1930.

NEW ZEALAND.

FIRE BRIGADES OF THE DOMINION

(REPORT ON THE) FOR THE YEAR ENDED 31ST MARCH, 1930, 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,

SIR,—

Herewith I have the honour to lay before you my twenty-second annual report, for the year ended 31st March, 1930, 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., Taihape, 13th January, 1930. Following is a list of the fifty-one 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	Taihape	Whangarei.
Hastings	New Plymouth	Taumarunui	

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

Auckland, September 20 and 21, 1929.
Balclutha, February 6, 1930.
Christchurch, December 16, 1929.
Dannevirke, October 7, 1929.
Dargaville, January 20, 1930.
Dunedin, February 8, 1930.
Eltham, November 28, 1929.
Feilding, March 27, 1930.
Foxton, April 2, 1930.
Gisborne, March 19, 1930.
Greymouth, December 10, 1929.
Hamilton, March 10, 1930.
Hastings, March 20, 1930.
Hawera, November 25, 1929.
Hikurangi, January 21, 1930.
Hokitika, December 13, 1929.
Invercargill, February 11, 1930.
Kaiapoi, December 16, 1929.
Kaitangata, February 12, 1930.
Lawrence, February 10, 1930.
Levin, April 1, 1930.
Masterton, October 8, 1929.
Milton, February 10, 1930.
Mount Roskill, September 19, 1929.
Napier, March 17, 1930.
New Plymouth, November 26, 1929.
Oamaru, February 4, 1930.
Ohakune, January 13, 1930.
Onehunga, September 20, 1929.
Opotiki, September 25, 1929.
Otaki, November 14, 1929.
Pahiatua, November 13, 1929.
Palmerston North, April 3, 1930.
Petone, April 10, 1930.
Port Chalmers, February 5, 1930.
Pukekohe, September 17, 1929.
Rotorua, March 7, 1930.
Taumarunui, January 14, 1930.
Tauranga, September 23, 1929.
Te Aroha, March 6, 1930.
Te Awamutu, January 15, 1930.
Timaru, December 17, 1929.
Waihi, September 26, 1929.
Waipukurau, November 12, 1929.
Wairoa, March 18, 1930.
Waitara, November 27, 1929.
Wanganui, March 26 and 27, 1930.
Wellington, August 23, 1929.
Westport, December 11, 1929.
Whangarei, January 22, 1930.

During the inspection visits instructions in fire drill and in fire-prevention matters generally were given in the smaller towns; inspections have been made and reports furnished in respect of public buildings and institutions, advice has been given to Fire Boards and local bodies in regard to the purchase of fire-station sites, planning of new fire stations, water-supply installations, improvements, &c.; specifications for supply of plant and appliances have been drawn up; a number of tests have been made and reports furnished in respect of tentative inventions and improvements in fire-prevention equipment; also public addresses on the subject of fire-prevention have been delivered.

A conference authorized by the Department for the purpose of considering matters in connection with the safe storage of petrol in bulk, fighting of oil-fires, &c., was held in Christchurch during the progress of the big oil-fire which occurred in that city in August last. The conference was attended by the Superintendents of the principal brigades, as also by the Inspector of Explosives and the Inspector of Fire Brigades, and the opportunity afforded of observing the tactics employed by the Christchurch Fire Brigade to extinguish the fire was a valuable object-lesson to the brigade officers.

Following upon an invitation from the executive officers of the United Fire Brigades' Association, I attended the fifty-first annual conference held at Whangarei in March last, and there delivered an address to the delegates dealing with fire-prevention matters generally. The conference has requested that the address be printed and distributed to the brigades.

Two new Volunteer Fire Police Corps have been organized, making a total of fourteen corps now operating.

Chief officers of brigades in those towns wherein Fire Police Corps are established report in most appreciative terms of the valuable services rendered by these purely voluntary organizations, the members of which are all prominent persons in their respective towns.

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

Auckland: New district fire-station at Avondale completed and occupied in July.
Dunedin: Foundations of the new central headquarters station laid in March.
Hikurangi: New 20 h.p. motor hose-and-ladder tender.
Hokitika: A 35 h.p. motor hose-and-ladder tender fitted with 200-g.p.m. pump.
Levin: An electrically-operated siren installed in place of the street fire-alarm system.
Masterton: A most suitable centrally-situated site for the purpose of erecting a new central station thereon has been acquired.
Milton: An electric pumping-outfit has been installed to improve the water-supply.
Onehunga: A 30 h.p. chassis purchased and converted into a hose-and-ladder tender.
Waipukurau: Storage reservoir completed and a new 9 in. carrying main laid to the Borough boundary.
Wanganui: Section adjoining central station, with ten-roomed house thereon, purchased.

The following fatalities have been reported:—

Auckland: Miss S. Lynch, head waitress, Cargen Hotel, fell from fire-escape during progress of fire and died later from her injuries.
Christchurch: Mrs. Mather, severe burns due to lighted match igniting petrol vapour which set fire to her clothing, removed to hospital and died same night. Also a number of non-fatal casualties of a more or less serious nature are reported as having occurred to brigadesmen and civilians.

The number of fire calls received throughout the fifty fire districts during the twelve months ended 31st March, 1930, totalled 3,164, an increase of 118 over the previous twelve months. Of the total number 1,351 were property fires, 435 chimney fires, 573 bush, grass, and rubbish fires, 717 false alarms, and 88 out-of-district fires.

The fire loss throughout the fire districts for the twelve months (all losses quoted, unless otherwise stated, include loss sustained on both insured and non-insured property) amounted to £410,217. The four heaviest district losses occurred in Wellington (£102,803), Christchurch (£64,912), Auckland (£44,154), and Dunedin (£24,285).

Incendiarism or suspected incendiarism is reported as the cause of 58 fires, involving a loss of £51,328; and 46 fires occurred in unoccupied buildings, with a loss of £24,084. Following is a list of fires mostly due to want of a little precaution in domestic matters: Sparks from washing-coppers and open-grate fire-places were responsible for 90 fires, causing a loss of £13,080; switches left on electric irons, kettles, and heaters, 41 fires, loss £8,809; gas left on, rings and stoves, 28 fires, loss £6,070; airing clothes, 16 fires, loss £5,393; matches thrown down alight, 141 fires, loss £48,029; cigarette-butts and smoking, 55 fires, loss £9,081; lighted candles, 12 fires, loss £1,624; live ashes thrown out, 28 fires, loss £1,388; benzine vapour in proximity to light, 46 fires, loss £2,144: a total of 457 fires causing a loss of £95,620. But in addition to the said 457 fires in which the causes of the outbreaks were ascertained, there is to be reckoned with, as largely in the same category in regard to carelessness, the 375 fires involving a loss of £195,000 reported as of "unknown" origin, and that are in most cases the "late call" and more extensive fires in which all trace of the "cause" had been destroyed. In the published opinion of well-known authorities in different parts of the world it is estimated that carelessness is responsible for from 75 to 90 per cent. of all outbreaks of fire, so it is a safe assumption that at least 70 per cent. of the 375 fires in question had their genesis in carelessness, thus making a total of 832 out of the 1,351 outbreaks in the fifty fire districts, with a

loss amounting to £241,870; all, or nearly all, due in the first instance to carelessness in some form or degree and as such could have been very largely preventable. Very clearly instancing undoubted carelessness and its consequences is the fact that during the last four years 127 fires, involving a loss of £64,679, has been reported as due to the current being left switched on electric flat-irons, radiators, and cookers.

The fire loss throughout New Zealand for the year ended 31st December, 1929, is estimated at £1,230,255—a conservative estimate—and it is a safe assumption that the actual loss was in excess of that amount. This, with an estimated population in the Dominion of 1,485,594, gives an average loss of 16s. 7d. *per capita*. The loss in the fifty fire districts for the corresponding twelve months' period amounted to £461,966; that, with a population of 637,590 residing within the districts, gives a *per capita* loss of 14s. 6d.; whilst the loss for the 848,004 persons resident in other than the fire districts amounted to £768,289, working out at an average of 18s. 1d. per head. As compared with 1928 the returns show a reduction of £405,863 in the fire loss for 1929, and of that amount, with the same number of outbreaks of fire that occurred in 1928 and including only 43 per cent. of the total population resident therein, £221,116, or 53 per cent., of the reduction occurred in the fire districts.

My inspections and observations throughout the Dominion during the past two years warrant the statement that the majority of our fire brigades are attaining a high standard of fire-fighting efficiency. This assertion is supported, to some extent at any rate, by the fact that the 3,685 fires that occurred throughout the fire districts during the three years 31st March, 1927, to 31st March, 1929, averaged a loss of £468 per fire whilst the 1,351 fires for the year ending 31st March, 1930, averaged a loss of £304, or a reduction of £164 in the average loss per fire. It is well that it is so, in view of the excessive number of outbreaks of fire that annually occur in this country, as also that fire-risk conditions in New Zealand demand an even higher standard of fire-fighting efficiency than in most other civilized countries due to the greater inflammability of our buildings, the very large majority of which are wholly constructed of a more or less light description of timber. In other countries where any extensive wood or "frame" construction obtains the timber used is usually of a heavier description, and, generally, the buildings having an internal lining of lath and plaster or other fire-resisting or slow-burning material, therefore are not liable to outbreaks of fire from the most minor causes as in the case of our buildings, particularly dwellinghouses, with their half-inch match-board lining, in many of earlier construction not even tongue and grooved, the wood lining covered with hessian cloth (scrim) and the whole then disguised by further coverings of pasted-on wall-paper which, once dry, is nothing more or less than a quick-fire train throughout the whole of the building, with the too-frequent result of a "total loss."

The decrease in the fire waste of £405,863 as compared with that of the previous year is some satisfaction. The loss, however, of well over one and a quarter million sterling for 1929 is far too heavy. It is a serious drain upon the resources of a country with a population of under one and a half million, and, seeing that to a very large extent the loss is easily preventable, conditions certainly call for some organized effort to reduce this annually recurring huge waste of property.

As previously stated, the estimated loss for 1929 amounting to £1,230,255 is a conservative estimate founded on reliable basis, and only relates to loss of property directly destroyed by fire, and does not take into account the many indirect phases of losses involved such as dislocation of business, unemployment, increased cost of fire-brigade equipment and maintenance, loss of irreplaceable public and personal property, &c., and I consider it to be well within the mark, therefore, to set down the fire waste during 1929 at considerably over one and a half millions of money.

As some indication of the abnormality of the waste by fire prevailing in New Zealand—at the same time making allowance for the more inflammable character of our buildings—comparison with that in Great Britain is of interest. The fire loss in Great Britain and Ireland during 1929 amounted to £15,617,471 (an increase of five millions over the loss in 1928) that with a population of 48,603,553 gives a loss of 6s. 5d. *per capita*, or only 39 per cent. of the loss per head in this Dominion. The large increase in the loss over that of the previous year has roused public interest. "This enormous wastage is a matter of grave concern to public economists," and quite a campaign in reduction of the loss is now in progress, towards which object a National Safety Week, under the auspices of the Safety First National Association of Great Britain, was held in May last, and in which nine hundred fire brigades took part. Measures advocated include installation of automatic sprinklers and alarms, holding of fire inquests, amendment of building by-laws, provision of private fire-extinguishing appliances, compulsory teaching of fire-prevention in schools—"and in what better way can you do that than by teaching children in school." All of which measures have been advocated in New Zealand for years past, and in view of the world-wide evidence to the reliability of automatic sprinklers and fire-alarm systems as a proved means of most effectively reducing the loss by fire, particularly by an almost total elimination of the disastrous "late call"; seeing also that any of the proved systems—due to the large rebate in insurance premiums on properties so protected—can be installed at little in some cases at no ultimate cost to owners of large insured properties, it is disappointing that there has not been in New Zealand any increase in the total number of automatic installations during the year under review.

It would be a step in the right direction if the system of co-ordination between the responsible officers of local governing bodies, on the lines of the public utilities committees now operating in some of the Australian cities and in Auckland and Christchurch, was adopted in all the large towns in New Zealand. Members of the committees set up include the City or Town Engineer, Building Inspector, Managers of the Electric Lighting, Power, and Tramway Services, Superintendent of the Fire Brigade, and so on. These committees hold periodical meetings and discuss suggested alterations

and improvements in the various services. The value of such co-ordination should be clearly apparent, for instance, as affecting the fire service in the matter of water-supply, building regulations, storage of imflammable goods, and many other kindred matters. Such committees certainly tend to do away with much of the friction that now exists owing to overlapping authority.

Appended are brief reports dealing with each fire district, 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 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.

Inspection, 20th and 21st September, 1929: The several stations and their equipment were found in first-class order and the "turnouts," &c., in each case was carried out in a smart and efficient manner. Erection of the new fire-station for protection of the Avondale section of the district was completed and occupied in the early part of the year. A new site has been purchased in Long Drive, St. Heliers, and plans for a new station for the protection of the Tamaki section of the Auckland Fire District are being prepared. Plant additions during the year include one 20–60 h.p. and one 30 h.p. new motor fire-engines, also considerable extensions of the street fire-alarm systems has been carried out.

BALCLUTHA.

Inspection, 6th February, 1930: Two officers and six firemen were in attendance at the inspection muster. The station and equipment were found in good order and the inspection drills were carried out in a satisfactory and creditable manner, but the numerical strength of the brigade is seriously low and should be brought up to the authorized number. Attendance at the ten general alarms averaged 70 per cent. of the total membership of the brigade—a fair record. Certain recommendations were made to members of the Board who were present at the inspection.

CHRISTCHURCH.

Inspection 16th December, 1929: The inspection parade and drill at the central station and the "turnouts" at the several substations were carried out in a smart and efficient manner, and all stations and their equipment were found in first-class order.

DANNEVIRKE.

Inspection 7th October, 1929: Superintendent, deputy, and sixteen 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 eleven "fire calls" averaged 90 per cent. of the total membership—a very good record. In my report to the Board I again recommended the appointment of a permanent fireman on the brigade strength.

DARGAVILLE.

Inspection, 20th January, 1930: Two officers and fourteen 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, with exception of a quantity of the newly purchased fire-hose, were found in good and proper order. Attendance at the seven "fire calls" averaged 75 per cent. of the total membership—a fair record. Recommendations were made in regard to provision of certain necessary minor equipment. The fire-station building is much in need of renovation, but its present site is unsuitable for the purpose, and a recommendation was made to the Board that a new site be purchased.

DUNEDIN.

Inspection, 8th February, 1930: The inspection and subsequent drill at the central station was carried out in a smart and efficient manner, as also was the "turnout" at the South Dunedin and Roslyn substations. All stations and equipment were found in first-class order. The question of the water-supply for fire-extinction purposes in Dunedin has been causing anxiety for some time past. The foundation-stone of the new central fire-station at the corner of Castle and St. Andrews Streets was laid on the 18th March.

ELTHAM.

Inspection, 28th November, 1929: Two officers and ten 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. Return of the attendances at the "fire calls" was incomplete. Recommendations in regard to provision of minor equipment were made, and attention called to the unsatisfactory condition of many of the street fire-hydrant indicators.

Feilding.

Inspection, 27th March, 1930: Two officers and thirteen firemen were in attendance at the inspection muster. The required inspection drills were carried out in a smart and efficient manner, and the station and equipment were found in good and proper order. Attendance at the nine general alarms averaged 74·5 per cent. of the total membership—a fair record. Certain matters requiring attention mentioned during my previous inspection had been attended to.

Foxton.

Inspection, 2nd April, 1930: Two officers and eight firemen were in attendance at the inspection muster. With the exception that more practice in the shipping of the stand-pipes is necessary, the inspection drills were carried out in a smart and satisfactory manner. Attendance at the three "fire calls" averaged 63 per cent. of the total membership, considerably below the general average. Certain recommendations were made in regard to equipment and methods of fire drill.

Gisborne.

Inspection, 19th March, 1930: Two officers and nineteen firemen were 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 equipment were found in first-class order. Attendance at the forty-three general alarms averaged 80·2 per cent. of the total membership—a good record. Nothing practical has yet been done to improve the water-supply and ensure permanent safety of the main-supply pipe-line.

Greymouth.

Inspection, 10th December, 1929: Two officers and seventeen firemen were in attendance at the inspection parade. The inspection drills were carried out in a smart and satisfactory manner, and the station and equipment, including the suction pipes on Mawhera Quay, were found in good and proper order. Attendance at the eighteen "fire calls" averaged 85·5 per cent. of the total membership—a good record. Attention was again called to the inadequate reticulation and other unsatisfactory conditions existing in regard to the water-supply for fire-extinction purposes in Greymouth, also in regard to the unsatisfactory state of the street hydrant indicators.

Hamilton.

Inspection, 10th March, 1930: Two officers and twenty firemen were on parade at the inspection muster. A contingent of the Volunteer Fire Police was also in attendance. The inspection drills were carried out in a smart and efficient manner, and the station and equipment were found in their usual first-class order. Attendance at the twenty-two general "fire calls" averaged 80·3 per cent. of the total membership of the brigade—a good record. In my report to the Board attention was again called to the expediency of purchasing additional land adjoining the present central-station site for the purpose of providing more married men's quarters. Long-service men are the backbone of all fire brigades, and every reasonable inducement should be given to retain such men in the service, particularly in the provision of quarters for married men as one of the most effective means towards that end.

Hastings.

Inspection, 20th March, 1930: At the inspection muster the full strength of the brigade, two officers, twenty-one firemen, and one messenger, was on parade. Certain recommendations previously made in regard to routine drill had been adopted, and 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 forty-one general "fire calls" averaged 75 per cent. of the total membership of the brigade—a fair record.

Hawera.

Inspection, 25th November, 1929: The full strength of the brigade, two officers and twelve firemen, were on parade at the inspection muster. The inspection drills were carried out in a very smart and efficient manner, and the station and all equipment were found in first-class order. Attendance at the seven general "fire calls" averaged 92 per cent.—a very good record. Attention was again called to the advisability of purchasing additional land adjoining the present station.

Hikurangi.

Inspection, 21st January, 1930: One officer and eight firemen were in attendance at the inspection muster. Although suitable men were available, the brigade had been four short of the authorized strength for some months past. Instructions in squad drill and other matters were given, also recommendations were made in regard to necessary minor equipment. I noted that some of the street hydrants were covered with road-metal, also that a number of hydrant indicators were missing. The water-reticulation for fire-extinguishing purposes in Hikurangi is very inadequate, there being no fire mains in Union and Part Streets, upper parts of Valley Road, &c., all being more or less closely-built-upon areas.

HOKITIKA.

Inspection, 13th December, 1930: One officer and twenty-three firemen were in attendance at the inspection parade. The required inspection drills were carried out in a smart and efficient manner, and the central and several hose-reel stations with their equipment were found in good and proper order. Attendance at the four "fire calls" averaged 83·3 per cent. of the total membership—a good record. A recommendation was again made in regard to provisions of motor transport for men and appliances.

INVERCARGILL.

Inspection, 11th February, 1930: Two officers and twenty firemen were in attendance at the inspection parade. The inspection drills were carried out in an exceptionally smart and efficient manner, and a very fine exhibition of physical and gymnastic drill was also carried out. The station and all equipment were found in first-class order. The Borough Council has allotted a sum of over £12,000 for improving the water service, which should put the supply for fire-extinction purposes on a more satisfactory footing.

KAIAPOI.

Inspection, 16th December, 1929: Two officers and ten firemen were in attendance at the inspection muster. During the course of the required inspection drills it was apparent that, whilst the men were active and willing, they were much in need of more instruction and drill. The station and equipment were found in good order and condition. Attendance at the sixteen "fire calls" averaged 70 per cent. of the total membership—a fair record. Attention was called to the inadequate diameter of the supply pipe feeding the recently constructed concrete reservoir situated on the North Main Road.

KAITANGATA.

Inspection, 12th February, 1930: Two officers and four firemen out of a total strength of ten then on the roll were in attendance at the inspection muster. The brigade was four short of its authorized strength. During the course of the inspection it was apparent that the brigade was not properly conversant with the effective use of the appliances, and more practice therewith is necessary. Attendance at the three "fire calls" averaged 60 per cent. of the total membership—a poor record. Recommendations were made that the motor hose-tender be fitted with Ruxtell axle-gear, broken arm on pump-clutch to be repaired, a new driving-chain to be fitted, and a siren to be fitted in accordance with the Act. Other recommendations in regard to minor matters were also made.

LAWRENCE.

An inspection of the district, the fire station, and its equipment was made on the 10th February, 1930. The station and equipment were found in good order. Attendance at the seven "fire calls" averaged 64 per cent. of the total membership of the brigade—considerably below general-average record. Advice was given to members of the Board in regard to certain matters, and recommendations made in respect to brigade equipment.

LEVIN.

Inspection, 1st April, 1930: Two officers and twelve firemen were in attendance at the inspection muster. With the exception that more practice in the shipping of the stand-pipes is necessary, the inspection drills were carried out in a smart and satisfactory manner, and the station and equipment were found in good order and condition. Attendance at the eight general "fire calls" averaged 72 per cent. of the membership—a fair record. Provision of a foam extincteur and of a hose-repairing outfit was recommended. An electrically-operated siren with direct wire connection to the Post-office Telephone Exchange has been installed in place of the bell and street-fire-alarm system.

MASTERTON.

Inspection, 8th October, 1929: Two officers and sixteen firemen were in attendance at the inspection parade. The inspection drills were carried out in a smart and satisfactory manner, and the station and equipment were found in good order. Inspection was made of several properties under offer to the Board as suitable sites for erection thereon of the proposed new central fire-station. Ultimately the Board acquired a very central and suitable site for that purpose.

MILTON.

Inspection, 10th February, 1930: Two officers and nine 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 nine "fire calls" averaged 72 per cent. of the total membership—a fair record. I had again to call attention to fitting the motor hose-tender with a siren in compliance with the Motor-vehicles Act. A new electric motor and pump has been installed, and the water-supply for fire-extinction purposes is now on a better footing.

MOUNT ROSKILL.

Inspection, 19th September, 1929: Two officers and thirteen 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 found in first-class order. Attendance at the fourteen general "fire calls" averaged 60 per cent. of the total membership—considerably below the general-average record. The water-supply throughout the Mount Roskill Fire District for fire-extinction purposes, extent of reticulation, &c., are still far from meeting requirements.

NAPIER.

Inspection, 17th March, 1930: At the central fire-station inspection muster two officers and eighteen firemen were on parade and at the Port station one officer and ten firemen were in attendance. The required inspection drills were carried out in a smart and efficient manner at both stations. The stations were found in good order and the equipment in effective working-condition.

NEW PLYMOUTH.

Inspection, 26th November, 1929: Two officers and fourteen firemen were in attendance at the inspection parade. The practical part of the inspection drills was carried out fairly efficiently, but more practice in the oral part thereof is necessary, and ordinary brigade drill should be held not less than twice per month. The station and equipment were found in good order. Equipment of the brigade is not keeping pace with the growth of the town, and should be strengthened as follows: Extension of the street-fire-alarm system, provision of a new motor fire-engine equipped with a first-aid pumping-outfit, and provision of a workshop and additional storeroom.

OAMARU.

Inspection, 4th February, 1930: Two officers and ten firemen were in attendance at the inspection muster. Whilst the men are apparently an active and willing body, it was evident during the course of the practical inspection that they were seriously in need of more instruction and drill in the use and operation of the various fire appliances. Attendance at the twenty-four "fire calls" averaged 68 per cent. of the total membership; this is below the general average, and is probably due to the inefficiency of the present fire-bell alarm. The method of ringing the fire bell is very crude, and a mechanical apparatus should be installed for the purpose. Other recommendations in minor matters have been made. The fire risks, block and otherwise, in Oamaru has increased considerably of late years, and are steadily growing. In my opinion, the time has arrived calling for the appointment of a permanent Superintendent of the brigade.

OHAKUNE.

Inspection, 13th January, 1930: Two officers and nine firemen were in attendance at the inspection muster. The required drills were carried out in a smart and efficient manner. Attendance at the eight "fire calls" averaged 71 per cent. of the total membership—a fair record. The brake shoe on the trailer pump-carriage had not been repaired, otherwise the various defects pointed out in my previous report had been remedied, and generally there is a marked improvement in the working-conditions and maintenance of both station and appliance. Recommendations were made in regard to clearing a track to the creek and as to the disposal of the old steam fire-engine.

ONEHUNGA.

Inspection, 20th September, 1929: Two officers and thirteen 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 twenty-five general "fire calls" averaged 68·3 per cent. of the total membership. This percentage is below the average record. Certain recommendations were made in regard to minor equipment.

OPOTIKI.

My first inspection of the Opotiki Brigade and its equipment was made on the 25th September, 1929. Two officers, nine firemen, and one messenger were in attendance at the inspection muster. The members present are apparently an active willing body of men that, with proper instruction, should constitute a smart and efficient brigade. Instruction was given in brigade squad drill, methods of fire-extinction, use and maintenance of the various appliances, &c. The present fire station is not well situated in regard to the risks of the town, and is otherwise unsuitable. A number of recommendations were made in regard to equipment and other matters.

OTAKI.

Inspection, 14th November, 1929: Two officers and eleven firemen were in attendance at the inspection muster. The required inspection drills were carried out in a satisfactory manner and the station and equipment were found in good order. Attendance at the three "fire calls" averaged 75·6 per cent. of the total membership—a fair record. Various matters were discussed with the Chairman of the Board and the Superintendent, and certain recommendations made in regard to minor equipment, &c.

PAHIATUA.

Inspection, 13th November, 1929: Two officers and eight firemen only, out of a strength of sixteen all told, were in attendance at the inspection muster. During the course of the inspection it was evident that the members of the brigade required more instruction and practice in the various squad drills, &c. Attendance at the three "fire calls" reported averaged 68·8 per cent. of the total membership. This is below the general-average record. Recommendations were made in regard to minor equipment and other matters. Once again I have to call attention to the inadequate and most unsatisfactory conditions of the water-supply for fire-extinction purposes obtaining in Pahiatua.

PALMERSTON NORTH.

Inspection, 3rd April, 1930: Two officers and twenty firemen were in attendance at the inspection parade. The inspection drills were carried out in a thoroughly efficient manner, and the stations and equipment were found in first-class order. In view of the number of buildings of large cubic

area erected in Palmerston North of late and in consideration of the water-supply conditions existing in the town, I consider the brigade equipment should be further strengthened by provision of another motor-pumping outfit.

PETONE.

Inspection, 10th April, 1930: One officer and fifteen firemen were in attendance at the inspection parade. The inspection drills were carried out in their usual efficient manner, and the station and equipment were found in first-class order. Attendance at the twenty-six "fire calls" averaged 62·5 per cent. of the total membership—considerably below the general average. Additions to the brigade equipment during the year include a new telescope fire-ladder and six new call-boxes in extension of the street-fire-alarm system. Improvement of the water-supply for fire-extinction purposes is now in hand, and a new 12 in. supply-main has been laid down and a number of the old 3 in. mains are being replaced with 4 in. piping.

PORT CHALMERS.

Inspection, 5th February, 1930: The Superintendent only was in attendance, all other members of the brigade were working overtime at the shipping in port, consequently no inspection of the personnel could be made. The station was found in good order. In regard to the equipment the stock of good fire-hose is dangerously low; 500 ft. of new hose is required. As previously reported to the Board, the present motor hose and first-aid tender is past its usefulness as a fire-engine, and the brigade should be provided with a more suitable machine.

PUKEKOHE.

Inspection, 17th September, 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 equipment was found in good order. Attendance at the eight "fire calls" averaged 71·4 per cent. of the total membership—a fair record. Erection of the new brick central fire-station has been completed, and is now in occupation. The building is well designed for its purpose, and is well situated in regard to the risks of the town. A street-fire-alarm system with ten distributed call-boxes thereon has been installed.

ROTORUA.

Inspection, 7th March, 1930: One officer and sixteen firemen were in attendance at the inspection parade. The required 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 "fire calls" averaged 80·1 per cent. of the total membership—a good record. During the year considerable extension of the water-supply mains for fire-extinction purposes has been carried out, and has greatly improved conditions in that respect.

TAUMARUNUI.

Inspection, 14th January, 1930: Two officers and thirteen firemen were in attendance at the inspection muster. The required inspection drills were carried out in a smart and efficient manner and the station and equipment were found in good order and condition. Attendance at the sixteen "fire calls" averaged 92 per cent. of the total membership—a very good record. Attention was called to the necessity of fitting the fire-motors with sirens, as required by the Motor-vehicles Act, and recommendations were made in regard to minor requirements.

TAURANGA.

Inspection, 23rd September, 1929: The full strength of the brigade, two officers and fourteen firemen, was in attendance at the inspection parade. The inspection drills were carried out in a smart and efficient manner, and the station and equipment was found in good order. Attendance at the thirteen "fire calls" averaged 84·4 per cent. of the total membership of the brigade—a good record. A "booster" pump has been installed on the "carrying" main, and has, I understand, improved the water-supply for fire-extinction purposes. A recommendation was made to the Board that land adjoining the fire-station be acquired, this in view of future necessary extension of the present station building.

TE AROHA.

Inspection, 6th March, 1930: One officer and nine firemen were in attendance at the inspection muster. With the exception that more practice with the new fire-ladder is necessary, the inspection drills were carried out in a satisfactory manner with noticeable improvement in the oral part thereof, and the station and equipment were found in proper order. Attendance at the seven "fire calls" averaged 90 per cent. of the total membership—a very good record. Attention was called to the necessity of fitting a siren on the fire-motor in accordance with requirements of the Motor-vehicles Act; recommendations were also made in regard to minor equipment. No action has yet been taken in regard to provision of a new and more suitable motor fire-engine.

TE AWAMUTU.

Inspection, 15th January, 1930: One officer and twelve firemen were in attendance at the inspection muster. The required inspection drills, particularly the oral part thereof, were carried out in a smart and efficient manner, and the station and equipment were found in good order and condition. Attendance at the three "fire calls" averaged 72 per cent. of the total membership—a fair record. Recommendations were made in regard to the provision of certain necessary minor equipment.

TIMARU.

Inspection, 17th December, 1929: Two officers and nineteen firemen were in attendance at the inspection parade. The required inspection drills were carried out in the usual efficient manner, and the station and equipment were found in first-class order. Attendance at the thirty-three general

alarms averaged 83·8 per cent. of the total membership—a good record. I had, as upon previous occasions, to again comment upon the unsatisfactory conditions in regard to the water-supply for fire-extinction purposes in certain parts of the town, particularly instancing the block occupied by the Evans mill and stores, Dalgety's stores, and other similar buildings, as also in the Gibson and Arthur Streets neighourhood. The Highfield section of the town, with its many and steadily increasing number of high-class residences, is too far away to be effectively served from the central fire-station, and the Board would be well advised to consider erection of a substation in the near future for protection of that portion of the fire district.

WAIHI.

Inspection, 26th September, 1929: Two officers and thirteen firemen were in attendance at the inspection muster. The inspection drills were carried out in a smart and creditable manner, and the station and equipment were found in good order. Altogether, there is a great improvement in the brigade and brigade matters generally. Attendance at the thirty "fire calls" averaged 76·3 per cent. of the total membership—a fair record. The Board has decided to purchase a new and more efficient motor fire-engine. Recommendations were made in regard to provision of certain minor equipment.

WAIPUKURAU.

Inspection, 12th November, 1929: One officer 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 good and proper order. Attendance at the nine "fire calls" averaged 70·6 per cent. of the total strength—a fair record. Recommendations were made in regard to the street "call-box" system, as also in the matter of some minor equipment. The new storage reservoir recently constructed with the new 9 in. carrying-main has greatly improved the water-supply for fire-extinction purposes in Waipukurau.

WAIROA.

Inspection, 18th March, 1930: Two officers and twelve firemen were in attendance at the inspection muster. The required inspection drills were carried out in a smart and efficient manner, very creditable to this comparatively recently organized brigade. The station and equipment were found in good and proper order. Attendance at the seven "fire calls" averaged 94 per cent. of the total membership—an excellent record.

WAITARA.

Inspection, 27th November, 1929: Two officers and seven firemen were in attendance at the inspection muster. During the inspection drill it was evident that the men were in need of more instruction and drill. Instructional drill should be carried out not less than twice per month. Attendance at the four "fire calls" averaged 87·5 per cent. of the total membership—a good record. Attention was called to the defective condition of some of the equipment, and recommendations were made in regard to other brigade equipment.

WANGANUI.

Inspection, 26th and 27th March, 1930: At the Central Station inspection parade two officers and twenty firemen were in attendance; a strong contingent of the Volunteer Fire Police Corps was also present. The required inspection drills were carried out in the usual efficient manner, and both the Central and Castlecliff Stations and their equipment were found in first-class condition. The Board has purchased the section in Wilson Street adjoining the present central-station site, and the ten-roomed house thereon is to be converted into two sets of married quarters. Attention was called to the condition of street-hydrant indicators in the Gonville section of the city.

WELLINGTON.

An inspection of the Wellington Brigade, its several stations, and their equipment was made on the 23rd and 24th August. The method of drilling the firemen as demonstrated at the central station during the course of my inspection is not, in my opinion, carried out on effective lines; this, and what I consider other faults in the method of use and maintenance of some of the fire-fighting equipment, was pointed out to the Superintendent during the inspection. This inspection, together with my observation of the working of the brigade at fires, and in other matters, force me to the conclusion that the general tactics employed, as also the directive control of the brigade operations at actual fires, is gravely at fault.

WESTPORT.

Inspection, 11th December, 1929: Two officers and sixteen firemen were in attendance at the inspection parade. Whilst there was an improvement in the oral part of the inspection drill, more practice in the practical work is very necessary, Drill once per month is not sufficient, bi-monthly drill should be adopted. Attendance at the nine "fire calls" averaged 82·5 per cent. of the total membership—a good record. A matter that should receive prompt attention is the repairing of the fire-station building damaged by the late earthquake, also quite a number of other matters require attention, as set out in my report submitted to the Fire Board.

WHANGAREI.

Inspection, 22nd January, 1930: The Superintendent and thirteen firemen were in attendance at the inspection muster. The required inspection drills were carried out in a smart and efficient manner, and the station and equipment were found in good and proper order. Attendance at the seventeen general alarms averaged 74·5 per cent. of the total membership—a fair record. Recommendations were made in regard to minor matters.

TABLES.

1. Summary of Fire Calls, 1929–30.

District.	Fires.	Chimneys.	Rubbish.	False Alarms.	Out of District.	Totals.
Auckland	255	32	49	81	15	432
Balclutha	6	4	..	1	..	11
Christchurch	172	33	38	118	34	395
Dannevirke	5	4	..	2	..	11
Dargaville	6	..	..	..	1	7
Dunedin	123	125	48	93	1	390
Eltham	6	..	..	..	..	6
Feilding	8	4	..	1	..	13
Foxton	2	..	1	..	..	3
Gisborne	29	6	5	5	2	47
Greymouth	17	..	1	..	1	19
Hamilton	26	3	15	5	4	53
Hastings	30	8	5	12	1	56
Hawera	4	9	3	2	1	19
Hikurangi	..	..	1	..	..	1
Hokitika	4	..	..	..	..	4
Invercargill	48	19	7	16	1	91
Kaiapoi	13	1	2	..	..	16
Kaitangata	4	..	..	..	..	4
Lawrence	5	2	..	..	..	7
Levin	5	3	..	..	2	10
Masterton	12	11	4	5	..	32
Milton	3	6	..	..	..	9
Mount Roskill	9	..	4	9	2	24
Napier	33	4	4	4	1	46
New Plymouth	31	2	8	3	1	45
Oamaru	11	6	3	2	2	24
Ohakune	7	..	1	..	..	8
Onehunga	16	1	..	11	..	28
Opotiki	2	..	..	..	..	2
Otaki	2	..	1	1	..	4
Pahiatua	3	..	..	..	1	4
Palmerston North	43	22	21	28	7	121
Petone	12	1	2	11	..	26
Port Chalmers	2	..	..	..	..	2
Pukekohe	1	..	..	7	..	8
Rotorua	15	7	6	2	..	30
Taumarunui	11	3	2	..	..	16
Tauranga	8	3	2	..	..	13
Te Aroha	4	1	1	1	..	7
Te Awamutu	2	1	..	..	..	3
Timaru	23	15	11	8	4	61
Waihi	12	..	10	8	..	30
Waipukurau	6	1	2	..	..	9
Wairoa	4	..	2	1	..	7
Waitara	4	..	..	..	..	4
Wanganui	56	18	95	19	3	191
Wellington	230	77	217	258	3	785
Westport	5	1	1	2	..	9
Whangarei	16	1	1	1	2	21
Totals	1,351	435	573	717	88	3,164

2. Summary of Fire Losses, 1929-30.

District.	Insured.	Uninsured.	Totals.	District.	Insured.	Uninsured.	Totals.
Auckland	40,184	3,970	44,154	Oamaru	2,278	329	2,607
Balclutha	210	28	238	Ohakune	1,720	1,021	2,741
Christchurch ..	58,928	5,984	64,912	Onehunga	4,579	585	5,164
Dannevirke ..	775	8	783	Opotiki	61	..	61
Dargaville	26	16	42	Otaki	1	..	1
Dunedin	23,253	1,032	24,285	Pahiatua	980	1,005	1,985
Eltham	2,663	9	2,672	Palmerston North ..	19,954	1,326	21,280
Feilding	2,548	47	2,595	Petone	3,480	820	4,300
Foxton	475	175	650	Port Chalmers ..	430	..	430
Gisborne	8,401	1,023	9,424	Pukekohe	100	..	100
Greymouth	2,990	1,537	4,527	Rotorua	490	400	890
Hamilton	6,966	665	7,631	Taumarunui ..	1,608	312	1,920
Hastings	7,274	533	7,807	Tauranga	3,467	879	4,346
Hawera	7	..	7	Te Aroha	210	165	375
Hikurangi	..	..	..	Te Awamutu ..	63	5	68
Hokitika	450	5	455	Timaru	3,673	56	3,729
Invercargill ..	4,304	1,278	5,582	Waihi	630	68	698
Kaiapoi	1,532	1,695	3,227	Waipukurau ..	1,611	883	2,494
Kaitangata	2,763	1,580	4,343	Wairoa	4,518	600	5,118
Lawrence	110	4	114	Waitara	3,780	840	4,620
Levin	651	150	801	Wanganui	12,905	1,169	14,074
Masterton	846	220	1,066	Wellington	89,620	13,183	102,803
Milton	5	..	5	Westport	1,764	1,310	3,074
Mount Roskill ..	3,959	154	4,113	Whangarei	6,507	1,304	7,811
Napier	19,394	5,298	24,692				
New Plymouth ..	7,090	453	7,543	Totals ..	358,093	52,124	410,217

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

As taken from the Estimates for the respective Years.

District.	Year ending 31st March, 1929.	Year ending 31st March, 1930.	Year ending 31st March, 1931.	District.	Year ending 31st March, 1929.	Year ending 31st March, 1930.	Year ending 31st March, 1931.
	£	£	£		£	£	£
Auckland	23,000	22,000	22,300	Ohakune	550	450	450
Balclutha	450	320	260	Onehunga	1,655	1,783	1,620
Christchurch ..	12,000	13,850	14,300	Opotiki	..	990	620
Dannevirke ..	792	775	710	Otaki	275	314	357
Dargaville	674	530	522	Pahiatua	338	383	335
Dunedin	15,700	15,700	16,000	Palmerston North ..	4,128	4,270	4,484
Eltham	350	648	421	Petone	1,929	1,945	1,789
Feilding	776	782	800	Port Chalmers ..	212	212	216
Foxton	465	487	491	Pukekohe	882	447	787
Gisborne	2,393	2,200	2,300	Rotorua	1,293	1,117	1,020
Greymouth	1,025	1,000	1,000	Taihape	..	..	645
Hamilton	2,725	2,925	3,000	Taumarunui ..	592	640	500
Hastings	1,400	1,708	1,703	Tauranga	953	640	564
Hawera	1,349	1,275	1,283	Te Aroha	680	635	649
Hikurangi	511	223	177	Te Awamutu ..	570	500	460
Hokitika	583	580	670	Timaru	3,000	2,700	3,150
Invercargill ..	5,448	5,342	5,830	Waihi	734	731	664
Kaiapoi	683	704	560	Waipukurau ..	320	330	430
Kaitangata	270	157	130	Wairoa	467	678	714
Lawrence	100	100	100	Waitara	237	228	277
Levin	730	701	586	Wanganui	8,000	8,300	8,100
Masterton	1,771	1,872	2,100	Wellington	26,400	30,400	30,400
Milton	200	200	200	Westport	500	800	800
Mount Roskill ..	1,300	1,209	1,135	Whangarei	1,130	1,462	1,123
Napier	4,094	4,196	4,200				
New Plymouth ..	1,887	2,085	2,528	Totals ..	136,816	142,979	145,045
Oamaru	1,300	1,455	1,495				

4. Summary of Causes of Fires, 1929–30.

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	..	3	..	..	3	1	..	..	..	..	..	..	..	..	..	5	..	..	1	..	1	..	..	..	1	..	..	..	..	..	..	..	1	..	2	1	..	..	..	1	..	..	..	..	4	..	..	28
Benzine—proximity to lights	4	..	8	1	..	7	..	..	..	1	..	..	1	..	..	..	1	..	..	..	..	1	1	..	1	1	..	..	2	..	..	..	..	..	..	..	..	3	1	..	..	1	..	..	..	..	11	..	1	46
Candles—drapery, &c., in contact	3	..	2	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	2	..	..	..	..	..	..	..	..	..	2	..	..	1	..	..	..	..	12
Clothes, airing	3	..	..	..	..	2	..	..	..	..	..	3	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	6	..	..	16
Defective chimneys, hearths	4	..	14	..	..	10	..	..	..	..	4	1	2	..	..	..	1	..	1	..	..	..	..	1	1	1	1	1	..	..	1	..	1	1	..	..	2	..	..	..	1	1	2	..	..	1	12	1	1	66
Defective hot-water services	2	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
Electricity—																																																		
Short circuits, fusing	45	..	3	..	..	5	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	1	..	..	3	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	2	9	..	..	75
Domestic irons, heaters, &c.	7	..	5	..	..	2	..	1	..	2	..	2	1	1	..	..	1	..	..	..	..	..	..	1	2	..	..	..	..	1	..	..	..	..	..	..	1	1	1	..	..	1	..	..	1	..	1	8	..	1	41
Fireworks, sparks from	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	1	4
Gas-explosions—defective fittings	..	..	2	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6
Gas rings, stoves	8	..	7	..	..	..	..	..	..	1	2	1	..	..	..	..	1	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	1	3	..	..	28
Incendiarism, or suspected	9	..	31	..	..	2	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	5	..	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	1	1	4	..	..	59
Kerosene heaters, incubators	..	..	1	..	..	1	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	2	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	9
Matches—																																																		
Children with	..	..	..	..	..	3	..	..	..	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6
Thrown down alight	7	..	16	1	..	1	2	..	..	..	..	2	1	..	..	..	4	1	..	1	..	..	..	..	1	1	2	..	..	..	1	..	3	..	..	..	..	..	..	..	..	..	1	1	..	..	5	84	..	..	135
Rats	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Miscellaneous causes	7	..	8	..	..	4	..	..	..	1	1	..	2	..	..	..	2	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	3	..	..	..	1	..	..	..	..	2	..	..	1	..	3	7	..	..	43
Motors—back-firing, short circuits	14	..	9	..	1	10	..	1	..	2	..	4	1	..	..	..	2	..	..	..	2	3	..	2	1	1	..	..	1	..	..	1	1	..	..	1	1	..	..	..	2	1	..	..	5	12	..	3	80
Naked lights	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	1	3	..	..	9
Picture-films	2	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	..	..	10
Overheating—																																																		
Beeswax, fat, &c.	3	2	2	..	..	2	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	6	..	..	20
Machinery, exhaust pipes	2	..	3	..	..	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	4	..	..	15
Tar	4	..	5	..	3	5	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	2	..	..	..	..	2	2	..	..	30
Wood in proximity to furnaces	4	..	..	..	..	2	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	10
Painters, burning off paint	1	..	4	..	..	3	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	13
Smoking	11	..	5	..	..	3	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	2	4	..	..	30
Smoking—cigarette-butts	..	..	9	..	..	2	..	..	..	..	..	1	..	..	..	..	4	1	..	..	..	..	..	..	1	..	1	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	2	2	..	..	25
Sparks—																																																	
Copper fires, fireplaces	13	1	12	..	1	7	..	1	..	2	1	5	2	..	..	..	6	2	1	1	..	..	..	..	1	3	..	2	1	..	..	..	1	3	..	..	1	1	..	1	..	..	..	1	..	..	2	16	..	2	90
Chimneys	..	..	2	..	1	2	..	..	..	..	..	1	..	1	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	8	..	..	21
Locomotives	6	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	3	..	..	14
Other fires	5	..	2	..	..	3	..	..	..	..	1	1	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	4	1	..	..	20
Spontaneous combustion	1	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	9
Unknown causes	85	3	17	3	..	37	3	5	1	17	8	2	18	..	..	4	6	6	2	1	2	2	1	5	15	18	5	3	4	..	..	1	22	4	..	..	4	4	5	3	1	9	5	5	1	2	17	8	4	7	375
Totals	255	6	172	5	6	123	6	8	2	29	17	26	30	4	..	4	48	13	4	5	5	12	3	9	33	31	11	7	16	2	2	3	43	12	2	1	15	11	8	4	2	23	12	6	4	4	56	230	5	16	1,351

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

——	Auckland.	Balclutha.	Christchurch.	Dannevirke.	Dargaville.	Dunedin.	Eltham.	Feilding.	Foxton.	Gisborne.	Greymouth	Hamilton.
Brigades, total strength of ..	90	12	46	19	20	50	16	22	16	25	30	25
Fire-stations—												
Residential	7	1	4	1	1	3	1	1	1	1	2	1
Non-residential	..	1	..	..	1	..	..	1	..	..	4	1
Fire-alarms—												
Circuits (C), boxes (B)	40 (C), 325 (B)	..	21 (C), 175 (B)	2 (C), 16 (B)	..	16 (C), 190 (B)	..	..	..	4 (C), 59 (B)	..	4 (C), 42 (B)
Electric sirens*	..	..	..	..	..	..	..	..	Elec. siren (Ex.)	Elec. siren	..	Elec. siren
Automatic, private	74	..	55	..	..	42	..	..	..	..	..	6
Telephones (points)	22	3	8	2	2	7	3	3	4	4	2	3
Motors—												
Hose-and-ladder tenders (h.p.) ..	5 (40)	1 (22)	..	1 (40)	..	..	1 (22)	1 (20)	1 (22)	1 (25)	..	1 (20)
First-aid, hose-and-ladder (h.p.) ..	4 (40–55)	..	4 (25–55)	..	1 (20)	4 (60–75)	..	..	..	1 (35)	1 (20)	..
Pump, hose-and-ladder (h.p.) ..	1 (110)	..	1 (70)	..	..	..	..	..	..	2 (36) Trailers	..	1 (60)
First-aid, pump, hose-and-ladder (h.p.)	3 (40–60)	..	3 (55)	..	..	2 (60, 90)	..	1 (30)	..	..	1 (30)	1 (45)
General utility	2 (20, 36)	..	1 (20)	..	..	2 (20, 30)	..	..	..	..	..	..
Petrol-electric ladders (height) ..	1 (87′)	..	1 (85′)	..	..	1 (83′)	..	..	..	..	..	..
Hose carts and 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, on motors (height) ..	4 (35′), 2 (32′)	1 (24′)	6 (20′ to 45′)	1 (35′)	1 (35′)	6 (1 53′; 5 30′)	1 (35′)	1 (30′)	1 (26′)	2 (35′)	2 (35′, 24′)	2 (35′, 30′)
Single, coupling (total height) ..	14 (18′ to 22′)	3	16 (160′)	4 (82′)	2 (50′)	7 (113′)	3 (61′)	6 (91′)	..	5 (80′)	5 (98′)	2 (24′)
Jumping-sheets	5	..	3	..	..	1	..	..	..	1	1	1
Smoke-jackets (J), helmets (H), masks (M)	2 (J), 4 (H)	..	1 (J), 5 (H)	4 (H)	..	1 (J), 2 (H), 4 (M)	2 (H)	4 (M)	1 (H)	3 (H)	..	1 (M)
Hand-pumps	5	1	8	2	1	6	1	1	1	1	1	1
Hand chemical extincteurs ..	12	2	10	2	1	10	2	2	2	4	2	3
Portable standpipes—												
Ratchet valves	20	..	1	..	1	12	1	..	..	..	..	2
Double heads	..	3	19	8	3	7	3	6	3	7	12	2
Single head	8	..	1	..	2	1	..	..	..	4	..	6
Hose—												
Rubber-lined (diameter) ..	1,057′ (2¾″)	..	2,900′ (2¾″)	100′ (2½″)	..	300′ (2½″)	..	..	..	..	..	500′ (2½″)
Unlined (diameter)	1,600′ (2½″), 13,921′ (2¾″)	1,600′ (2½″)	14,350′ (2¾″)	3,900′ (2½″)	1,800′ (2½″)	18,500′ (2½″)	2,000′ (2½″)	2,600′ (2½″)	1,100′ (2½″)	3,500′ (2½″)	3,000′ (2½″)	4,200′ (2½″)
Rubber, first-aid (diameter) ..	1,440′ (¾″)	..	800′ (¾″)	..	100′ (¾″)	700′ (¾″)	..	120′ (¾″)	..	180′ (¾″)	150′ (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	85–90	75–125	70–80	80–110	53–120	91–117	40–95	40–45

* Electric siren alarms marked (Ex.) are operated also by Public Telephone Exchange Attendant through direct wire connected with fire-station control-switch.

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 ..	23	15	15	30	23	14	10	11	17	20	14	16	36	22
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), 37 (B)	..	..	..	..	6 (C), 16 (B)	..	..	3 (C), 30 (B)	2 (C), 29 (B)
Electric sirens*	..	Elec. siren	..	..	..	..	..	..	Elec. siren (Ex.)	Elec. siren	..	..	..	..
Automatic, private	..	1	..	..	9	..	..	..	..	1	..	1	..	..
Telephones (points)	3	2	..	4	2	1	..	..	2	2	1	1	8	3
Motors—														
Hose-and-ladder tenders (h.p.) ..	..	1 (35)	1 (20)	..	..	..	..	..	1 (22)	..	1 (20)	..	..	2 (20, 30)
First-aid, hose-and-ladder (h.p.) ..	2 (25, 35)	..	..	..	..	..	1 (22)	..	..	1 (25)	..	..	1 (35)	..
Pump, hose-and-ladder (h.p.) ..	..	..	..	G.P.M. 1 steam 380	1 (60)	1 (22)	..	..	..	..	..	..	..	1 (65)
First-aid, pump, hose-and-ladder (h.p.)	..	1 (35)	..	..	2 (60, 60)	G.P.M. Steam 300	..	..	..	1 (45)	..	1 (30)	2 (65, 45)	..
General utility	..	..	..	..	1 (30)	..	..	..	..	..	..	..	1 (20)	..
Petrol-electric ladders (height) ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hose carts and reels (hand-drawn) ..	1	2	1	6	..	..	2	2	1	2	1 and 1 chemical	..	2	1
Ladders—														
Motor-traction (height)	..	..	..	1 (28′)	..	..	..	..	..	..	..	..	1 (60′)	..
Extension, on motors (height) ..	2 (35′ 20′)	2 (35′)	1 (35′)	..	1 (60′), 3 (30′)	1 (30′)	1 (30′)	..	1 (26′)	2 (30′, 35′)	1 (16′)	1 (30′)	3 (35′, 35′, 25′)	2 (50′, 35′)
Single, coupling (total height) ..	1 (20′)	6 (91′)	4 (66′)	4 (89′)	..	3 (24′)	1 (20′)	2 (49′)	4 (36′)	1 (25′)	1 (25′)	2 (26′)	7 (160′)	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)	3 (H)	10 (M)	..	6 (H)	2 (H)
Hand-pumps	2	2	..	2	3	1	4	1	2	1	1	..	2	2
Hand chemical extincteurs ..	4	4	2	..	8	2	..	2	2	2	3	2	7	9
Portable standpipes—														
Ratchet valves	..	1	..	..	..	..	..	1	1	2	2	..	..	..
Double heads	5	4	2	5	2	..	..	1	1	3	2	3	12	9
Single head	..	2	2	2	8	..	..	..	2	3	..	..	2	1
Hose—														
Rubber-lined (diameter) ..	300′ (2½″)	..	..	..	..	..	..	..	..	50′ (2½″)	..	..	300′ (2½″)	200′ (2½″)
Unlined (diameter)	2,700′ (2½″)	3,000′ (2½″)	1,500′ (2½″)	2,800′ (2¾″)	6,800′ (2¾″)	4,200′ (2¾″)	1,800′ (2½″)	1,000′ (2½″)	2,000′ (2½″)	2,550′ (2½″)	1,800′ (2½″)	2,000′ (2½″)	9,000′ (2½″)	4,000′ (2½″)
Rubber, first-aid (diameter) ..	240′ (¾″)	180′ (¾″)	..	..	240′ (¾″)	..	..	..	..	120′ (¾″)	100′ (1″)	120′ (¾″)	360′ (¾″)	180′ (¾″)
Water-supply (P = pumping; G = gravitation	P and G	P and G	G	G	P and G	River and sumps	G	G	G	G	P	G	P and G	G
Pressure, average, noon–midnight ..	125–130	30–73	40–80	100–105	45	..	Partial 70	65–80	75–100	80–85	50	60–80	65–139	100–150

* Electric siren alarms marked (Ex.) are operated also by Public Telephone Exchange Attendant through direct wire connected with fire-station control-switch.

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	27	16	14	14	18	18	16
Fire-stations—													
Residential	1	1	1	1	1	1	2	1	..	1	1	1	1
Non-residential	1	..	..	..	..	..	..	..	2	..	1	1	1
Fire-alarms—													
Circuits (C), boxes (B)	..	..	2 (C), 34 (B)	..	..	..	5 (C), 55 (B)	1 (C), 26 (B)	..	..	3 (C), 24 (B)	..	1 (C), 8 (B)
Electric sirens*	..	..	Elec. siren	Elec. siren (Ex.)	Elec. siren	..	Elec. siren	..	..	Elec. siren (Ex.)	..	Elec. siren (Ex.)	Elec. siren
Automatic, private	..	..	..	..	..	..	3	..	..	..	..	..	..
Telephones (points)	5	3	1	2	1	1	2	2	..	1	2	4	2
Motors—													
Hose-and-ladder tenders (h.p.)	..	1 (20)	1 (30)	1 (20)	1 (20)	1 (20)	1 (25)	1 (30)	..	1 (20)	1 (50)	2 (20, 18)	1 (22)
First-aid, hose-and-ladder (h.p.)	1 (40)	..	1 (40)	..	..	..	..	..	1 (22)	..	..	..	1 (30)
Pump, hose-and-ladder (h.p.)	..	1 (30) Trailer	..	..	..	..	1 (50)	..	..	..	..	..	..
First-aid, pump, hose-and-ladder (h.p.)	1 (45)	..	..	..	..	..	1 (35)	1 (36)	..	..	1 (35)	..	..
General utility	..	..	..	..	..	..	..	..	..	..	..	..	..
Petrol-electric ladders (height)	..	..	..	..	..	..	..	..	..	..	..	..	..
Hose carts and reels (hand-drawn)	1	..	1	1	..	1	2	1	2	1	2	2	2
Ladders—													
Motor-traction (height)	..	..	..	..	..	..	..	..	..	..	..	..	..
Extension, on motors (height)	2 (30′, 35′)	1 (36′)	2 (35′, 25′)	1 (35′)	1 (26′)	1 (24′)	3 (60′, 30′, 22′)	2 (35′, 30′)	1 (26′)	1 (28′)	2 (35′)	2 (30′, 26′)	2 (34′, 30′)
Single, coupling (total height)	2 (38′)	2 (32′)	4 (65′)	1 (25′)	2 (20′, 18′)	1 (20′)	10 (115′)	2 (19′)	1 (20′)	1 (25′)	3 (61′)	2 (34′)	1 (35′)
Jumping-sheets	..	..	1	..	..	..	..	1	..	..	1	..	..
Smoke-jackets (J), helmets (H), masks (M)	1 (H)	..	2 (H)	..	2 (H)	..	1 (H)	1 (H)	..	2 (H)	1 (H)	1 (H)	..
Hand-pumps	2	2	..	1	2	1	2	2	2	1	1	1	2
Hand chemical extincteurs	1	2	4	2	1	1	1	7	2	2	4	4	..
Portable standpipes—													
Ratchet valves	1	..	..	..	..	..	1	..	1	1	1	..	..
Double heads	5	..	4	3	2	3	5	2	2	2	2	4	4
Single head	1	1	..	..	..	..	3	5	..	..	5	..	1
Hose—													
Rubber-lined (diameter)	..	..	100′ (2½″)	..	..	..	..	300′ (2½″)	..	..	350′ (2½″)	..	..
Unlined (diameter)	2,800′ (2½″)	1,400′ (2½″)	2,500′ (2½″)	1,000′ (2½″)	1,500′ (2½″)	1,600′ (2½″)	6,000′ (2½″)	4,500′ (2½″)	1,000′ (2½″)	2,000′ (2½″)	1,900′ (2½″)	2,400′ (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	G	G	G	G	P and G	G	G	G	G	P and G
Pressure, average, noon–midnight	90–100	..	100–110	140–150	110–135	50–60	Uncertain	40–60	110–150	80–100	60–64	100–125	70–110

* Electric siren alarms marked (Ex.) are operated also by Public Telephone Exchange Attendant through direct wire connected with fire-station control-switch.

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	22	16	17	17	16	32	79	24	20	Permanent, 230; auxiliary and volunteers, 897; total, 1,127.
Fire-stations—												
Residential	1	1	1	1	1	1	1	4	5	1	1	67
Non-residential	..	..	..	..	..	..	..	..	3	..	..	25
Fire-alarms—												
Circuits (C), boxes (B)	2 (C), 3 (B)	..	6 (C), 28 (B)	4 (C), 14 (B)	1 (C), 5 (5)	..	..	9 (C), 89 (B)	18 (C), 120 (B)	..	2 (B)	160 (C), 1,423 (B)
Electric sirens*	Elec. siren (Ex.)	..	..	..	Elec. siren (Ex.)	Elec. siren (Ex.)	..	..	..	..	..	16
Automatic, private	..	..	2	1	..	..	..	22	74	..	..	291
Telephones (points)	4	2	9	7	3	1	2	3	8	4	4	165
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)	..	..	1 (45)	26
Pump, hose-and-ladder (h.p.) ..	..	..	1 (60)	..	..	..	..	..	2 (70, 45)	..	..	13 and 1 steam.
First-aid, pump, hose-and-ladder (h.p.)	..	..	1 (45)	..	..	..	..	2 (60, 45)	3 (45, 35, 35)	..	..	29 and 1 steam.
General utility	..	..	1 (20)	..	..	..	..	1 (20)	2	..	..	11
Petrol-electric ladders (height) ..	..	..	..	..	..	..	..	..	1 (85′)	..	..	4
Hose carts and reels (hand-drawn) ..	1	1	..	2	1	1	2	..	4	3	1	72 and 1 chemical.
Ladders—												
Motor-traction (height)	..	..	..	..	..	..	..	..	..	..	..	6
Extension, on motors (height) ..	1 (35′)	1 (35′)	2 (60′, 35′)	1 (30′)	1 (30′)	1 (30′)	1 (30′)	4 (60′, 35′, 35′, 30′)	10 (14′–55′)	2 (28′, 28′)	1 (30′)	94
Single, coupling (total height) ..	3 (55′)	2 (26′)	7 (165′)	3 (68′)	3 (50′)	2 (24′)	2 (30′)	5 (81′)	14 (145′)	2 (47′)	2 (35′)	183
Jumping-sheets	..	..	1	..	..	..	..	3	2	..	..	27
Smoke-jackets (J), helmets (H), masks (M)	..	..	2 (H)	..	2 (H)	3 (H)	..	2 (H)	2 (H), 1 (J), 1 (M)	2 (H)	2 (H)	5 (J), 69 (H), 20 (M)
Hand-pumps	1	1	2	1	2	1	1	4	16	1	1	102
Hand chemical extincteurs ..	2	2	6	..	2	3	2	9	21	2	2	181
Portable standpipes—												
Ratchet valves	1	1	4	..	..	..	3	7	..	2	2	69
Double heads	2	1	4	5	3	3	3	6	17	3	3	210
Single head	..	1	..	..	1	1	..	2	22	4	1	92
Hose—												
Rubber-lined (diameter) ..	..	..	..	..	..	100′ (2½″)	..	680′ (2½″)	4,410′ (2¾″)	..	..	8,385′ (2¾″), 3,280′ (2½″)
Unlined (diameter)	2,000′ (2½″)	2,000′ (2½″)	3,500′ (2½″)	2,000′ (2½″)	1,200′ (2½″)	2,000′ (2½″)	1,600′ (2½″)	15,350′ (2½″)	1,900′ (3¾″), 4,400′ (2½″), 10,045′ (2¾″)	3,300′ (2½″)	2,000′ (2½″)	127,200′ (2½″), 39,587′ (2¾″), 1,900′ (3¾″)
Rubber, first-aid (diameter) ..	..	..	120′ (¾″)	..	..	..	..	480′ (¾″)	858′ (¾″)	..	120′ (¾″)	8,568′ (¾″), 240′ (1″)
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	130–140	100–110	100–120	115–130	120–135	90–120	130–150	..

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