389	576,810	781,809	144,251
Cost of fire-fighting..	$	465,805	179,180	173,090	141,246	58,056	129,378	77,123	104,548	1,165,462	907,060	781,751	330,629
Total damage and fire-fighting cost.	$	1,201,483	429,144	2,315,982	264,433	129,023	166,738	400,788	273,912	2,276,851	1,483,870	1,563,560	474,880

TABLE 6 (concluded)

Statistics of Forest Fires by Regions, 1957
Shown with Averages for the 10-year Period 1947-56

		New Brunswick		Nova Scotia		Newfoundland	Federal Lands									
							National Parks		Indian Lands		Other Federal Lands		Yukon		Northwest Territories	
		Average 1947-56	Year 1957	Average 1947-56	Year 1957	Year 1957	Average 1947-56	Year 1957	Average 1947-56	Year 1957	Average 1947-56	Year 1957	Average 1947-56	Year 1957	Average 1947-56	Year 1957
Fires -																
Total number.....		235	271	268	554	265	32	29	45	98	4	11	40	88	58	42
Caused by lightning.....	%	9.8	8.5	0.7	0.4	1.5	24.2	27.6	8.9	12.2	25.0	-	10.0	38.6	39.7	28.6
Area burned -																
Merchantable timber.....	acres	31,194	204	850	5,708	237	816	361	837	37	-	6	29,867	13,892	9,847	350
Young growth.....	"	3,670	1,451	3,015	2,839	1,085	232	18	1,469	237	1	8	9,939	14,516	30,557	27
Cut-over lands...	"	2,774	443	1,913	329	1,136	1,197	-	557	82	3	-	4,505	4	71	500
Non-forested lands.....	"	3,619	2,555	4,240	2,912	26,522	2,265	935	10,787	1,216	3	4	26,725	87,834	442,509	333,781
Total area burned.....	"	13,257	4,653	10,018	11,788	28,980	4,510	1,314	13,650	1,572	7	18	71,036	116,246	482,984	334,658
Damage.....	$	103,545	23,125	95,497	74,845	61,927	7,678	1,026	24,144	3,446	36	173	105,691	46,728	275,212	86,100
Cost of fire-fighting.....	$	62,026	18,168	37,115	35,000	192,961	9,546	11,994	12,952	8,516	222	1,089	10,931	24,332	35,208	30,710
Total damage and fire-fighting cost.....	$	165,571	41,293	132,612	109,845	254,888	17,224	13,020	37,096	11,962	258	1,262	116,622	71,060	310,420	116,810