

1934.  
NEW ZEALAND.

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# FIRE BRIGADES OF THE DOMINION.

(REPORT ON THE) FOR THE YEAR ENDED 31st MARCH, 1934, BY THE  
INSPECTOR OF FIRE BRIGADES.

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*Presented to both Houses of the General Assembly by Command of His Excellency.*

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The INSPECTOR OF FIRE BRIGADES to the Hon. the MINISTER OF INTERNAL AFFAIRS.

Office of Inspector of Fire Brigades,  
Wellington, 25th October, 1934.

SIR,— I have the honour to submit the twenty-fifth annual report for the year ending 31st March, 1934, on the working of the Fire Brigades Act, 1926.

## FIRE DISTRICTS.

The City of Nelson was declared a fire district during the year, and the Fire Board took the unusual course of assuming control of the fire protection of the district during the same year. The number of fire districts in operation at the end of the year was fifty-four.

## DOMINION FIRE WASTE.

The national loss by fire during the year 1933, estimated on the same basis as in previous years, was £644,781, as compared with £867,714 for the year 1932 and an average of £1,332,032 for the five years 1927–31.

These figures show a remarkable drop in the national fire waste for the past two years, the loss for 1933 being less than half that of the five-year average. It is difficult to make comparisons with the pre-war period, as the statistics for insured losses have only been kept in the present form since 1924, and there is some doubt as to the accuracy of the figures published prior to 1917. From the information available, however, it would appear that the loss for 1933 expressed in relation to population (8s. 4d. per head), which is the only satisfactory basis of comparison, is comparable with the lowest figure recorded for the past thirty years.

To some extent the fire-loss figures for the year do not accurately reflect the true position, since they are based on the payments made by insurance companies, and by the terms of their policies the latter are required to refund to the insurer the replacement value only of insured property destroyed by fire. Property values, which had fallen considerably in 1932, were still further reduced in 1933, and to the extent of this reduction the fire-loss figures for the year represent lower values rather than a lesser quantity of property destroyed. It is difficult to estimate accurately the effect of these lower values on the year's returns, but it is considered that since about 75 per cent. of the insured property is situated in districts protected by fire brigades and most of the losses in these areas are partial ones only, the apparent reduction due to this cause would not exceed 25 per cent., leaving a balance of from 25 per cent. to 30 per cent. to be otherwise accounted for.

The improvement in the fire-fighting methods and the equipment and efficiency of the fire brigades has undoubtedly affected the fire-loss position, but this is a gradual process and would be unlikely to be more than a minor contributing factor in the sudden drop which has taken place in 1932 and 1933. On consideration of the position there appears to be no reason to modify the opinion, expressed in the last annual report, that the principal cause of the marked reduction in fire loss is the more general understanding by the public of the facts regarding fire. Property-owners appear to have realized to a much greater extent than in the past that the insurance contract is an indemnity only, and that a forced realization on property through fire will on present-day values involve heavy loss in most cases. The marked decrease in the number of fires occurring, particularly in business premises, is evidence of the greater care with respect to fire which has been forced on the public through the severity of the depression.

The following table shows for purposes of comparison the fire losses in Great Britain, Canada, and the United States of America.

	New Zealand Fire Loss.	Fire Loss per Head.							
		New Zealand.	*	Great Britain.	*	Canada.	*	U.S.A.	*
	£	s. d.		s. d.		s. d.		s. d.	
Average (1927-31)	1,332,032	18 1	..	5 0	..	17 5	..	16 0	..
1932	867,714	11 5	36.9	3 9	25.0	16 8	4.3	13 2	17.7
1933	644,781	8 4	53.9	4 7	8.3	12 11	25.8	8 10	44.8

\* Percentage drop on five-year average.

It will be noted that the fire-loss returns for the United States of America show a reduction as compared with the five-year period 1927-31 approaching that experienced in New Zealand, but that the larger proportion of this reduction occurred in 1933. The reduction in the American fire losses for 1932 was generally held by the authorities to be mainly due to the drop in property-values, but it is significant that the very considerable reduction in 1933 occurred during a period of extreme financial disturbance. The financial conditions existing in Great Britain and in Canada were by comparison normal, and the slight increase in loss in Great Britain during 1933 is attributed to the effects of the very dry summer experienced and to the shortage of water for fire-fighting in some districts. Commenting on the 1933 returns for the United States of America, the *Quarterly*, the official organ of the National Fire Protection Association, says editorially:—

“ Various authorities attribute this material reduction in the national fire losses to different causes. It is noteworthy, however, that the initial drop was coincident with the declaration of the bank moratorium and the adoption of the sixty-day rule by the insurance companies. The effect of the bank moratorium was to create scepticism as to the solvency of all financial institutions, insurance companies as well as banks, and made it temporarily impossible for the companies to pay losses. The decision to withhold payment of losses for sixty days discouraged incendiarism and made honest property-owners unusually careful to avoid having fires. . . . Just what percentage of the fire loss of the country is due to arson is a matter of conjecture, but the experience of the past year seems to substantiate the opinion that incendiarism, deliberate or unconscious, is responsible for a very substantial part of the total fire loss.”

Experience over many years and in different countries has shown that the great bulk of the loss by fire is due to carelessness. While it is not possible to prove conclusively the causes of the reduced losses either in the United States of America or in New Zealand, it is a reasonable assumption from the facts that the reduction is mainly due to a greater measure of care with respect to fire by the public generally, and that this greater care has been induced by the knowledge that under the existing financial conditions insurance is not an effective safeguard against personal loss in the event of fire. In New Zealand the public realization of this fact is due partly to the fire-prevention publicity campaigns undertaken in recent years, and partly to the action taken fairly generally by the insurance companies in the reduction of the insurance “ cover ” allowed, and by a tightening-up of the system of inspection of their risks.

It would appear that the maintenance of the present more satisfactory position with respect to the national fire wastage is to a great extent in the hands of the insurance companies themselves. Inquiries made into fires of a suspicious nature almost invariably show that “ over-insurance ” has taken place and the property is insured for more than it is worth. In such cases the insurer is likely to assume that he will gain by a fire. Conversely, if the public generally can be made to realize—as it has by the existing conditions—that insurance will only cover part of the fire loss, the greater care and lesser tendency to deliberate fires evidenced by the 1933 figures will have a permanent effect on the national fire loss.

#### FIRE LOSS IN FIRE DISTRICTS.

It will be seen from Tables I and III attached that the fire loss in fire districts during the year ending the 31st March last was £245,195, and in areas protected by Fire Boards £39,158, or a total loss of £284,353, as compared with £201,736 for the previous year. This increase was due in some degree to the inclusion of additional fire districts (City of Nelson and several areas included in the Auckland Metropolitan District), but mainly to the fact that although the number of fires was slightly lower than during the previous year (732 as compared with 737), the number involving a loss of £5,000 or more increased from four to twelve. Of these fires, four occurred in Auckland (£50,353), one in Wellington (£5,100), five in Christchurch (£66,174), and two in Dunedin (£14,922), the loss in the twelve fires being £136,549, or practically half the total loss for the year. Although the loss per head (6s. 6d.) in fire districts is higher than for the previous year, it is still considerably lower than the national loss for the calendar year 1933 (8s. 4d.) referred to above.

#### CAUSES OF FIRE.

The year's records show that there has been no great variation in the causes from which fires arise. Pride of place as the principal fire hazard is still held by the unguarded domestic fireplace, while fires from electrical equipment tend to increase, mainly owing to electric irons and radiators being left on after use. Next in order come fires from smokers' carelessness with matches, pipes, and cigarettes, this hazard being a prolific cause of fire in business premises. Fires from naked lights (candles, lamps, &c.) are decreasing in number with the greater use of electricity, but those from the domestic use of petrol inside buildings (home dry-cleaning) appear to be increasing and are the most prolific source of personal injury. The indications from the returns are that every year approximately the same number of people leave matches—and particularly wax matches—about for children to play with, light rubbish fires near buildings, use petrol or kerosene for lighting fires, place hot ashes in wooden containers, air clothes before open fires, look for gas-leaks with a lighted match, or contribute to the national fire waste in the other ways detailed in these reports from year to year.

## INCENDIARISM.

There has been a very definite decrease during the year in the number of fires recorded as of suspicious origin. The special inquiries by the police into all fires the cause of which is not clearly accidental have been continued, but the number of cases it has been found necessary to refer to the special committee for further consideration has been less than one-third of the number dealt with in 1932. Only seven coroner's inquiries into fires were held during the year.

Arson is at all times a very difficult crime to sheet home to the offender owing to the fact that the fire very often destroys the evidence, but adjusters and insurance men generally with whom the matter has been discussed are unanimously of opinion that the work of the Police Department during the past three years has been very effective in checking incendiary fires. Owing to the publicity given to the procedure adopted with respect to these fires in these reports, in fire-prevention week activities, and by reason of the police investigations and coroners' inquiries, it is becoming fairly common knowledge that very searching inquiries will follow any fire having the least suspicious circumstances, and this fact alone tends to be an effective deterrent in most cases. The number of prosecutions taken during the year is set out in the following table:—

Year.						Prosecutions for Arson.	Convictions.	Dismissals.	Coronial Inquiries into Fires.
1931	..	..	..	..	..	28	16	12	5
1932	..	..	..	..	..	27	21	6	15
1933	..	..	..	..	..	13	7	6*	7

\* Three admonished by Court.

## DEATH AND INJURY IN FIRES.

Seven fatalities due to fires were recorded during the year—the same number as in 1932. Of these four were due to persons being trapped inside burning buildings, and three deaths were due to persons using petrol inside buildings in the vicinity of fires or naked lights. Only one fatality occurred in fires in hotels during the year.

The number of persons injured during fires was, as would be expected from the lesser number of fires occurring, considerably below the average of the past few years. Only thirty cases were reported to the Department, and in only seventeen were the persons seriously injured.

## HAND FIRE-EXTINGUISHERS.

In consequence of the bursting of a hand fire-extinguisher, which caused the death of a postal official at Hastings, and several other similar accidents with hand extinguishers, the Government set up a departmental committee during the year to consider and report as to the standard of construction and maintenance to be adopted for hand fire-extinguishers used in Government service, and also to consider whether it is desirable to introduce any legislation controlling the construction and maintenance of fire-extinguishers used by the public.

The committee consists of the Chief Inspector of Machinery; the Chief Mechanical Engineer, New Zealand Railways; the Field Engineer, P. and T. Laboratory; the Mechanical Engineer, Public Works Department; the Deputy Chief Inspector of Factories; the Chief Inspector, Fire Underwriters' Association; and the Inspector of Fire Brigades (Chairman). A number of meetings were held during the year, and a series of tests were carried out on extinguishers. Information is being obtained from abroad, particularly from Great Britain, and it is anticipated that it will be some considerable time before the committee will be able to bring down a final report.

During the year a considerable extension has been made in the arrangement under which fire brigades undertake the servicing of fire-extinguishers for the public. The value of this service appears to be appreciated generally, and it is anticipated that it will be further extended in the future.

## FIRE BRIGADE ORGANIZATION.

In the survey of the fire-protection conditions existing in New Zealand, made in the last annual report, it was noted that in practically all the larger towns arrangements had been made for a number of firemen to sleep in the fire station, so as to reduce to the minimum the time taken by the brigade in responding to fire calls during the night hours, when the call is usually received at a later stage of the fire than in the daytime.

In order to stress the necessity for this service and the desirability of maintaining wherever possible a fire-engine crew during the evening as well as the night hours, the following table has been prepared showing the number of fires and the loss experienced in the four principal cities (including the surrounding areas protected by the city brigades).

Period.	Number of Fires.	Percentage of Total.	Fire Loss.	Percentage of Total.
			£	
6 a.m.—6 p.m. . . . .	241	49·59	25,731	12·56
6 p.m.—Midnight . . . . .	169	34·77	64,200	31·34
Midnight—6 a.m. . . . .	76	15·64	114,887	56·09

It will be noted that the percentages represented by the number of fires and the loss are practically in inverse ratio, and that while the heaviest loss occurs during the early morning hours, that experienced during the evening represents a very considerable proportion of the total, and the number of fires occurring during this period is proportionately higher than during the rest of the day.

FIRE ENGINES FOR SECONDARY TOWNS.

In the last annual report attention was called to the difficulties under which many of the fire brigades in the secondary towns are working owing to the insufficient volume of water available for fire-fighting. Most of the towns have a gravitational water-supply which is fed from the intake or reservoir through a carrier main of limited diameter (6 in. to 9 in.) and the maximum capacity of this main is sometimes as low as 200 gallons per minute, and in many cases below 400 gallons per minute. The reticulation in many cases is not adequately gridironed and long lengths of 4 in. and even 3 in. dead-end mains are frequently found. These will not carry sufficient water at pressure to give effective fire-fighting streams.

There is a general impression on the part of the public—including many of the members of controlling local authorities—that if the water-supply system has a good static pressure that is all that is necessary, and it is the brigade's fault if fires "get away." It is not realized that when a large volume of water is drawn off there are heavy frictional losses in the pipe-line, and the "running pressure" through the fire-hose, which determines the effectiveness of the jet, is a very different thing from the pressure recorded on the gauge in the borough office during periods when ordinary domestic supply only is affecting the system.

It may be taken for granted that, once a community has established at considerable expense a water-supply system which is efficient for domestic purposes, it will regard with considerable disfavour any suggestions for the improvement of the system solely to meet fire-fighting requirements, unless this can be shown—usually by some disastrous fire—to be absolutely essential, or there is a possibility of the ratepayers being partly recouped for their outlay by the consequential reductions in insurance premiums. Failing this improvement the only satisfactory way to ensure that the brigade will have a reasonable chance to fight serious fires is to equip the fire engine with a pump. This will enable the firemen to use all the water available at high pressure and so make up to some extent for the lack of volume.

There is some difficulty in convincing the controlling local authorities as to the desirability of installing fire pumps by a mere statement of the theoretical considerations affecting their use, but, during the year under review, through the courtesy of the makers, it was possible to make actual tests with fire pumps in a number of towns where it was considered that the conditions existing warranted their use. These tests, of which typical instances are given below, not only proved the effectiveness of a pump over a wide range of water-supply conditions, but enabled the local-authority members to see for themselves the great improvement in the fire streams given by the pump as compared with the direct supply from the main. The flows shown were measured with a Prentice flow gauge and represent the maximum delivery from the hydrant with open waterway. The figures in parentheses show the quantity of water flowing at the pressures shown, and it will be noted that in all cases the pump utilized 80 per cent. or more of the total volume of water in the main.

	Static Pressure (Pounds/sq. in.)	Flow (g.p.m.).	Nozzle used.	Nozzle pressure recorded (Pounds/sq. in.).	
				Direct from Standpipe.	Through Pump.
				g.p.m.	g.p.m.
1. Ellerslie, Auckland .. ..	65	220	2 × 3/4"	22 (123)	45 (184)
2. Te Aroha .. ..	110	60	1 × 3/4"	28 (30)	60 (47)
3. Te Aroha .. ..	112	125	{ 1 × 1 1/4" 1 × 1 1/2" 1 × 1 3/4" }	30 (87)	50 (112)
4. Te Aroha .. ..	130	385	1 × 1 1/2"	35 (231)	80 (349)
5. Morrinsville .. ..	70	280	2 × 1 1/4"	30 (150)	82 (248)
6. Te Awamutu .. ..	62	280	2 × 1 1/4"	28 (146)	80 (244)
7. Hamilton .. ..	40	250	2 × 1 1/4"	20 (122)	55 (204)

Test No. 1 was made on a 4 in. main, and is typical of the water-supply found in many residential suburbs. It will be seen that with the pump two good streams—sufficient to deal with practically any residence fire—were obtained, as compared with extremely poor streams direct from the main. Tests Nos. 2 and 3 were taken on 3 in. dead-end mains and represent extreme cases of poor water-supply. It will be seen that even under these conditions the pump greatly improved both the volume of water and the effective pressure. Test No. 4 is quoted to show the improvement made by the pump when drawing water from large mains in the business area of a town where heavy-volume streams are occasionally required.

Tests Nos. 5 and 6 were taken from the principal main in the business area of country towns, under similar conditions to those found in many districts. They show that without the pump it is not safe to take even two 3/4 in. streams, but with the pump two first-class jets can be obtained, adequate for dealing with all but very serious fires, and likely even in these cases to be effective for protecting adjoining buildings. Test No. 7 was taken from a hill main near the reservoir, and is interesting in that it shows that the pressure obtainable from the pump depends on the volume of water available and is not affected by a low static pressure on the system.

At the present time the use of fire pumps is largely confined to the cities and larger towns, and the machines mostly used are heavy-duty truck chassis fitted with turbine pumps. The bodies are of the side-seating type having very limited accommodation for storage of gear, and the cost of the complete fire engine varies from £1,200 to £2,700 delivered, depending on horse-power and the equipment provided. Machines of this class are beyond the finances of the smaller local authorities, but there are now on the market a number of light, high-speed trucks fitted with motors of the car type which are eminently suitable for fire-brigade work, and which can be fitted with a suitable fire pump and a body designed for local conditions at a cost from £600 upwards. It is hoped that as the machines now in use require replacement the controlling authorities will instal combination pump units, which are serviceable in any situation and are essential for effective operation in most places.

## FIRE-PREVENTION.

The results achieved by the fire-prevention week held at the end of 1931 amply demonstrated the value of a fire-prevention campaign in assisting to reduce the national fire loss. It is well known that publicity efforts of this character are not effective unless repeated at fairly regular intervals, and arrangements were therefore made to hold a fire-prevention week in April last. As on the previous occasion, the local authorities and Fire Boards were asked to assist, and publicity matter was prepared for general circulation.

The undoubted success of the movement was due mainly to the enthusiasm with which the organization was taken up by the fire brigades throughout the country. In the city and most of the larger towns a small grant was made by the brigade controlling authority to cover the cost of signs, &c., and the demonstrations given by the brigades to arouse public interest were very creditable. Processions and special displays were held in the cities, and in even the smallest of the country towns the brigades arranged for special exhibitions of their work. Arrangements were made for members of the brigade to give lessons in the local schools, and the firemen also undertook the distribution of the publicity matter.

Broadcast talks were given from the Y.A. stations, and the press throughout New Zealand gave the question considerable prominence. The references noted included twenty editorials, sixty-nine news items regarding fire-brigade displays, eighteen illustrations, and seventy-two general news references and articles on fire hazards and fire-prevention. The country papers in particular dealt at considerable length with the more prominent fire hazards, and this publicity is particularly valuable, as it would get the information into many country homes which would not otherwise be reached by the campaign.

## CONSTRUCTION OF BUILDINGS.

The Government has decided not to proceed with the proposed Building Construction Bill, which has been the subject of reference in the last two annual reports. This is regretted, as it was hoped that under this Bill it would be possible to arrange for standard building by-laws providing for the protection of buildings, particularly from fire-exposure hazards.

A typical illustration of loss arising from the neglect of this precaution was a recent fire in a two-storey building of wooden construction in Wellington. In this case the fire broke out in a lavatory adjoining a small light area, on the opposite side of which was a reinforced concrete building of three storeys. The brigade received an early call and comparative little fire damage was done in the wooden building. The windows in the light area in the concrete building were of ordinary glass in wooden frames, the fire broke through immediately, and the fire damage was practically as extensive as that in the building in which the outbreak occurred.

It is understood that in lieu of the proposed legislation it is proposed to issue a set of model building by-laws for use by local authorities, prepared with special reference to earthquake-resisting design. Although this is not at first apparent, the question of fire resistance in the construction of buildings has an important bearing on earthquake damage, since a properly constructed building will lessen the danger of block fires following earthquake. This danger exists generally in most New Zealand cities and towns at the present time, since very few of the buildings—even those constructed during recent years—are adequately protected against exposure fires.

Very little attention appears to have been paid by architects to the safeguarding of buildings against fire, and very few of the local authorities' by-laws contain provisions requiring these safeguards. In his first report to the Government after his appointment as Inspector of Fire Brigades, the late Captain T. T. Hugo referred to this question as follows:—

*“Faulty Building Construction.”*—This is a widely spread evil. Fires have taken place in our midst that should have been looked upon as valuable lessons, but very little good has resulted in that direction. A large block of buildings recently erected in one of our cities in place of those destroyed by fire is, as a conflagration risk, very little, if any, better than it was before—owing to unprotected windows in narrow rights-of-way, vulnerable roofs, &c. A striking illustration of false economy in these respects was shown during the progress of the fire that took place on Lambton Quay in October, 1906. Had the side-windows and roof of the then newly erected Bank of New South Wales been protected—and this could have been done for a comparatively small increase in the cost of erection—this fine building would most undoubtedly not have been destroyed.”

It is regrettable that, despite the great improvement in methods and materials that are available to the modern builder, it should be necessary to call attention to this matter in practically the same terms twenty-six years later.

## METROPOLITAN FIRE DISTRICTS.

The operations of the Auckland Metropolitan Fire Board, which functioned for the first time during the year under review, amply demonstrated the advantages of unified control of a large urban area, both from the point of view of brigade efficiency and financial savings.

During the year reports were prepared with respect to the formation of similar metropolitan fire districts in Christchurch and Dunedin in lieu of the present arrangement under which the Fire Board provides protection for the surrounding districts on payment of a retaining fee. The Christchurch authorities have declined to support the proposals in the meantime, but application has been received for the formation of a united district comprising the City of Dunedin and the Borough of Mosgiel, and negotiations are still being carried on for the inclusion of the Boroughs of St. Kilda and Green Island.

## FIRE-BRIGADE CONTROL IN FIRE DISTRICTS.

No further progress has been made with the suggestion contained in the last annual report that, in lieu of the present fifty-four Fire Boards, the fire service throughout the fire districts should be controlled by a New Zealand Board operating through the local authorities in the country towns. The matter was given some consideration at the last meeting of the Municipal Association, when a remit

proposing a somewhat similar form of control was rejected by the Conference. Most of the opposition to the proposal appears to be based on the suggestion that the proposed Board would be a modified form of Government control, which incidentally is not intended, and it would appear that sufficient weight has not been given to the more efficient service that would be possible under a single controlling authority.

INSPECTIONS.

It was not found possible to make a complete inspection of all brigades during the year, but the majority were visited at least once. Close touch is kept with the activities of all brigades by means of newspaper cuttings containing the reports of matters affecting the local fire-protection service. Wherever necessary special inspections were made. The conditions found were generally satisfactory, and in one or two instances where defects had previously been pointed out a considerable improvement was noted. The usual reports were made on inspections of public buildings and institutions, and advice has been given to Fire Boards and local bodies with regard to equipment, fire station sites and buildings, water-supply installations, &c. A number of reports were also made to the Local Government Loans Board on loans proposed for fire prevention, and water supply and reticulation purposes.

I have, &c.,  
R. GIRLING-BUTCHER,  
Inspector of Fire Brigades.

TABLE I.—MISCELLANEOUS STATISTICS FOR FIRE DISTRICTS.

District.	Popula- tion.	Rateable Capital Value.	Insurance Companies Premium Income.	Number of Fire Calls.	Fires Involv- ing Loss of Pro- perty.	Insurances on Property involved in Fires.	Insured Fire Loss, Buildings and Contents.	Uninsured Fire Loss, Buildings and Contents.	Total Fire Loss.	Authorized Expenditure for Year ending 31st March, 1935.
		£	£			£	£	£	£	£
Auckland Metro- politan	183,140	70,974,657	208,986	659	145	1,229,482	71,693	724	72,417	28,100
Balclutha ..	1,650	274,120	2,080	4	1	600	5	..	5	237
Birkenhead ..	3,440	900,912	4,400	14	..	..	..	..	..	612
Cambridge ..	2,200	727,270	3,089	7	4	2,455	1,084	..	1,084	496
Christchurch ..	92,150	29,268,512	104,983	266	90	332,683	40,864	8,600	49,464	12,000
Dannevirke ..	4,580	1,406,444	6,398	10	6	18,320	2,061	257	2,318	755
Dargaville ..	2,010	489,697	3,271	9	3	3,700	125	1	126	396
Dunedin ..	69,900	17,106,487	75,191	368	56	212,601	14,750	1,618	16,368	11,750
Eltham ..	2,020	534,868	2,221	3	2	1,150	900	..	900	385
Feilding ..	4,520	1,409,893	5,675	9	2	2,750	660	112	772	825
Foxton ..	1,740	251,656	1,516	4	3	9,082	5,341	1,371	6,712	391
Gisborne ..	14,550	4,623,120	20,796	27	12	27,575	3,978	176	4,154	1,671
Greymouth ..	6,400	1,127,999	7,107	11	10	18,750	4,002	655	4,657	841
Hamilton ..	15,750	5,120,021	17,960	68	13	5,607	386	800	1,186	2,730
Hastings ..	12,400	3,524,504	15,564	41	12	7,000	2,010	935	2,945	2,715
Hawera ..	4,760	1,331,921	7,658	21	5	14,470	234	3	237	1,127
Hikurangi ..	1,250	161,986	1,062	3	1	300	300	..	300	122
Hokitika ..	2,590	390,955	2,820	4	4	1,075	1,050	3,150	4,200	605
Invercargill ..	21,200	5,174,638	24,842	109	34	93,180	6,903	1,247	8,150	5,045
Kaipoi ..	1,750	315,828	1,991	4	2	100	20	45	65	492
Kaitangata ..	1,350	102,335	1,060	2	1	..	..	3	3	128
Lawrence ..	650	56,850	705	1	1	180	9	..	9	75
Levin ..	2,800	759,576	3,398	14	5	1,390	1,081	..	1,081	531
Masterton ..	8,830	2,509,839	12,044	30	6	9,750	1,856	111	1,967	2,861
Milton ..	1,600	227,693	1,936	2	..	..	..	..	..	130
Mosgiel ..	2,120	304,310	2,005	..	..	..	..	..	..	105
Napier ..	16,400	4,210,330	25,023	43	17	13,790	5,475	1,081	6,556	4,286
Nelson ..	11,200	2,869,744	16,448	28	15	9,980	3,696	228	3,924	2,505
New Plymouth ..	16,550	5,004,996	17,728	47	16	19,585	2,944	15	2,959	1,858
Oamaru ..	7,680	1,540,468	8,311	17	10	10,622	1,678	692	2,370	924
Ohakune ..	1,400	109,110	1,121	8	2	500	225	1,000	1,225	355
Opotiki ..	1,330	326,617	1,788	6	1	11,375	3,609	..	3,609	420
Otaki ..	1,660	305,888	1,854	3	1	1,300	50	..	50	366
Pahiatua ..	1,560	345,395	3,069	5	3	2,365	1,365	575	1,940	335
Palmerston North ..	21,950	7,429,131	29,654	103	17	13,925	1,290	141	1,431	4,281
Petone ..	11,190	3,117,446	13,333	26	6	101,000	535	150	685	1,781
Port Chalmers ..	2,570	306,321	1,936	6	3	870	606	180	786	265
Pukekohe ..	2,560	796,803	2,728	9	1	..	..	5	5	654
Rotorua ..	5,250	1,462,021	6,915	27	7	20,950	5,184	..	5,184	1,009
Taihape ..	2,450	504,802	3,395	5	1	400	7	..	7	489
Taumarunui ..	2,550	630,170	2,545	13	3	647	71	40	111	502
Tauranga ..	3,190	847,995	4,149	7	2	1,650	340	..	340	620
Te Aroha ..	2,560	712,018	4,054	6	1	250	1	..	1	597
Te Awamutu ..	1,940	634,768	3,289	8	2	650	121	45	166	550
Timaru ..	17,450	5,216,077	16,960	39	8	10,650	714	40	754	2,581
Waihi ..	3,200	268,716	2,577	24	8	3,538	797	450	1,247	586
Waipukurau ..	2,030	504,634	2,541	11	3	3,825	180	..	180	355
Wairoa ..	2,420	675,606	3,540	6	5	6,865	3,946	..	3,946	677
Waitara ..	1,920	321,234	2,996	1	1	600	180	..	180	234
Wanganui ..	24,850	5,968,006	31,430	134	23	17,135	883	346	1,229	6,563
Wellington ..	114,100	52,619,290	173,907	748	123	828,393	23,662	1,918	25,580	29,424
Westport ..	4,070	511,810	4,386	6	2	900	15	20	35	700
Whangarei ..	7,880	2,331,663	8,211	13	3	4,225	725	..	725	898
Woodville ..	1,130	167,389	1,347	3	3	1,060	355	495	850	340
	758,390	248,814,539	933,993	3,042	705	3,079,250	217,966	27,229	245,195	139,280

TABLE IIA.—AVERAGE STATISTICS FOR ALL FIRE DISTRICTS WHICH HAVE BEEN IN OPERATION FOR THE ELEVEN YEARS 1924-34.

District.	Population.	Municipal Rates.	Rates per Head.	Insurance Premiums.	Insurance Premiums per Head.	Number of Fires.	Fires per 1,000 of Population.	Highest Fire Loss in any Individual Year.	Fire Loss.	Fire Loss per Head.	Loss per Fire.	Fire brigade Expenditure.	Expenditure per Head.	District
		£	£ s. d.	£	£ s. d.			£	£	£ s. d.	£	£	s. d.	
Auckland*	97,927	497,356	5 1 7	158,836	1 12 7	188	1.92	114,709	65,002	0 13 6	345	20,065	4 1	Auckland.*
Balclutha ..	1,567	3,740	2 7 9	2,006	1 6 4	2	1.51	7,090	1,049	0 13 5	444	362	4 8	Balclutha.
Christchurch ..	87,279	232,837	2 13 4	7,937	1 6 6	141	1.61	96,575	50,727	0 11 8	360	12,350	2 10	Christchurch.
Dannevirke ..	4,389	11,198	2 11 0	7,937	1 16 2	6	1.47	8,680	1,114	0 5 0	173	701	3 2	Dannevirke.
Dargaville ..	2,041	12,627	6 3 9	3,692	1 16 2	5	2.63	4,125	2,553	1 14 10	663	558	5 6	Dargaville.
Dunedin ..	68,181	189,107	2 13 6	81,371	1 3 11	116	1.70	59,793	30,181	0 8 11	260	14,252	4 2	Dunedin.
Feilding ..	4,414	16,230	3 13 7	6,946	1 11 6	6	1.46	5,044	2,088	0 9 6	324	715	3 3	Feilding.
Foxton ..	1,751	4,550	2 12 0	1,945	1 2 3	4	2.23	6,830	2,810	1 12 2	718	471	5 5	Foxton.
Gisborne ..	13,818	61,785	4 9 5	23,903	1 14 7	23	1.66	24,240	12,338	0 19 11	539	2,462	3 7	Gisborne.
Greymouth ..	5,886	16,027	2 14 6	7,500	1 5 6	10	1.63	32,174	10,408	1 15 4	1,085	1,014	3 5	Greymouth.
Hamilton ..	14,860	58,533	3 18 10	21,967	1 9 7	21	1.43	25,746	4,763	0 6 5	225	2,710	3 8	Hamilton.
Hastings ..	11,123	35,805	3 4 5	16,277	1 9 3	19	1.73	24,504	8,762	0 15 8	455	1,633	2 11	Hastings.
Hawera ..	4,665	15,374	3 5 11	7,986	1 14 3	9	1.85	11,876	2,454	0 10 6	284	1,169	5 0	Hawera.
Hokitika ..	2,480	3,748	1 10 3	2,939	1 3 9	6	2.35	8,591	2,975	1 4 0	511	575	4 8	Hokitika.
Invercargill ..	19,142	71,034	3 14 3	23,984	1 5 1	38	1.96	47,221	14,228	0 14 11	379	5,407	5 8	Invercargill.
Kaipoi ..	1,726	2,134	1 4 9	2,513	1 9 1	4	2.56	25,984	4,419	2 11 2	993	695	8 1	Kaipoi.
Kaitangata ..	1,495	1,686	1 2 7	1,100	0 14 8	2	1.28	4,343	969	0 13 0	407	167	2 3	Kaitangata.
Lawrence ..	663	1,266	1 18 2	741	1 2 4	2	2.47	3,770	536	0 16 2	327	91	2 9	Lawrence.
Levin ..	2,563	6,029	2 7 0	3,879	1 10 1	5	2.13	9,745	2,275	0 17 9	417	651	5 1	Levin.
Masterton ..	8,506	27,461	3 4 7	13,180	1 10 0	14	1.64	18,539	6,937	0 16 4	499	1,928	4 7	Masterton.
Milton ..	4,005	4,005	2 12 6	2,222	1 9 1	1	0.95	1,000	192	0 2 6	132	189	2 6	Milton.
Napier ..	15,890	56,561	3 11 2	27,944†	1 15 2	22‡	1.41	24,692	10,852‡	0 13 9	484	3,935	4 11	Napier.
New Plymouth ..	15,083	53,868	3 11 5	19,114	1 5 4	18	1.18	9,593	5,527	0 6 11	312	2,034	2 9	New Plymouth.
Oamaru ..	25,980	25,980	3 10 2	8,174	1 2 1	7	0.99	23,878	5,288	0 14 4	718	1,100	3 0	Oamaru.
Ohakune ..	1,495	2,478	1 13 2	1,442	0 19 4	5	3.65	11,825	3,822	2 12 6	701	444	5 11	Ohakune.
Palmerston North ..	19,706	70,511	3 11 7	31,056	1 11 6	38	1.93	31,637	14,927	0 15 2	392	3,858	3 11	Palmerston North.
Petone ..	10,217	24,934	2 8 10	13,703	1 6 10	10	0.98	5,070	1,884	0 3 8	188	1,619	3 2	Petone.
Port Chalmers ..	2,580	4,319	1 13 4	2,270	0 17 7	3	1.27	2,135	879	0 6 3	267	240	1 11	Port Chalmers.
Rotorua ..	4,902	8,655	1 15 4	7,084	1 8 11	10	2.02	7,416	3,116	0 12 9	314	1,087	4 6	Rotorua.
Taumarunui ..	2,450	7,967	3 5 0	3,384	1 7 7	7	2.75	7,942	1,884	0 15 5	280	537	4 5	Taumarunui.
Tauranga ..	2,775	8,039	2 18 0	4,273§	1 10 10	5	1.64	5,074	2,094	0 13 3	460	639	4 9	Tauranga.
Te Aroha ..	2,423	6,216	2 11 4	3,833	1 11 5	4	1.84	4,426	2,010	0 16 7	452	645	5 4	Te Aroha.
Timaru ..	16,278	53,468	3 5 8	18,023	1 2 2	18	1.08	19,457	5,753	0 7 1	328	2,503	3 1	Timaru.
Waihi ..	3,392	4,680	1 7 7	2,856	0 16 10	11	3.19	5,909	3,146	0 18 7	291	694	4 1	Waihi.
Waitara ..	1,801	4,227	2 6 11	2,569	1 8 6	2	1.11	5,044	1,916	1 1 3	958	228	2 6	Waitara.
Wanganui ..	24,465	96,682	3 19 0	36,384	1 9 9	40	1.65	14,074	8,904	0 7 3	220	7,168	5 11	Wanganui.
Whangarei..	6,858	25,116	3 13 3	7,932	1 3 2	9	1.27	36,569	6,942	1 0 3	795	1,063	3 1	Whangarei.
All districts ..	493,727	1,726,233	3 9 11	696,813	1 8 3	831	1.69	..	305,724	0 12 5	367	95,979	3 11	All districts.
Ten years' average, whole Dominion	1,468,653	5,332,333	3 12 6	1,913,326	1 6 1	4,627	3.15	1,636,119	1,154,863	0 15 9	..	..	..	Ten years' average whole Dominion.

§ Eight-year average.

† Ten-year average.

‡ Seven-year average.

\* Ten-year average.

TABLE II.B.—AVERAGE STATISTICS FOR OTHER FIRE DISTRICTS.

District.	Period of Average. (Years.)	Population.	Municipal Rates.	Rates per Head.	Insurance Premiums.	Insurance Premiums per Head.	Number of Fires.	Fires per 1,000 of Population.	Highest Fire Loss in any Individual Year.	Fire Loss.	Fire Loss per Head.	Loss per Fire.	Fire Brigade Expenditure.	Expenditure per Head.	District.
Auckland Metropolitan	1	183,140	£ 879,489	£ s. d. 4 16 0	£ 208,986	£ s. d. 1 2 10	145	0.79	£ 72,417	£ 72,417	£ s. d. 0 7 11	£ 499	£ 30,400	s. d. 3 4	Auckland Metropolitan.
Birkenhead	2	3,430	12,926	3 14 10	4,404	1 5 8	1	0.29	802	401	0 2 4	401	492	2 11	Birkenhead.
Cambridge	3	2,173	7,950	3 13 5	3,309	1 10 6	4	1.68	1,084	725	0 6 8	198	496	4 7	Cambridge.
Eltham	10	2,044	6,539	3 4 0	2,743	1 4 2	3	1.66	2,672	1,021	0 10 0	297	466	4 7	Eltham.
Hikurangi	6	1,238	2,103	1 14 0	1,217	0 19 8	1	1.21	1,000	364	0 5 11	242	230	3 9	Hikurangi.
Mosgiel	1	2,120	5,465	2 11 7	2,005	0 18 11	..	..	..	..	..	..	105	1 0	Mosgiel.
Nelson	1	11,200	35,949	3 4 2	16,448	1 11 7	15	1.34	3,924	3,924	0 7 0	262	2,505	4 6	Nelson.
Oporiki	5	1,304	4,132	3 3 5	2,125	1 12 7	3	2.61	3,609	1,121	0 17 2	329	586	9 0	Oporiki.
Otaki	9	1,608	4,660	2 18 0	1,982*	1 4 8	3	1.87	2,855	1,040	0 12 11	347	340	4 3	Otaki.
Pahiatua	8	1,518	4,130	2 14 5	3,301	2 3 6	3	1.89	11,775	3,092	2 0 9	1,077	385	5 1	Pahiatua.
Pukekohe	8	2,505	12,855	5 2 8	3,317	1 6 6	3	1.10	5,680	937	0 7 6	343	647	5 2	Pukekohe.
Taihape	4	2,462	9,552	3 17 7	3,923	1 11 11	2	0.91	856	306	0 2 6	136	532	4 4	Taihape.
Te Awamutu	7	1,820	9,737	5 7 0	3,406	1 17 5	2	1.33	4,510	1,096	0 12 0	432	477	5 3	Te Awamutu.
Waipukurau	8	1,946	5,850	3 0 1	3,238	1 13 2	4	2.31	7,167	2,090	1 1 6	465	326	3 4	Waipukurau.
Wairoa	8	2,466	9,799	3 19 6	4,231	1 14 6	5	2.23	140,742	20,834	8 8 11	3,788	519	4 2	Wairoa.
Wellington	8	108,775	453,851	4 2 9	193,610	1 15 7	195	1.79	294,070	103,744	0 18 11	536	27,325	5 0	Wellington.
Westport	10	3,935	9,123	2 6 4	4,266	1 1 8	5	1.37	11,989	2,766	0 14 1	518	638	3 3	Westport.
Woodville	3	1,123	2,567	2 5 9	1,482	1 6 5	4	3.26	2,105	988	0 17 7	270	399	7 1	Woodville.

\* Four-year average.

TABLE III.—AREAS PROTECTED BY FIRE BOARDS.

District.	Population.	Rateable Capital Value.	Number of Fire Calls.	Fires involving Loss of Property.	Insured Fire Loss, Buildings and Contents.	Uninsured Fire Loss, Buildings and Contents.	Total Fire Loss.	Protected by	Remarks.
Belfast (works only)	..	£ ..	2	2	£ 25,410	£ ..	£ 25,410	Christchurch Fire Board	Payment for attendances.
Felding (works only)	..	..	..	..	..	..	..	Felding Fire Board	Payment for attendances.
Green Island	2,450	384,700	21	7	9,953	9	9,962	Dunedin Fire Board	Borough pays £750 p.a. to Fire Board.
Hawera	600*	210,000*	1	..	..	..	..	Hawera Fire Board	County pays £75 p.a. to Fire Board.
Mangere	750*	522,000	1	1	247	150	397	Auckland Metropolitan Fire Board	County pays £75 p.a. plus £5 for every call in excess of ten.
New Lynn	3,300	648,406	1	..	..	..	..	Auckland Metropolitan Fire Board	Borough pays £100 p.a. plus £5 for every call in excess of ten.
Cashmere	..	..	..	..	..	..	..	Christchurch Fire Board	County pays £300 p.a. to Fire Board.
Fendalton	..	3,795,757	34	16	2,877	507	3,384	Christchurch Fire Board	County pays £450 p.a. to Fire Board.
Riccarton	..	..	..	..	..	..	..	Christchurch Fire Board	Borough pays £450 p.a. to Fire Board.
St. Kilda	8,370	1,774,021	15	1	5	..	5	Dunedin Fire Board	Borough pays £550 p.a. to Fire Board.
West Harbour (works only)	..	..	..	..	..	..	..	Dunedin Fire Board	Payment for attendances.
	26,620	7,334,884	75	27	38,492	666	39,158		

\* Estimated.

Approximate Cost of Paper.—Preparation, not given; printing (1,420 copies), £13 10s.