1929.

NEW ZEALAND.

FIRE BRIGADES OF THE DOMINION

(REPORT ON THE) FOR THE YEAR ENDED 31ST MARCH, 1929, BY THE INSPECTOR OF FIRE BRIGADES.

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

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

Office of Inspector of Fire Brigades (Department of Internal Affairs),
Wellington, 17th July, 1929.

SIR,—

Herewith I have the honour to lay before you my twenty-first annual report, for the year ended 31st March, 1929, relative to the working of the Fire Brigades Act, and including matter in connection therewith.

One new fire district was constituted during the year—viz., Opotiki, 1st October, 1928. Following is a list of the fifty Fire Boards now operating :—

Auckland	Hawera	Oamaru	Tauranga
Balclutha	Hikurangi	Ohakune	Te Aroha
Christchurch	Hokitika	Onehunga	Te Awamutu
Dannevirke	Invercargill	Opotiki	Timaru
Dargaville	Kaiapoi	Otaki	Waihi
Dunedin	Kaitangata	Pahiatua	Waipukurau
Eltham	Lawrence	Palmerston North	Wairoa
Feilding	Levin	Petone	Waitara
Foxton	Masterton	Port Chalmers	Wanganui
Gisborne	Milton	Pukekohe	Wellington
Greymouth	Mount Roskill	Rotorua	Westport
Hamilton	Napier	Taumarunui	Whangarei.
Hastings	New Plymouth		

Fire districts and brigades working under Fire Board control, their stations and equipment, have been officially inspected and reported upon as follows :—

Auckland, January 29 and 30, 1929.
Balclutha, December 6, 1928.
Christchurch, October 29, 1928.
Dannevirke, January 16, 1929.
Dunedin, December 8 and 10, 1928.
Eltham, September 26, 1928.
Feilding, April 10, 1928.
Foxton, February 7, 1929.
Gisborne, November 7, 1928.
Greymouth, October 25, 1928.
Hamilton, November 20, 1928.
Hastings, September 18, 1928.
Hawera, September 24, 1928.
Hikurangi, October 9, 1928.
Hokitika, October 26, 1928.
Invercargill, December 5, 1928.
Kaiapoi, October 29, 1928.
Levin, February 5, 1929.
Masterton, January 15, 1929.
Milton, December 4, 1928.
Mount Roskill, January 24, 1929.
Napier, November 5, 1928.
New Plymouth, September 25, 1928.
Oamaru, October 30, 1928.
Ohakune, January 23, 1929.
Onehunga, October 12, 1928.
Otaki, February 13, 1928.
Pahiatua, January 14, 1929.
Palmerston North, March 12, 1929.
Petone, February 19, 1929.
Port Chalmers, December 7, 1928.
Pukekohe, June 14, 1928.
Rotorua, November 23, 1928.
Taumarunui, January 24, 1929.
Tauranga, November 21, 1928.
Te Aroha, November 20, 1928.
Te Awamutu, November 26, 1928.
Timaru, October 21, 1928.
Waihi, November 20, 1928.
Waipukurau, September 17, 1928.
Wairoa, November 6, 1928.
Waitara, September 26, 1928.
Wanganui, February 6, 1929.
Wellington, July 12, 1928.
Westport, October 24, 1928.
Whangarei, October 8, 1928.

Circumstances have not permitted inspection of the Kaitangata and Lawrence Fire Districts.

During the inspection visits instruction in fire drill and in fire-protection matters generally has been given in the smaller towns; inspections have been made and reports furnished in respect to public buildings and institutions; advice has been given to local bodies and others in regard to water-supplies and fire-prevention; specifications for the supply of plant and appliances have been drawn up; quite a number of tests have been made and reports furnished in respect to tentative inventions and improvements in fire-prevention equipment; also, public addresses on the subjects of fire waste and fire-prevention matters have been delivered.

Special visits and reports have been made, of which the following are the principal:—

Napier: May 17, 1928—Address, Chamber of Commerce.
Dunedin: May 28, 1928—Board meeting; plans of proposed new central fire-station.
Wellington: June 5, 1928—Address, Chamber of Commerce.
Rotorua: November 25, 1928—Inspection and report, King George V Hospital.
Upper Hutt: March 22, 1929—Inspection and report, picture-theatres.
Trentham: March 23, 1929—Inspection, Trentham Camp.
Masterton: April 9, 1929—District fire-brigades demonstration.
Auckland: June 19, 1928—Inspection, sites for new substations, Avondale and Tamaki.
Wanganui: September 3, 1928—Annual meeting.
Onehunga: October 6 and 7, 1928—District Fire Brigades Conference, and meeting executive United Fire Brigades Association.
Palmerston North: October 16, 1928—Annual meeting.
Te Aroha: November 21, 1928—District inspection.
Hokitika: February 23 to March 3, 1929—United Fire Brigades Conference and demonstration.

Following upon an invitation from the executive officers of the United Fire Brigades Association, I attended their annual conference and biannual demonstration held in Hokitika in February last, and delivered an address to the delegates upon fire-prevention matters generally. At the request of the Conference this address is to be printed and distributed to the brigades. There was a great improvement throughout in the methods of carrying out the demonstration; antiquated events were modernized, and certain of the appliances were replaced by more up-to-date gear. Altogether this demonstration was the most practical and educationally successful that has been held within my experience, and the executive officers of the association are to be highly commended for the firm manner in which they have at last taken this matter in hand. Further, it was pleasing to see the appreciative manner in which the drastic and even exacting alterations made in most of the events were accepted by the brigades taking part in the competitions.

Two new Volunteer Fire Police Corps have been formed, and chief officers of brigades continue to report in highly appreciative terms of the valuable services at fires rendered by these purely voluntary organizations, the members of which are all prominent citizens of their respective towns.

Following are the principal improvements and additions to equipment in various fire districts:—

Auckland: Purchase of new station site, Tamaki district; 40·45 h.p. motor first-aid hose-and-ladder tender; continuous foam generator set.
Christchurch: Continuous foam generator set.
Dunedin: Plans prepared for new headquarters station.
Invercargill: New 65 h.p. 500–700 g.p.m. pump and first-aid motor, fitted with 65 ft. fire-escape ladder.
Pukekohe: Plans prepared for new fire-station.
Rotorua: Purchase of new station-site.
Tauranga: Installation electric fire-alarm siren.
Timaru: Erection of two cottage residences for married firemen.
Westport: New 14·28 h.p. motor hose-and-ladder tender.

Six new auto-sprinkler, eight auto-detector, and two private manual alarms have been installed during the twelve months.

The following fatalities have been reported:—

Auckland: April 1, 1928—Rholder Beuth, brigade chauffeur, severely burned by benzine-explosion and died next day.
Dunedin: June 9, 1928—Two-story eight-roomed dwelling destroyed by fire. Horace Mann, owner, burnt to death, and Helen Mann, elderly spinster, severely burnt and died two days later.
Gisborne: March 3, 1929—Motor-shed. The owner died as a result of burns whilst trying to extinguish the fire.

Quite a number of casualties of a less serious nature than the above are reported as having occurred to brigadesmen and civilians.

The number of fire calls received throughout the forty-nine fire districts for the twelve months ended 31st March, 1929, totalled 3,046: of that number 1,350 were property fires, 354 chimney fires, 609 bush, grass, and rubbish fires, 637 false alarms, and 96 out-of-district fires.

The fire loss (all losses quoted, unless otherwise stated, include loss sustained on both insured and non-insured property) throughout the fire districts for the twelve months amounted to £710,596. The four heaviest district losses occurred in Wellington (£294,070), Auckland (£74,958), Dunedin (£42,775), and Christchurch (£39,166).

Incendiarism is returned as the cause of 40 fires, involving a loss of £11,210, and 53 fires occurred in unoccupied buildings, with a loss of £8,683. Following is a list of fires, most of them in connection

with domestic matters, nearly all of them due to carelessness: Electric irons, kettles, and cookers left switched on were responsible for 40 fires, with a loss of £34,540; children with matches, and matches thrown down alight, 125 fires, loss £36,993; cigarette-butts and smoking, 68 fires, loss £12,935; sparks from copper-fires and fireplaces, 92 fires, loss £12,746; live ashes thrown out, 32 fires, loss £11,293: gas rings and stoves, 26 fires, loss £8,103; airing clothes before the fire, 15 fires, loss £4,423; naked lights in proximity to benzine, 49 fires, loss £2,558: a total of 447 fires, causing a loss amounting to £123,591—practically all due to carelessness in some form or degree.

The fire loss throughout New Zealand for the twelve months ended 31st December, 1928, is estimated at £1,636,118—a conservative estimate; and it is a safe assumption that the actual loss exceeds the amount stated. This, with the population for that period estimated at 1,453,517, gives an average loss of 22s. 6d. per head of population. The loss in the forty-nine fire districts for the same twelve-months period amounted to £683,082, which with a population of 611,280 residing within the districts gives a *per capita* loss of 22s. 4d.; whilst the loss for the 842,237 persons resident in other than fire districts amounted to £953,036, an average of 22s. 7d. *per capita.*

Carelessness in regard to fire and its consequences is too deeply ingrained to expect any radical reform in that respect in our present adult population, and in my opinion one of the most effective means of reducing the prevailing excessive number of outbreaks of fire—and which at the present time is proving to be so in the United States of America and Canada—is the *compulsory* teaching of fire-prevention in our schools and colleges, and by that method inculcating in the rising generation an individual sense of responsibility and care in respect to danger and loss by fire.

Another effective means towards reduction of our enormous fire waste, and which, at the risk of it being considered tiresome reiteration, I would once again advocate, is the installation of automatic protection in factories, emporiums, warehouses, and other large commercial establishments. There is now installed in buildings throughout the forty-nine fire districts 45 auto-sprinkler installations and 142 auto-detector installations of various patterns, or 187 in all, only a tithe of what there should be. There are also 106 private manual fire-alarms: these are call boxes of various patterns fixed inside the building, connected by direct wire with the local fire-station and operated by switch or press-buttons.

It is on record that one of the auto-sprinkler systems has, throughout the world, extinguished 28,000 fires, with, including water damage, an average loss of £60 per fire; and the Associated Fire Alarms Co. of London publish the following statement, as taken from the records of twelve leading British fire-insurance companies: The total premium received for ten years amounted to £1,616,000; fire loss for the same period, £42,720; percentage of premium loss, $2\frac{1}{2}$ per cent., as against a premium loss of 51 per cent. sustained on property not protected by automatic alarms. To appreciate what these records really mean, it should be understood that they apply only to outbreaks of fire occurring in large properties. Auto-protection systems are mostly installed only in mills, factories, dry-goods stores, and suchlike large establishments, that under the conditions of occupation, together with the inflammable nature of their contents, render them more subject to outbreaks of fire, and where a late call would mean very serious loss, and, contingently, destruction of adjoining property. Out of the 1,350 property fires, 1,339 resulted in an aggregate loss of £340,208, whilst the remaining eleven fires were responsible for £370,208, or 58 per cent. of the total loss, amounting to £710,506, incurred in the forty-nine fire districts. The eleven outbreaks occurred on properties typical for "auto-protection," and, according to the published records of results set out above and covering practically every country in the world, had such protection been installed there is every right to assume the losses would have averaged less than 10 per cent. of what actually occurred, and property to the value of something over £333,000 saved from destruction. Surely such authentic records are a reliable guarantee that installation of auto-protection secures an almost certain immunity from heavy loss by fire. After all the publicity given to this subject, as representing the business section of the community, and as such in a position to more readily realize the extent to which this continuous huge waste of property is affecting the financial conditions of the country, it is certainly surprising that one or more of the numerous chambers of commerce established in New Zealand have not made some practical move in remedy of this regrettable state of affairs.

Enactments making installations of auto-protection compulsory in certain classes of buildings, or else placing restrictions on the size of buildings not so protected, are in operation in different parts of the world. In America twelve of the United States have a State law in that relation, and 139 cities and towns have locally enacted by-laws in the same relation; and in Canada an Act empowers the Dominion Fire Commissioner to enforce recommendations made for the auto-protection of property. In Australia, Melbourne by-laws impose restrictions on the size of buildings not so protected; in Sydney, State regulations under the Buildings Act require auto-protection in certain specified classes of buildings. For protection of life, elimination of the too-often-disastrous late call, and as a very appreciable step in reduction of the prevailing excessive fire waste—seeing, too, that insurance premium rebates go a long way towards defraying interest on this cost of installation—City and Borough Councils might well follow the examples set out above in the making of by-laws relative to auto-protection. The indifference of the public generally, and of the business section of the community in particular, in New Zealand regarding a matter which so seriously affects the economic conditions of the country is remarkable in comparison with the practical interest displayed by the public and the action taken for reduction of their fire waste in other countries where the annual *per capita* loss is lower—in some cases very much below that prevailing in this Dominion. As examples, national fire-prevention Ordinances have been proclaimed in the United States of America by the President, in Canada by the Governor-General, and in Italy by the Premier. A State Fire Prevention Bureau has been established in France, and in Germany the President has issued a mandate for the setting-up of a Fire-prevention Commission (both the latter within the last twelve months). In Great Britain a Royal Commission on Fire Brigades and Fire-prevention issued a voluminous report in 1923.

Comparison with the fire loss in Australia would be interesting, but no collective figures of the losses in that country are available.

Of the 3,046 fire calls received throughout the year, 637 proved to be false alarms, and of that number no less than 339 are reported as of malicious origin. Every turn-out of a fire brigade is a matter of expense, but, what matters more, they are also a potential danger to life and limb—more so to-day than before in view of the ever-increasing motor traffic. The steady increase in the number of malicious false alarms is a most serious matter, endangering as they do the lives of both civilians and fire-brigademen. Although no fatal accident has occurred to civilians during recent years, two fire-brigade officers have been killed, and quite a number of firemen more or less seriously injured, whilst proceeding in response to *malicious* false alarms. It is a most difficult matter to detect the offenders, and I have to again call attention to the very inadequate penalties that (with three or four exceptions) have been inflicted upon conviction—mostly fines ranging from a few shillings to two or three pounds. A case in point: A young man, a member of a fire brigade too, who pleaded that the particular alarm then in question was accidentally given, but admitted having given a previous false alarm for a joke, was ordered to pay £2 brigade expenses.

Of necessity travelling faster than the ordinary traffic, but only when proceeding in response to a fire call, fire-engines do not travel at the high rate of speed generally attributed to them—an illusion due to the howling of the siren, the shining helmets of the firemen, the rattle and rather dazzling appearance of the engine and its equipment, and perhaps a little to the excitement usual upon such occasions. Giving evidence in a Court case some little time ago, witnesses' estimated the speed at which the engine was travelling at the time varied from forty-five up to sixty miles per hour. Now, although the fire-motor in question, fitted with a powerful engine, was actually, as per specifications, geared down to a maximum speed of thirty-five miles per hour on the level, and perhaps was not even doing that speed.

Appended are brief reports dealing with each fire district [not printed], also the following tables:—

1. Summary of calls attended by each brigade.
2. Fire loss in each district.
3. Annual cost of each brigade.
4. Summary of the causes of fire in each district.
5. Personnel and equipment of each brigade.

I have, &c.,

THOS. T. HUGO,

Inspector of Fire Brigades.

The Hon. the Minister of Internal Affairs.

DISTRICT REPORTS.

AUCKLAND.

Inspections, 19th June, 1928, and 29th January, 1929. The several stations with their equipment were found in proper order, and the turnout in each case was carried out in a smart and efficient manner. The Tamaki Road Board district, being now incorporated in the city, becomes part of the Auckland Fire District; also, the Board has undertaken protection of the One Tree Hill district. The additions to the Remuera district fire-station have been completed, and plans prepared for erection of a fire-station for protection of the Avondale district. Specially prepared slabs are now being let into the footpath-kerbs as fire-hydrant indicators, in place of the present unsightly splashes of whitewash. Plant additions during the year include a new 40–45 horse-power motor fire-engine and a continuous foam-generator outfit for dealing with oil fires.

BALCLUTHA.

Inspection, 6th December, 1928. Two officers and seven firemen were present at the inspection muster. In comparison with my previous inspection there was a very satisfactory improvement in the carrying-out of the required inspection drills, and the station and equipment was in good order. Attendance at the two fire calls averaged 62 per cent. of the total membership. I found quite a number of the street fire-hydrants completely covered with loose road metal and some of the indicators missing, a matter requiring prompt attention; also, the motor-hose tender was not fitted with a siren, as required by the Regulations under the Motor-vehicles Act.

CHRISTCHURCH.

Inspection, 29th October, 1928. The inspection drill at the central station and the turnout at the several substations were carried out in a smart and efficient manner, and the stations and their equipment were found in their usual good order. A continuous foam-generator set has been added to the equipment of the brigade, and five more auto-detector fire-alarm systems have been installed in Christchurch.

DANNEVIRKE.

Inspection, 16th January, 1929. Superintendent, deputy, fourteen firemen, and two messengers in attendance at the inspection muster. The inspection drills were carried out in a smart and efficient manner, and the station and equipment were found in good order. Attendance at the twelve general alarms averaged 80 per cent. of the total membership, a good record. A recommendation was made to the Board that conditions now called for the appointment of a permanent member of the brigade.

DARGAVILLE.

Inspection, 10th October, 1929. Two officers and eight firemen were in attendance at the inspection muster. The inspection drills were carried out in a smart and efficient manner, and the station and equipment were found in good order. Attendance at the twelve fire calls averaged 74·2 per cent. of the total membership—a fair record. The motor fire-engine required fitting with a siren in accordance with the regulations of the Motor-vehicles Act; also, formation of a Volunteer Fire Police Corps was again advocated.

DUNEDIN.

Inspection, 8th December, 1928. The inspection drill at the central station, as also the turnout at the two district stations, were carried out in a smart and efficient manner. All stations and their equipment were found in proper order. A further run on the Roslyn motor served to confirm my previously expressed opinion that it is too heavy and slow in the "pick-up" to give efficient service in that particular district; it should be replaced with a lighter and faster machine. The street fire-hydrant indicators are in a bad state, particularly so in Princes Street—indistinct, out of line, and altogether missing in some places. This is a matter that should receive prompt attention. Plans for the proposed new central station, to replace the present old congested building, have been prepared and submitted for approval.

ELTHAM.

Inspection, 26th September, 1928. The full strength of the brigade—two officers and fifteen firemen—were in attendance at the inspection muster. The inspection drills were carried out in a smart and efficient manner, and the station and equipment were found in good order and condition. Attention of the Board was again called to the necessity for providing additional living-accommodation at the fire-station.

FEILDING.

Inspection, 10th April, 1928. Two officers and thirteen firemen were present at the inspection muster. The inspection drills were carried out in a satisfactory manner, and the station and equipment were found in good order and condition. The attendance at nine general alarms averaged 81 per cent. of the total strength—a good record. Several recommendations in respect to the brigade equipment were made to and adopted by the Board.

FOXTON.

Inspection, 7th February, 1929. Two officers and thirteen firemen were in attendance at the inspection muster. The inspection drills were carried out in an efficient manner, and the station and equipment were found in good order. Attendance at the eight fire calls averaged 68·8 per cent. of the total membership of the brigade. Certain members of the brigade were in need of uniform.

GISBORNE.

Inspection, 7th November, 1928. Two officers, twenty firemen, and two cadets were present at the inspection parade. A contingent of the Volunteer Fire Police Corps was also in attendance. The inspection drills were carried out in an efficient manner, and the station and equipment were found in first-class order. Attendance at thirty-one general alarms averaged 85·2 per cent. of the total membership—a good record. Recommendations were made to the Board in regard to provision of fire-foam extincteurs and to the fitting of a siren on the Denby motor.

GREYMOUTH.

Inspection, 25th October, 1928, when two officers and seventeen firemen were in attendance at the inspection muster. The required inspection drills were carried out in a satisfactory manner, and the stations and equipment were found in good order. Attendance at the nine general alarms averaged 93·5 per cent. of the total membership of the brigade—a very good record. In my report to the Board attention was called to the continued inadequacy of the water-supply for fire-extinction purposes, in particular applying to the limited extent of the reticulation and inadequate volume owing to the small diameter of the mains in general.

HAMILTON.

Inspection, 20th November, 1928. The full strength of the brigade, two officers and twenty-two firemen, was present at the inspection parade. A contingent of the Volunteer Fire Police Corps was also in attendance. The required inspection drills were carried out in a smart and efficient manner, and the station and all equipnent were found in first-class order. Attendance at the twenty general alarms averaged 87·5 per cent. of the total membership of the brigade—a very good record. I had again to call attention to the necessity of erecting a substation for protection of the Frankton portion of the fire district. In February last the Hamilton ratepayers approved of a loan for improvement of the water-supply, and completion of the scheme set out will place the town on a much more satisfactory footing in regard to fire-prevention.

Hastings.

Inspection, 18th September, 1928. Two officers, seventeen firemen, and two messengers were in attendance at the inspection parade. The inspection drills were carried out in an efficient manner, and the station and all equipment were found in first-class order. Attendance at the twenty-five general alarms averaged 74·5 per cent. of the total membership—a fair record. Certain recommendations were made in regard to future drill and practice. The additions and alterations to the central station will prove quite a factor in improving the all-round working efficiency of the brigade. Three additional call-boxes have been installed on the street fire-alarm system.

Hawera.

Inspection, 24th September, 1928. The full strength of the brigade, two officers and sixteen firemen, were in attendance at the inspection muster. The inspection drills were carried out in a smart and efficient manner, and the station and all equipment were found in first-class order. Attendance at the thirty-five general alarms averaged 82 per cent. of the total membership of the brigade a good record. Attention was again called to the advisability of acquiring additional land adjoining the present fire-station. An electrically driven siren has been installed in place of the firebell.

Hikurangi.

Inspection, 9th October. Two officers and thirteen firemen were in attendance at the inspection muster. Hikurangi is a newly constituted fire district, and at the time of my inspection equipment of the brigade had not been completed. Certain inspection drills were carried out in a manner satisfactory under the circumstances. An address and practical instruction in fire matters generally were given, and a number of necessary recommendations made to the Fire Board.

Hokitika.

Inspection, 26th October, 1928. Two officers and twenty-three firemen were in attendance at the inspection parade. The required inspection drills were carried out in a satisfactory manner, and the central and hose-reel stations with their several equipments were found in good order and condition. In my report to the Board installation of mechanical apparatus for ringing the firebell, or preferably installation of an electrically operated siren in direct connection with the Telephone Exchange, was advocated; also that motor transport for men and appliances should now be provided.

Invercargill.

Inspection, 5th December, 1928. Two officers and eighteen firemen were in attendance at the inspection parade. The inspection drills were carried out in a smart and efficient manner, and the station and all equipment were found in first-class order. A new 55 horse-power motor combination fire-engine, fitted with a 65 ft. escape, &c., has been purchased and placed in commission. In regard to the water-supply, the scraping and cleaning of the reticulation is proving very effective, and will increase efficiency of the supply from 50 to 75 per cent., but the necessity of laying down larger distributing-mains, so to obtain an adequate flow and pressure throughout the whole of the reticulation, still remains.

Kaiapoi.

An inspection of the Kaiapoi fire district, fire-station, and equipment was made on the 29th October, 1928, when both station and equipment were found in good order and condition. Attendance at the seven general alarms averaged 70 per cent. of the total membership of the brigade—a fair record. There is no water-supply system installed in the Kaiapoi Borough, and to obtain water for fire-extinction purposes the brigade pump from the river with their motor fire-pump. For years past in my various reports attention of the Fire Board has been called to the necessity for the construction of sumps in certain parts of the town, to enable dealing with outbreaks of fire in properties situated at a distance from the river, but up to the time of my last visit none had been constructed, although I understand one was shortly to be sunk in the Main North Road.

Levin.

Inspection, 5th February, 1929. Two officers and fourteen firemen were in attendance at the inspection muster. The station and equipment were found in good order and condition. Attendance at the four general alarms averaged 77·6 per cent. of the total membership of the brigade—a fair record. The inspection drills were not carried out to the same degree of efficiency that obtained on previous occasions, and certain recommendations were made to the Board in that respect.

Masterton.

Inspection, 15th January, 1929. Two officers and seventeen firemen were in attendance at the inspection muster. The inspection drills were carried out in a smart and efficient manner, and the station and equipment were found in first-class order. Attendance at the fifteen general alarms averaged 76·5 per cent. of the total membership of the brigade—a fair record. The Board have decided to purchase a site for erection of a new central fire-station.

Milton.

Inspection, 4th December, 1928. One officer and seven men were in attendance at the inspection muster. The inspection drills were carried out in a satisfactory manner, and the station and equipment were in good order. I had again to call attention to the unsatisfactory conditions of the water-supply for fire-extinction purposes, more particularly in that the supply, such as it is, is shut off at 8.30 p.m. every night, and in case of fire it would be ten minutes or more before any water at all is available, and in that respect very dangerous conditions exist in the town. Also, the motor hose-tender was not fitted with a siren, as required under the Regulations of the Motor-vehicles Act.

Mount Roskill.

Inspection, 24th January, 1929. Two officers and twelve firemen were in attendance at the inspection muster. The various inspection drills were carried out in a smart and efficient manner, and the station and equipment were found in first-class order. Attendance at the seventeen general alarms averaged 40·6 per cent. of the total membership of the brigade—a low average. Various recommendations were made, and formation of a Volunteer Fire Police Corps advocated. In view of local conditions the services of such a corps, organized on the lines explained at the time of my visit, would prove of great assistance to the brigade.

Napier.

Inspection, 5th November, 1928. Two officers and twenty firemen were on parade at the central station, and two officers and seven firemen at the Port station. The required inspection drills were carried out in an efficient manner, particularly so by the Port section of the brigade. Both stations, with their equipment, were found in first-class order. Certain recommendations were made in regard to some minor matters requiring attention.

New Plymouth.

Inspection, 25th September, 1928. Two officers and nineteen firemen were in attendance at the inspection parade. The inspection drills were carried out in a satisfactory manner, and the station and equipment were found in first-class order. Attendance at the twenty-four general alarms averaged 75 per cent. of the full membership of the brigade—a fair record. Attention was called to the necessity of providing alternate means of summoning the brigade in case of a breakdown of the borough electric supply; also, provision of a workshop and storeroom at the central station was again mentioned.

Oamaru.

Inspection, 30th October, 1928. Two officers and eleven firemen were in attendance at the inspection muster. The inspection drills were carried out in a satisfactory manner, and the station and equipment was found in good order and condition. Attendance at the twenty-two fire calls averaged 72 per cent. of the total membership of the brigade—a fair record.

Ohakune.

Inspection, 23rd January, 1929. Owing to delay by the secretary of the Board in notifying the brigade, only two officers and three firemen were in attendance at the inspection muster. The 36 ft. ladder recently purchased is unsuitable to a dangerous degree for fire-brigade work at fires. The brake-shoe on the near side of the trailer pump was broken in half, consequently the machine was without brake control at that time. The motor hose-tender was not fitted with a siren, as required by the Motor-vehicles Act. The front doors of the engine-shed require attention, and the old motor steam fire-engine housed at the Junction, useless in its present condition, should be put in working order, or sold for what it will fetch.

Onehunga.

Inspection, 12th October, 1928. Two officers and fifteen firemen were in attendance at the inspection parade. The inspection drills were carried out in a smart and efficient manner, and the station and equipment were found in first-class order. Attendance at the thirty-five general alarms averaged 68·3 per cent. of the total membership of the brigade. A recommendation was made as to the advisability, for reasons set out in my report to the Board, of purchasing a second and lighter motor hose-and-ladder tender; also, attention was called to the paucity of street-lighting in the vicinity of the central fire-station.

Otaki.

Inspection, 13th February, 1929. Two officers and eleven firemen were in attendance at the inspection muster. The inspection drills were carried out in a smart and efficient manner. The station and equipment were found in good order, but the vacant part of the section had a very neglected appearance; as pertaining to a fire-station it should be maintained in better order. Certain recommendations were made to the Board in regard to minor equipment.

Pahiatua.

Inspection, 14th January, 1929. Two officers and twelve firemen were in attendance at the inspection parade. There was a decided improvement in the carrying-out of the required inspection drills, and the station and equipment were found in good order. I had again to call attention to the very inadequate water-supply for fire-extinction purposes, and if there is no prospect of immediate improvement in both volume and pressure, I recommended provision of a pumping outfit. Also, the motor hose-tender was not fitted with a siren, as required by Regulations under the Motor-vehicles Act.

Palmerston North.

Inspection, 12th March, 1929. Two officers and nineteen firemen were in attendance at the inspection parade. The inspection drills were carried out in a smart and efficient manner, and the station and equipment were found to be in first-class order. Again attention was called to the increasing inadequacy of the water-supply for fire-extinction purposes in Palmerston North, which has now assumed a most serious aspect. Examination of the brigade log-book shows that at times the pressure between 7 a.m. and 7 p.m. fell as low as 18 lb. and under, whilst for many days the pressure during the said twelve hours averaged only 35 lb. or less; and it is apparent that if during such period an outbreak of fire got anything of a start in one of the larger risks disastrous consequences must be anticipated.

Petone.

Inspection, 19th February, 1929. Two officers and fourteen firemen were in attendance at the inspection parade. The inspection drills were carried out in the customary efficient manner, and the station and equipment was found in first-class order. Attendance at the thirty-five general alarms averaged 73 per cent. of the total membership—a fair record. Attention was again called to the serious conditions of the water-supply for fire-extinction purposes in Petone. At 8.30 p.m. on the evening of the inspection the pressure on the station gauge stood at 42 lb.; the telephone signal was given to start booster pumping, but in four minutes and a half the standing pressure had risen only 6 lb.; half a minute later the gauge registered 51 lb., which was the maximum pressure reached. Altogether, with the small diameter of a larger portion of the reticulating-mains, the water-supply conditions in Petone have reached a dangerous stage.

Port Chalmers.

Inspection, 7th December, 1928. The Superintendent and ten firemen were present at the inspection muster. The inspection drills were carried out in a satisfactory manner, and the station and equipment were in good order. Attendance at the three fire calls averaged only 49 per cent. of the total membership. The engine of the motor hose-tender is not powerful enough for fire purposes in such a hilly district; in any case the machine has been in service for eight years, and is past effective work; also, the machine is not fitted with a siren, as required by the Regulations under the Motor-vehicles Act. I noted that several of the street hydrants were completely hidden in the grass; this is a matter requiring prompt attention.

Pukekohe.

Inspection, 14th June, 1928. Two officers and eleven firemen were in attendance at the inspection parade. The inspection drills were carried out in a smart and efficient manner, and the equipment was found in good order. The full strength of the brigade was in attendance at the three fire calls—an excellent record. The newly installed electric siren should be connected by direct wire to the Telephone Exchange. The Fire Board is now negotiating a loan for erection of a new fire-station to replace the present dilapidated old building. A poll for a waterworks extension loan has been carried by the ratepayers, and the proposed scheme will materially improve the water-supply for fire-extinction purposes.

Rotorua.

Inspection, 23rd November, 1928. Two officers and seventeen firemen were in attendance at the inspection parade. The inspection drills were carried out in a smart and efficient manner, and the station and equipment was in first-class order. Attendance at the twenty-nine fire calls averaged 74·2 per cent. of the total membership—a fair record. In view of future necessity for erection of a more commodious central fire station, the Fire Board have acquired a site in Amokau Street. The new site is well situated, and otherwise suitable for the purpose.

Taumarunui.

Inspection, 24th January, 1929. Two officers and twelve firemen were in attendance at the inspection muster. The inspection drills were carried out in a satisfactory manner, and the station and equipment were in good order. Attendance at the thirteen fire calls averaged 87·2 per cent. of the total membership of the brigade—a good record.

TAURANGA.

Inspection, 21st November, 1928, when at the inspection muster the full strength of the brigade—two officers and thirteen firemen—were in attendance. The inspection drills were carried out in a smart and satisfactory manner, and the equipment was found in good order. Attendance at the nine fire-alarms averaged 88·1 per cent. of the total membership—a very good record. Recommended the fire-alarm siren be connected by direct wire to the Telephone Exchange. A number of the street fire-hydrant indicators were not in place, a matter requiring prompt attention.

TE AROHA.

An inspection of the brigade was made, as previously reported, on the 13th June, 1928, and an inspection of the district and the brigade equipment made on the 21st November, 1928, when (subject to the comments contained in my report to the Board in regard to the motor hose-tender) the station and equipment were found in good order. Attendance at the ten fire calls averaged 89·4 per cent. of the total membership of the brigade—a very good record.

TE AWAMUTU.

Inspection, 26th November, 1928. Two officers and eight firemen were present at the inspection muster—not a good attendance. The inspection drills were carried out smartly and in a satisfactory manner—a good all-round improvement in that respect. The equipment was in good order. Attendance at the three fire calls averaged 68 per cent. of the total membership—an improvement on the attendance for the previous year, but still below the general average. Recommendations were made in regard to installation of an electric fire-alarm system connected by direct wire with the Telephone Exchange.

TIMARU.

Inspection, 31st October, 1928. Two officers and twenty-one firemen were in attendance at the inspection parade. The inspection drills were carried out in a smart and efficient manner, and the station and equipment were found in first-class order. Attendance at the twenty-two general alarms averaged 82 per cent. of the total membership—a good record. A house has been purchased to serve as a residence for the Superintendent of the Brigade; also, two cottages as married quarters for firemen have been erected on a section adjoining the central station site. A recommendation was made that the Board acquire a site for erection of a substation for protection of the property situated in the Highfield district.

WAIHI.

Inspection, 22nd November, 1928. Owing to a dispute then pending between the Fire Board and the brigade, but since settled in a satisfactory manner, only two officers and four firemen were present at the inspection muster. Attendance at the twenty-four general alarms averaged 72 per cent. of the total membership—a fair record. The motor fire-engine was taken for a test run, during the course of which it was apparent the engine is not now equal to the work it is called upon to perform; also, attention of the Board was called to the defective lay-out of the street fire-alarm circuits.

WAIPUKURAU.

Inspection, 17th September, 1928. The full strength of the brigade, two officers and fifteen firemen, were in attendance at the inspection muster. The inspection drills were carried out in a smart and energetic manner, but more instruction and practice in certain drills is necessary. The station and equipment were found in good order. Attendance at the twelve general alarms averaged 75 per cent. of the total membership—a fair record. Recommendations were made to the Board in regard to provision of minor equipment.

WAIROA.

Inspection, 6th November, 1928. Two officers and eleven firemen were in attendance at the inspection muster. The inspection drills were carried out in a smart and efficient manner very creditable to this comparatively recently organized brigade, and the station and equipment were in first-class order. Attendance at the six general alarms averaged 71 per cent. of the total membership—a fair record. The street hydrant-indicators are of too small a pattern and are otherwise unsatisfactory; this and other minor matters were dealt with in my report to the Board.

WAITARA.

A surprise visit to the Waitara Fire District was made on the 26th September, 1928. The station and equipment generally was not in the good order usually maintained by the volunteer brigade under Fire Board control. The two branches in the motor hose-box are dented to the extent of affecting efficiency of the fire-jets. They require straightening or replacing by branches in better order. Attendance at the three fire calls averaged 75 per cent. of the total membership of the brigade—a fair record.

WANGANUI.

Inspection, 6th February, 1929. Two officers and nineteen firemen were present at the central station inspection parade. A contingent of the Volunteer Fire Police Corps was also in attendance. A call was sent to the Castlecliff substation, in response to which the motor with one officer and five men had a delivery to work at the central station within eight minutes—a good piece of work. The required inspection drills were carried out in the usual smart and efficient manner, and the station and equipment were in first-class order. Attention of the Board was again called to the wisdom of providing additional married quarters at the central station.

WELLINGTON.

Inspection, 12th July, 1928. All stations, appliances, and other equipment were found in order. There has been a large expenditure on Capital Account in the Wellington Fire District, principally due to erection of two new substations—one in the Miramar district, having two sets of married quarters, &c.; the other in Brooklyn, with three sets of married quarters, &c. Major additions to equipment included two 40–45 horse-power motor combination machines fitted with 300/350 g.p.m. turbine pumps, first-aid pumping outfit, ladder, &c.; also, two commercial chassis have been purchased, and bodies built thereon locally, to serve as hose-and-ladder tenders.

WESTPORT.

Inspection, 24th October, 1928. Superintendent and eighteen firemen were in attendance at the inspection muster. The inspection drills were carried out in an active and willing manner, but more instruction and drill are necessary. Attendance at the fourteen fire calls averaged 86·2 per cent. of the total membership—a good record. A 14–28 horse-power motor-chassis was purchased, and a well-designed body built thereon by a local firm. A recommendation was made that an electrically operated fire-alarm be installed directly connected with the Telephone Exchange.

WHANGAREI.

Inspection, 8th October, 1928. Two officers and fourteen firemen were in attendance at the inspection muster. The required inspection drills were carried out in an efficient manner, and the station and equipment were found in good order and condition. Attendance at the eleven general fire calls averaged 80·1 per cent. of the total membership of the brigade—a good record. Formation of a Volunteer Fire Police Corps was recommended in my report to the Board.

TABLES.

1. Summary of Fire Calls, 1928–29.

District	Fires.	Chimney Fires.	Bush, Grass, and Rubbish Fires.	False Alarms.	Out of District.	Totals.
Auckland	251	21	127	101	19	519
Balclutha	1	1	..	..	..	2
Christchurch	146	15	31	95	34	321
Dannevirke	8	2	1	1	..	12
Dargaville	10	1	1	..	..	12
Dunedin	160	124	80	122	3	489
Eltham	6	..	..	..	..	6
Feilding	9	..	2	..	..	11
Foxton	4	..	2	..	2	8
Gisborne	23	3	3	5	4	38
Greymouth	8	1	..	2	..	11
Hamilton	24	9	22	3	7	65
Hastings	18	5	3	5	2	33
Hawera	19	12	9	6	3	49
Hikurangi	1	..	..	..	..	1
Hokitika	10	..	3	1	..	14
Invercargill	50	16	11	10	1	88
Kaiapoi	8	..	..	..	..	8
Kaitangata	2	..	..	..	..	2
Lawrence	..	..	..	1	..	1
Levin	4	2	..	..	..	6
Masterton	17	2	3	2	..	24
Milton	..	1	1	..	..	2
Mount Roskill	12	3	5	2	..	22
Napier	31	2	4	14	1	52
New Plymouth	24	..	1	2	..	27
Oamaru	9	5	4	3	1	22
Ohakune	3	3	4	..	..	10
Onehunga	16	2	6	13	2	39
Opotiki	..	..	..	..	..	..
Otaki	1	..	..	..	..	1
Pahiatua	1	..	1	..	..	2
Palmerston North	53	14	23	33	4	127
Petone	25	..	3	10	..	38
Port Chalmers	3	..	1	..	..	4
Pukekohe	2	1	..	..	..	3
Rotorua	7	8	9	4	2	30
Taumarunui	11	1	1	..	..	13
Tauranga	7	..	3	..	..	10
Te Aroha	7	..	3	..	..	10
Te Awamutu	3	..	..	..	..	3
Timaru	15	14	13	4	3	49
Waihi	13	..	13	3	..	29
Waipukurau	6	1	3	2	1	13
Wairoa	6	..	..	..	1	7
Waitara	1	..	2	..	..	3
Wanganui	50	18	76	13	1	158
Wellington	241	65	132	179	4	621
Westport	14	..	..	..	..	14
Whangarei	10	2	3	1	1	17
Totals	1,350	354	609	637	96	3,046

2. Summary of Fire Losses, 1928–29.

District.	Insured.	Uninsured.	Totals.	District.	Insured.	Uninsured.	Totals.
Auckland	70,283	4,675	74,958	Oamaru	19,762	4,116	23,878
Balclutha	31	..	31	Ohakune	1,114	415	1,529
Christchurch ..	37,368	1,798	39,166	Onehunga	2,169	310	2,479
Dannevirke ..	1,674	353	2,027	Opotiki	..	..	..
Dargaville	3,625	1,110	4,735	Otaki	1,050	400	1,450
Dunedin	41,464	1,311	42,775	Pahiatua	8	22	30
Eltham	1,030	60	1,090	Palmerston North ..	7,348	887	8,235
Feilding	2,146	155	2,301	Petone	3,635	1,435	5,070
Foxton	4,495	2,335	6,830	Port Chalmers ..	405	1,205	1,610
Gisborne	4,473	259	4,732	Pukekohe	29	..	29
Greymouth	21,271	10,903	32,174	Rotorua	2,095	225	2,320
Hamilton	4,335	1,432	5,767	Taumarunui ..	976	226	1,202
Hastings	19,467	5,037	24,504	Tauranga	3,941	1,133	5,074
Hawera	11,725	151	11,876	Te Aroha	880	490	1,370
Hikurangi	80	..	80	Te Awamutu ..	990	570	1,560
Hokitika	3,862	2,515	6,377	Timaru	9,167	127	9,294
Invercargill	11,717	1,380	13,097	Waihi	4,992	678	5,670
Kaiapoi	3,202	1,109	4,311	Waipukurau ..	152	45	197
Kaitangata	460	490	950	Wairoa	4,975	1,128	6,103
Lawrence	..	..	..	Waitara	520	170	690
Levin	8,075	1,670	9,745	Wanganui	12,574	1,145	13,719
Masterton	1,980	270	2,250	Wellington	235,865	58,205	294,070
Milton	..	..	..	Westport	5,730	1,244	6,974
Mount Roskill ..	4,235	53	4,288	Whangarei	1,040	151	1,191
Napier	13,938	3,200	17,138				
New Plymouth ..	5,060	590	5,650	Totals ..	595,413	115,183	710,596

3. Cost of Fire Brigades (Capital Expenditure included).

As taken from the Estimates for the respective Years.

District.	Year ending 30th June, 1924.	Year ending 30th June, 1925.	Year ending 30th June, 1926.	Year ending 30th June, 1927.	Nine Months ending 31st March, 1928.	Year ending 31st March, 1929.	Year ending 31st March, 1930.
	£	£	£	£	£	£	£
Auckland ..	16,700	18,400	20,000	21,000	15,000	23,000	22,000
Balclutha ..	400	500	500	500	425	450	320
Christchurch ..	12,100	13,000	13,000	12,000	9,000	12,000	13,850
Dannevirke ..	739	620	614	636	662	792	775
Dargaville ..	816	600	675	675	450	674	530
Dunedin ..	13,500	13,500	15,500	15,500	11,625	15,700	15,700
Eltham	..	750	600	500	437	350	648
Feilding ..	623	554	639	528	843	776	782
Foxton	397	626	594	467	388	465	487
Gisborne ..	2,188	2,200	2,462	3,104	3,346	2,393	2,200
Greymouth ..	948	949	1,005	1,483	1,250	1,025	1,000
Hamilton ..	2,650	2,800	2,930	2,650	1,906	2,725	2,925
Hastings ..	1,012	1,206	1,120	1,330	1,490	1,400	1,708
Hawera ..	713	1,241	1,302	1,320	956	1,349	1,275
Hikurangi ..	..	..	..	..	..	511	223
Hokitika ..	570	480	550	500	512	583	580
Invercargill ..	10,300	3,200	4,300	4,755	4,331	5,448	5,342
Kaiapoi ..	947	1,279	663	636	535	683	704
Kaitangata ..	175	290	230	186	161	270	157
Lawrence ..	90	100	90	100	75	100	100
Levin	799	803	586	617	600	730	701
Masterton ..	1,946	1,649	1,790	1,728	1,298	1,771	1,872
Milton	240	340	200	178	100	200	200
Mount Roskill ..	..	..	..	..	1,264	1,300	1,209
Napier	2,886	3,522	3,852	3,730	3,335	4,094	4,196
New Plymouth ..	1,965	1,953	2,076	1,960	1,642	1,887	2,085
Oamaru ..	800	950	1,050	1,250	1,300	1,300	1,455
Ohakune ..	348	420	537	474	500	550	450
Onehunga ..	..	..	..	1,670	1,334	1,655	1,783
Opotiki	..	..	..	..	..	..	990
Otaki	..	..	325	399	416	275	314
Pahiatua ..	..	..	..	590	320	333	383
Palmerston North	2,143	2,224	4,502	4,298	3,269	4,128	4,270
Petone	1,450	1,394	1,484	1,591	1,227	1,929	1,945
Port Chalmers ..	310	269	252	214	220	212	212
Pukekohe ..	..	..	..	330	745	882	447
Rotorua	1,328	1,356	958	1,000	890	1,293	1,117
Taumarunui ..	650	445	530	500	414	592	640
Tauranga ..	499	559	509	659	588	953	640
Te Aroha ..	573	621	778	833	680	680	635
Te Awamutu ..	..	..	..	..	420	570	500
Timaru	1,850	2,250	2,050	2,350	2,400	3,000	2,700
Waihi	822	651	837	583	622	734	731
Waipukurau ..	..	..	..	..	495	320	330
Wairoa	..	..	..	..	491	467	678
Waitara ..	120	220	234	263	198	237	228
Wanganui ..	4,450	7,050	7,400	8,150	6,000	8,000	8,300
Wellington ..	..	..	..	18,715	25,400	26,400	30,400
Westport ..	..	550	630	570	500	500	800
Whangarei ..	1,000	1,016	1,018	890	800	1,130	1,462
Totals ..	89,052	90,541	98,372	121,412	110,476	136,816	142,979

4. Summary of Causes of Fires, 1928–29.

Summary of Causes.	Auckland.	Balclutha.	Christchurch.	Dannevirke.	Dargaville.	Dunedin.	Eltham.	Feilding.	Foxton.	Gisborne.	Greymouth.	Hamilton.	Hastings.	Hawera.	Hikurangi.	Hokitika.	Invercargill.	Kaiapoi.	Kaitangata.	Lawrence.	Levin.	Masterton.	Milton.	Mount Roskill.	Napier.	New Plymouth.	Oamaru.	Ohakune.	Onehunga.	Opotiki.	Otaki.	Pahiatua.	Palmerston North.	Petone.	Port Chalmers.	Pukekohe.	Rotorua.	Taumarunui.	Tauranga.	Te Aroha.	Te Awamutu.	Timaru.	Waihi.	Waipukurau.	Wairoa.	Waitara.	Wanganui.	Wellington.	Westport.	Whangarei.	Totals.
Ashes, live	4	1	2	..	..	9	..	..	..	1	..	..	..	1	..	..	2	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	2	1	1	..	1	..	..	..	..	1	4	..	..	32
Benzine—proximity to light	4	..	5	..	..	5	1	..	..	2	..	2	..	1	..	..	1	..	..	..	..	1	..	..	3	2	..	..	1	..	..	..	..	..	..	..	..	1	..	1	1	..	..	..	..	..	3	16	..	..	50
Candles—drapery, &c., in contact	4	..	2	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	5	..	..	15
Clothes—airing before fire	..	..	..	..	..	2	..	..	..	1	1	2	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	6	..	1	15
Defective chimneys, hearths	2	..	7	..	2	17	..	2	..	1	1	..	..	..	..	1	3	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2	2	..	1	..	..	..	..	..	..	..	..	..	..	1	18	..	..	62
Defective hot-water services	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	5
Electricity—																																																		
Short circuits, fusing	49	..	2	..	..	6	1	..	..	..	..	1	..	..	..	..	2	1	..	..	..	..	..	..	2	..	1	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	5	..	..	72
Domestic irons, heaters, &c.	3	..	12	..	..	4	..	..	..	1	..	1	..	1	..	..	1	..	..	..	..	..	..	..	1	2	..	..	..	..	1	..	2	..	..	..	..	1	..	..	..	..	..	..	2	7	1	1	41
Fireworks, sparks from	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
Gas-explosions, defective fittings	..	..	1	..	..	7	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	11
Gas rings, stoves	5	..	1	..	..	4	..	..	..	..	..	..	2	..	..	..	2	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	2	..	1	..	..	..	..	..	..	..	2	..	..	2	4	..	..	26
Incendiarism, or suspected	4	..	10	..	1	2	..	..	..	..	1	..	1	1	..	1	2	..	..	..	..	3	..	..	..	..	..	..	4	..	..	3	..	..	..	2	..	..	..	..	..	..	..	..	..	4	..	1	40
Kerosene heaters, incubators	3	..	1	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	2	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	10
Matches—																																																		
Children with	3	..	5	..	..	4	..	1	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	2	..	1	22
Thrown down alight	1	..	10	..	..	2	1	..	..	..	..	2	1	1	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	1	..	..	..	..	1	..	..	..	..	..	79	..	..	103
Rats	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	4
Miscellaneous causes	7	..	8	..	..	6	..	..	..	1	..	3	1	..	..	..	2	..	..	..	..	1	..	..	1	2	..	..	2	..	..	..	4	1	..	..	1	1	..	..	..	2	..	1	..	..	1	12	..	..	57
Motors—back-firing, short circuits	19	..	6	..	..	12	..	..	..	1	..	..	1	..	1	..	3	..	..	..	..	..	..	4	1	1	..	..	3	..	..	..	1	3	..	..	..	..	..	..	..	..	..	..	..	2	3	..	..	61
Naked lights	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3
Picture films	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	..	..	8
Overheating—																																																		
Beeswax, fats, &c.	5	..	7	..	..	8	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	2	..	..	..	..	..	..	..	1	..	..	..	..	7	..	..	34
Machinery, exhaust pipes	4	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	7
Tar	9	..	2	1	..	4	..	..	..	..	..	1	1	..	..	..	1	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	1	3	..	..	27
Wood, proximity to furnaces	2	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	7
Painters burning off paint	4	..	3	..	..	5	..	..	..	..	..	..	..	1	..	..	2	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	20
Smoking	4	..	5	..	..	2	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	16
Cigarette-butts	6	..	12	2	..	..	..	..	..	..	1	..	..	..	..	..	5	..	..	..	..	2	..	..	4	..	..	..	..	..	..	..	4	..	..	..	..	1	1	..	..	..	..	..	..	1	13	..	..	52
Sparks—																																																	
From chimneys	2	..	3	1	..	2	..	..	..	1	1	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	..	..	20
From copper-fires	7	..	6	..	..	6	..	..	..	..	..	4	1	..	..	..	1	..	..	..	..	1	..	1	..	1	2	..	1	..	..	..	2	..	..	..	..	..	1	1	..	1	1	..	1	..	2	5	..	1	45
From locomotives	9	..	..	..	..	1	..	..	..	..	..	1	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	14
From fireplaces, furnaces	5	..	5	..	1	2	..	..	..	..	..	1	..	..	..	1	4	..	..	..	1	1	..	..	2	..	..	..	..	..	..	..	5	..	..	1	..	1	..	..	..	..	..	..	..	..	5	12	..	..	47
From other fires	..	..	3	..	..	4	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	..	..	13
Spontaneous combustion	4	..	5	..	..	1	..	..	..	..	..	1	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	3	2	..	..	19
Unknown causes	81	..	16	3	6	39	3	6	4	8	3	5	10	6	..	6	12	5	2	..	2	2	..	6	13	15	4	2	2	..	..	1	20	17	1	..	2	5	3	3	1	7	13	2	6	1	19	9	13	4	388
Totals	251	1	146	8	10	160	6	9	4	23	8	24	18	19	1	10	50	8	2	..	4	17	..	12	31	24	9	3	16	..	1	1	53	25	3	2	7	11	7	7	3	15	13	6	6	1	50	241	14	10	1,350

5. Summary.—Personnel, Plant, and Appliances.

— —	Auckland.	Balclutha.	Christchurch.	Dannevirke.	Dargaville.	Dunedin.	Eltham.	Feilding.	Foxton.	Gisborne.	Greymouth	Hamilton.
Brigades, total strength of	86	13	46	21	20	52	17	21	16	25	20	24
Fire-stations—												
Residential	7	1	4	1	1	3	1	1	1	1	2	1
Non-residential	..	1	..	..	1	..	..	1	..	..	3	1
Fire-alarms—												
Circuits (C), boxes (B)	35 (C), 299 (B)	..	21 (C), 168 (B)	2 (C), 16 (B)	..	15 (C), 187 (B)	..	..	..	4 (C), 59 (B)	..	4 (C), 42 (B)
Automatic, private	75	..	58	..	..	40	..	..	..	..	..	6
Telephones (points)	22	3	8	2	4	7	3	3	4	4	2	2
Motors—												
Hose-and-ladder tenders (h.p.)	5 (40)	1 (22)	..	1 (40)	1 (20)	1 (38)	1 (22)	1 (20)	1 (20)	1 (30)	..	1 (20)
First-aid, hose-and-ladder (h.p.)	3 (65, 50, 38)	..	3 (40, 30, 25)	..	..	1 (70), 3 (60)	..	..	..	1 (50)	1 (20)	..
Pump, hose-and-ladder (h.p.)	1 (110)	..	2 (70, 30)	..	..	..	..	..	..	2 (36) Trailers	..	1 (60)
First-aid, pump, hose-and-ladder (h.p.)	2 (50, 50)	..	3 (50)	..	..	2 (90, 45)	..	1 (30)	..	..	1 (30)	1 (45)
General utility	2 (25, 20)	..	1 (20)	..	..	1 (20)	..	..	..	..	..	..
Petrol-electric, ladders (height)	1 (87′)	..	1 (85′)	..	..	1 (85)	..	..	..	..	..	..
Fire-engines, steam (g.p.m.)	..	..	..	..	..	..	..	..	..	1 (400)	..	..
Hose-carts, reels (hand-drawn)	..	1	2	2	1	..	2	2	..	1	5	2
Ladders—												
Motor-traction (height)	1 (65′)	..	1 (65′)	..	..	1 (80′)	..	..	..	..	..	1 (50′)
Extension (height) (on motors*)	2 (22′)*, 3 (35′)*	1 (24′)*	1 (45′)*, 3 (35′)*, 2 (20′)*	1 (35′)*	1 (35′)*	2 (20′), 4 (30′)*	1 (34′)*	1 (30′)*, 1 (30′)	1 (26′)*	2 (35′)*	1 (35′)*, 1 (27′)	2 (35′*, 30′)
Single, coupling (total height)	12 (18′ to 22′)	3 (57′)	16 (160′)	4 (82′)	2 (25′)	1 (25′)	3 (61′)	1 (23′)	..	5 (80′)	5 (98′)	3 (32′)
Jumping-sheets	5	..	3	..	..	1	..	..	..	1	1	1
Smoke jackets (J), helmets (H), masks (M)	2 (J), 4 (H), 10 (M)	..	1 (J), 3 (H), 1 (M)	4 (H)	..	1 (J), 2 (H), 4 (M)	2 (H)	4 (M)	1 (H)	1 (H)	..	1 (M)
Hand-pumps	5	1	8	2	1	6	1	1	1	1	1	1
Hand chemical extincteurs	12	2	10	2	..	9	2	2	2	4	2	3
Portable standpipes—												
Ratchet valves	21	..	1	..	1	12	1	..	..	..	..	2
Double heads	..	3	19	8	2	7	3	6	3	7	9	2
Single heads	8	..	1	..	2	1	..	..	..	4	1	6
Hose—												
Rubber-lined (diameter)	1,144′ (2¾″)	..	3,000′ (2¾″)	100′ (2½″)	..	150′ (2½″)	..	..	..	..	..	500′ (2½″)
Unlined (diameter)	11,895′ (2¾″)	1,600′ (2½″)	15,380′ (2¾″)	3,800′ (2½″)	1,000′ (2½″)	15,550′ (2½″)	2,500′ (2½″)	2,600′ (2½″)	1,200′ (2½″)	3,500′ (2½″)	3,000′ (2½″)	4,500′ (2½″)
Rubber, first-aid (diameter)	1,260′ (¾″)	..	800′ (¾″)	..	..	700′ (¾″)	..	180′ (¾″)	..	180′ (¾″)	120′ (¾″)	120′ (¾″)
Water-supply (P = pumping; G = gravitation)	P and G	G	P and G	G	G	G	G	G	P and G	G	P and G	P and G
Pressure, average, noon–midnight	40–120	65–70	96–105	80–85	85–95	80–130	75–90	85–110	53–120	86–112	55–95	45–50

5. Summary.—Personnel, Plant, and Appliances—*continued*.

——	Hastings.	Hawera.	Hikurangi.	Hokitika.	Invercargill.	Kaiapoi.	Kaitangata.	Lawrence.	Levin.	Masterton.	Milton.	Mt. Roskill.	Napier.	New Plymouth.
Brigades, total strength of	22	17	15	30	23	12	12	12	17	20	12	18	37	24
Fire-stations—														
Residential	1	1	1	..	1	1	..	..	1	1	1	1	2	1
Non-residential	..	..	..	5	..	..	1	1	..	..	..	..	1	..
Fire-alarms—														
Circuits (C), boxes (B)	4 (C), 41 (B)	2 (C), 20 (B)	..	..	4 (C), 36 (B)	..	..	..	1 (C), 6 (B)	6 (C), 16 (B)	..	..	3 (C), 29 (B)	2 (C), 29 (B)
Automatic, private	..	1	..	..	9	..	..	..	..	1	..	1	..	..
Telephones (points)	3	2	..	7	2	1	..	..	3	2	2	1	7	3
Motors—														
Hose-and-ladder tenders (h.p.)	..	1 (35)	..	..	1 (35)	..	..	..	1 (22)	..	1 (20)	..	..	2 (20, 30)
First-aid, hose-and-ladder (h.p.)	2 (25, 35)	..	..	..	1 (60)	1 (22)	1 (22)	..	..	1 (25)	..	..	1 (35)	..
Pump, hose-and-ladder (h.p.)	..	..	..	..	..	..	..	..	..	..	..	..	..	1 (65)
First-aid, pump, hose-and-ladder (h.p.)	..	1 (35)	..	..	2 (65)	..	..	..	..	1 (45)	..	1 (30)	2 (65, 40)	..
General utility	..	..	..	..	1 (20)	..	..	..	..	..	..	..	1 (20)	..
Petrol-electric ladders (height)	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Fire-engines, steam (g.p.m.)	..	..	..	1 (380)	..	1 (300)	..	..	..	..	1 (chemical)	..	..	..
Hose-carts, reels (hand-drawn)	1	2	1	5	..	1	2	2	1	2	1	..	2	1
Ladders—														
Motor-traction (height)	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Extension (height) (on motors*)	2 (35′, 25′)*	2 (35′)*	1 (36′)	1 (28′)	3 (60′, 35′, 30′)*	1 (30′)*	1 (20′)	..	1 (26′)*	2 (30′, 35′)*	1 (16′)*	1 (30′)*	3 (60′, 35′, 35′)*	2 (50′, 35′)*
Single, coupling (total height)	3 (40′)	7 (121′)	..	4 (71′)	1 (30′)	3 (24′)	..	2 (49′)	4 (40′)	5 (65′)	1 (25′)	2 (26′)	10 (261′)	3 (46′)
Jumping-sheets	2	..	..	..	1	..	..	..	1	..	..	..	2	1
Smoke jackets (J), helmets (H), masks (M)	3 (H)	1 (H)	..	..	2 (H)	3 (H)	..	..	2 (H)	2 (H)	..	3 (M)	8 (H)	2 (H)
Hand-pumps	2	2	..	2	3	1	4	1	1	1	1	..	2	2
Hand chemical extincteurs	4	2	..	..	8	2	..	2	2	3	3	2	8	9
Portable standpipes—														
Ratchet valves	..	1	..	..	..	..	..	1	1	2	2	..	..	..
Double heads	5	3	2	5	2	..	..	1	1	3	..	3	12	6
Single heads	..	2	2	3	8	..	..	..	2	3	..	..	2	1
Hose—														
Rubber-lined (diameter)	300′ (2½″)	..	..	200′ (2½″)	..	..	..	..	..	50′ (2½″)	..	..	300′ (2½″)	200′ (2½″)
Unlined (diameter)	2,700′ (2½″)	3,300′ (2½″)	1,500′ (2½″)	2,500′ (2¾″)	6,500′ (2¾″)	3,000′ (2¾″)	1,600′ (2½″)	1,000′ (2½″)	1,600′ (2½″)	2,400′ (2½″)	1,900′ (2½″)	2,000′ (2½″)	9,700′ (2½″)	4,000′ (2½″)
Rubber, first-aid (diameter)	240′ (¾″)	180′ (¾″)	..	..	180′ (¾″)	..	120′ (1″)	..	..	120′ (¾″)	100′ (¾″)	120′ (¾″)	360′ (¾″)	200′ (¾″)
Water-supply (P = pumping; G = gravitation)	P and G	P and G	G	G	P and G	River and sumps	G (partial)	G	G	G	P	G	P and G	G
Pressure, average, noon–midnight	125–135	30–73	40–80	100–105	45	..	70	65–80	75–100	80–85	52	50–70	65–139	100–140

5. Summary.—Personnel, Plant, and Appliances—*continued.*

—	Oamaru.	Ohakune.	Onehunga.	Opotiki.	Otaki.	Pahiatua.	Palmerston North.	Petone.	Port Chalmers.	Pukekohe.	Rotorua.	Taumarunui.	Tauranga.
Brigades, total strength of	17	14	18	12	16	16	25	18	15	14	19	18	16
Fire-stations—													
Residential	1	1	1	..	1	1	2	1	..	1	1	1	1
Non-residential	1	..	..	1	..	..	..	..	2	..	1	1	1
Fire-alarms—													
Circuits (C), boxes (B)	..	..	2 (C), 34 (B)	..	..	..	5 (C), 50 (B)	1 (C), 20 (B)	..	..	3 (C), 24 (B)	..	1 (C), 8 (B)
Automatic, private	..	..	..	..	..	..	2	1	..	..	..	..	..
Telephones (points)	5	2	1	1	1	1	2	3	..	3	2	4	2
Motors—													
Hose-and-ladder tenders (h.p.)	..	1 (20)	..	1	1 (20)	1 (20)	1 (25)	1 (30)	..	1 (20)	1 (50)	2 (20, 18)	..
First-aid, hose-and-ladder (h.p.)	1 (40)	..	1 (40)	..	..	..	..	..	1 (22)	..	..	..	1 (23)
Pump, hose-and-ladder (h.p.)	..	1 (30) Trailer	..	..	..	..	1 (60)	..	..	..	..	..	..
First-aid, pump, hose-and-ladder (h.p.)	1 (45)	..	..	..	..	..	1 (35)	1 (36)	..	..	1 (35)	..	..
General utility	..	..	..	..	..	..	..	..	..	..	..	..	..
Petrol-electric ladders (height)	..	..	..	..	..	..	..	..	..	..	..	..	..
Fire-engines, steam (g.p.m.)	..	..	..	..	..	..	..	..	..	..	..	..	..
Hose-carts, reels (hand-drawn)	1	..	1	1	1	1	2	1	2	1	2	2	2
Ladders—													
Motor-traction (height)	..	..	..	..	..	..	..	..	..	..	..	..	..
Extension (height) (on motors*)	2 (30′, 35′)*	1 (36′)*	1 (35′)*	1 (35′)*	1 (26′)*	1 (24′)*	3 (60′,30′, 22′)*	1 (35′)	1 (26′)*	1 (28′)*	2 (35′)*	2 (26′, 30′)*	1 (34′)*
Single, coupling (total height)	2 (38′)	2 (32′)	4 (78′)	1 (25′)	2 (24′)	2 (40′)	10 (116′)	5 (43′)	1 (20′)	1 (25′)	3 (61′)	3 (45′)	3 (36′)
Jumping-sheets	..	..	1	..	..	..	1	1	..	..	1	..	..
Smoke jackets (J), helmets (H), masks (M)	1 (H)	..	2 (H), 6 (M)	..	..	..	1 (H)	1 (H)	..	..	1 (H)	1 (H)	..
Hand-pumps	2	2	..	1	2	1	2	2	2	1	1	1	2
Hand chemical extincteurs	1	2	3	2	1	1	1	5	..	2	4	4	..
Portable standpipes—													
Ratchet valves	1	..	..	..	2	..	1	..	1	1	1	..	..
Double heads	5	..	4	3	..	4	5	2	2	2	2	4	4
Single heads	2	1	..	..	..	..	3	5	..	..	5	..	1
Hose—													
Rubber-lined (diameter)	..	..	100′ (2½″)	..	..	..	..	300′ (2½″)	..	..	350′ (2½″)	..	..
Unlined (diameter)	2,900′ (2½″)	1,400′ (2½″)	3,000′ (2½″)	1,000′ (2½″)	1,800′ (2½″)	1,550′ (2½″)	5,000′ (2½″)	4,000′ (2½″)	1,300′ (2½″)	1,500′ (2½″)	1,500′ (2½″)	1,800′ (2½″)	2,000′ (2½″)
Rubber, first-aid (diameter)	180′ (¾″)	..	240′ (¾″)	..	..	..	120′ (¾″)	120′ (¾″)	140′ (1″)	..	160′ (¾″)	..	120′ (¾″)
Water-supply (P = pumping; G = gravitation)	G	Creeks and races	P and G	P	G	G	G	P and G	G	G	G	G	G
Pressure, average, noon–midnight	90–100	..	100–110	140	110–135	60–65	Uncertain	40–65	110–150	85–100	60–64	100–125	70–80

5. Summary.—Personnel, Plant, and Appliances—*continued.*

——	Te Aroha.	Te Awamutu.	Timaru.	Waihi.	Waipukurau.	Wairoa.	Waitara.	Wanganui.	Wellington.	Westport.	Whangarei.	Totals.
Brigades, total strength of	16	15	24	15	16	17	16	29	78	21	19	1,115
Fire-stations—												
Residential	1	1	1	1	1	1	1	2	5	1	1	64
Non-residential	..	..	1	..	..	..	..	..	3	..	..	26
Fire-alarms—												
Circuits (C), boxes (B)	2 (C), 3 (B)	..	6 (C), 28 (B)	4 (C), 14 (B)	1 (C), 5 (B)	..	..	9 (C), 88 (B)	18 (C), 120 (B)	..	2 (B)	157 (C), 1,344 (B)
Automatic, private	..	..	2	1	..	..	..	22	74	..	..	293
Telephones (points)	4	2	3	7	2	1	1	3	8	4	4	152
Motors—												
Hose-and-ladder tenders (h.p.)	1 (20)	1 (20)	..	1 (20)	1 (20)	1 (20)	1 (20)	2 (60–20)	5 (23–35)	2 (35, 28)	1 (22)	46
First-aid, hose-and-ladder (h.p.)	..	..	..	..	..	..	..	..	..	..	1 (45)	24
Pump, hose-and-ladder (h.p.)	..	..	1 (60)	..	..	..	..	..	1 (70)	..	..	10
First-aid, pump, hose-and-ladder (h.p.)	..	..	1 (45)	..	..	..	..	3 (60, 40, 40)	3 (35, 40, 45)	..	..	28
General utility	..	..	1 (20)	..	..	..	..	1 (20)	1 (20)	..	..	9
Petrol-electric ladders (height)	..	..	..	..	..	..	..	..	1 (85)	..	..	4
Fire-engines, steam (g.p.m.)	..	..	..	..	..	..	..	..	1 (650)	..	..	5
Hose-carts, reels (hand-drawn)	1	1	1	2	1	1	2	..	4	3	1	73
Ladders—												
Motor-traction (height)	..	..	..	..	..	..	..	..	1 (60)	..	..	5
Extension (height), (on motors*)	2 (35′,* 34′)	1 (35′)*	2 (60′, 35′)*	1 (30′)*	1 (30′)	1 (35′)*	1 (24′)*	4 (60′, 35′, 35′, 30′)*	9 (on motors)	2 (28′)*	1 (30′)*	94
Single, coupling (total height)	2 (30′)	2 (26′)	7 (165′)	3 (68′)	3 (50′)	..	1 (30′)	5 (76′)	14 (145′)	2 (47′)	2 (75′)	180
Jumping-sheets	..	..	1	..	..	..	..	3	2	..	..	29
Smoke jackets (J), helmets (H), masks (M)	..	..	2 (H)	..	2 (H)	3 (H)	..	2 (H)	1 (J), 2 (H), 1 (M)	3 (H)	2 (H)	6 (J), 63 (H), 30 (M)
Hand-pumps	1	1	2	1	2	1	1	4	16	1	1	101
Hand chemical extincteurs	2	2	6	..	2	3	2	9	21	2	2	172
Portable standpipes—												
Ratchet valves	1	1	4	..	..	..	3	7	..	2	2	72
Double heads	2	1	4	5	3	3	3	6	17	5	3	201
Single heads	..	1	..	..	1	1	..	2	22	4	1	95
Hose—												
Rubber-lined (diameter)	..	..	..	..	..	..	..	680′ (2½″)	4,570′ (2¾″)	..	..	8,714′ (2¾″), 3,230′ (2½″)
Unlined (diameter)	1,800′ (2½″)	2,000′ (2½″)	3,000′ (2½″)	2,000′ (2½″)	1,200′ (2½″)	2,200′ (2½″)	1,900′ (2½″)	15,450 (2½″)	11,850′ (2¾″), 5,850′ (2½″)	2,700 (2½″)	2,500′ (2½″)	51,125′ (2¾″), 142,800′ (2½″)
Rubber, first-aid (diameter)	..	..	120′ (¾″)	..	..	..	..	480′ (¾″)	460′ (¾″)	..	120′ (¾″)	260′ (1″), 6,980′ (¾″)
Water-supply (P = pumping; G = gravitation)	G	G	G	G	G	G	G	G	G	G	G	..
Pressure, average, noon–midnight	100–130	60–100	70–75	80–100	50–60	100–105	100–120	100–140	120–135	90–120	120–150	..

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