

1928.
NEW ZEALAND.

FIRE BRIGADES OF THE DOMINION

(REPORT ON THE) FOR THE NINE MONTHS ENDED 31st MARCH, 1928, 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 the Inspector of Fire Brigades, Wellington, 7th September, 1928.

SIR,—

Herewith I have the honour to lay before you my twentieth annual report, this, in accordance with the Fire Brigades Act, 1926, being for the nine months ended 31st March, 1928.

One new fire district has been constituted—viz., Hikurangi—on the 14th November, 1927. Following is a list of the forty-nine Fire Boards now operating :—

Auckland	Hawera	New Plymouth	Tauranga
Balclutha	Hikurangi	Oamaru	Te Aroha
Christchurch	Hokitika	Ohakune	Te Awamutu
Dannevirke	Invercargill	Onehunga	Timaru
Dargaville	Kaipoi	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			

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

Auckland, June 18 and 19, 1928.	New Plymouth, November 8, 1927.
Balclutha, January 18, 1928.	Oamaru, January 10, 1928.
Christchurch, May 9, 1928.	Ohakune, February 7, 1928.
Dannevirke, May 16, 1928.	Onehunga, December 5, 1927.
Dargaville, December 8, 1927.	Otaki, March 8, 1928.
Dunedin, January 13 and 19, 1928.	Pahiatua, April 26, 1928.
Eltham, November 10, 1927.	Palmerston North, February 21, 1928.
Feilding, April 10, 1928.	Petone, June 28, 1928.
Foxton, March 27, 1928.	Port Chalmers, January 13, 1928.
Gisborne, March 14, 1928.	Pukekohe, June 14, 1928.
Greymouth, February 7, 1928.	Rotorua, December 13, 1927.
Hamilton, June 20, 1928.	Taumarunui, January 31, 1928.
Hastings, November 1, 1927.	Tauranga, December 14, 1927.
Hawera, November 7, 1927.	Te Aroha, June 13, 1928.
Hokitika, February 9, 1928.	Te Awamutu, November 24, 1927.
Invercargill, January 16, 1928.	Timaru, May 10, 1928.
Kaipoi, May 8, 1928.	Waihi, December 15, 1927.
Kaitangata, January 17, 1928.	Waipukurau, October 31, 1927.
Lawrence, January 12, 1928.	Wairoa, March 13, 1928.
Levin, March 26, 1928.	Waitara, November 9, 1927.
Masterton, April 27, 1928.	Wanganui, March 1, 1928.
Milton, January 11, 1928.	Wellington, July 12, 1928.
Mount Roskill, June 18, 1928.	Westport, February 8, 1928.
Napier, March 12, 1928.	Whangarei, December 7, 1927.

During the inspection visits instruction in fire drill has been given in the smaller towns ; inspections have been made and reports submitted in respect to public buildings and institutions ; advice has been given to local bodies and others in regard to water-supplies and fire-prevention matters generally ; specifications for the supply of paint and appliances have been drawn up ; also a number of broadcast and other public addresses on the subject of fire waste and fire-prevention have been delivered.

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

Lower Hutt : July 15, 1927—Inspection and report.
 Waiuku : July 28, 1927—Conference with Town Board.
 Waikato Military Camp : July 29, 1927—Inspection and report.
 Wanganui : September 5, 1927—Annual meeting.
 Levin : October 12, 1927—Special Board meeting.
 Petone : October 19, 1927—Water-supply report and purchase of additional property.
 Auckland : December 5, 1927—Inspection of proposed building-sites, Avondale.
 Mount Roskill : December 10, 1927—Opening new station.
 Rotorua : December 15, 1927—Inspection and report, King George V Hospital.
 Timaru : January 10, 1928—Conference with Boards on building extensions.
 New Plymouth : February 26 to 29, 1928—United Fire Brigades Conference.

Following upon an invitation from the executive officers of the United Fire Brigades Association, I attended their annual conference held in New Plymouth in February last, and there delivered an address to the conference delegates upon fire-prevention and fire-protection matters generally. At the request of the conference the address is to be printed and distributed to the brigades.

Two new Volunteer Fire Police Corps have been formed, in Westport and Dargaville respectively. Chief officers 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.

As in previous years, the Department has, on behalf of various Fire Boards and of the United Fire Brigades Association, indented and distributed fire-hose in accordance with requests to that effect.

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

Auckland : Purchase of new station-site at Avondale ; extensive additions to Remuera substation.
 Dunedin : 45 h.p. motor fitted with 300/350 g.p.m. pump, first-aid ladder, &c.
 Hamilton : Purchase new substation-site at Frankton.
 Hastings : Additions to central station.
 Hawera : Electric-siren installation.
 Oamaru : 45 h.p. motor fitted with 300/350 g.p.m. pump, first-aid ladders, &c.
 Ohakune : 20 h.p. motor, hose and ladder tender.
 Otaki : Electric-siren installation.
 Petone : Purchase section and residence adjoining central station.
 Pukekohe : Electric-siren installation.
 Taumarunui : 20 h.p. British motor hose-tender and 30 ft. Ajax ladder.
 Tauranga : 22.5 h.p. British motor hose-and-ladder tender ; installation street fire-alarm system.
 Timaru : Purchase of section and dwelling adjoining central station as residence for Superintendent.
 Waipukurau : 20 h.p. motor hose-and-ladder tender.
 Wanganui : Erection of brigade workshop at central station.
 Wellington : Two new substations, Miramar and Brooklyn, erected ; purchase of two 40/45 h.p. motor combination fitted with 300/350 g.p.m. turbine pump, first aid, &c., also two motor hose-and-ladder tenders.
 Whangarei : 40 h.p. motor, hose, ladder, and first-aid tender.

Superintendents have reported the following casualties as occurring in their respective districts :—

Auckland : July 24, 1927—Samuel Lodge, aged 72, burnt to death. September 25, 1927—Matthew Wishart rescued from boardinghouse but subsequently died in hospital.
 February 29, 1928—Isaac Bradovitch, boarder, jumped from veranda and sustained broken leg.
 Christchurch : Two men and a woman sustained severe bruises in dwellinghouse fire. All were removed to hospital, where the woman Mary Murphy later succumbed to her injuries.
 Wellington : November 22, 1927—George Jessen severely burned by explosive ; was removed to hospital, and later died from his injuries.

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

The number of fire calls received throughout the forty-eight fire districts for the nine months ended 31st March, 1928, totalled 2,541, or only 199 less than the 2,740 calls received during the preceding twelve months ended 30th June, 1927—proportionately an increase of 20 per cent. The property fires for the same periods, respectively 1,044 as against 1,291, give a proportionate increase of 7 per cent. only. The remainder of the calls for the nine months are made up as follows : Chimney fires, 216 ; bush, grass, and rubbish fires, 776 ; false alarms, 414 ; out-of-district fires, 91.

The fire loss (all fire losses quoted, unless otherwise stated, include both insured and non-insured loss) throughout the fire districts only for the nine months amounted to £498,671, as compared with £516,366 for the preceding twelve months, a proportionate increase of 22 per cent. The four heaviest district losses occurred in Auckland (£110,905), Wellington (£89,415), Christchurch (£67,010), and Kaiapoi (£25,984).

The fire loss throughout New Zealand for the twelve months ended 31st December, 1927, is estimated at £1,331,508. This, with the population of the Dominion for the same period estimated at 1,448,010, gives an average loss of 18s. 4½d. per head of population. The loss in the forty-eight fire districts for the same period amounted to £502,944, which, with a population of 544,303 residents within the districts, gives a *per capita* loss of 18s. 5½d., whilst the loss for the 902,707 persons resident other than in the fire districts amounted to £828,564, an average of 18s. 4¼d. *per capita*.

Serious as the fire-waste conditions in New Zealand have been for years past, the foregoing figures only too clearly demonstrate that the position is steadily going from bad to worse, and there are good reasons for the assertion that the figures in question are really an underestimate of the actual loss. Although the excessive fire waste prevalent in this Dominion has been prominently before the public for years past, very little has been done—certainly no organized effort has been made—to reduce this tremendous waste of the wealth of the community. An editorial in an English paper dealing with the fire loss in Great Britain asks, “Can any nation afford this continual drag on its resources?” That year (1925) the loss in Great Britain averaged 3s. 9d. per head of the population: the same year in New Zealand the loss averaged 15s. *per capita*. Since then the fire loss in Great Britain for 1927 has dropped to 3s. 3¼d. *per capita*, whilst in New Zealand the same year it has risen to 18s. 4½d. *per capita*; and the obvious question presents itself, “Can this Dominion afford such an enormous drain on its resources?”

There are 277 auto-detector and private fire-alarm installations throughout the fire districts, all directly connected to their respective local fire-brigade stations. Of these thirty-nine are of the combination auto-detector and sprinkler type, 134 are auto-detector systems of various patterns, and the remaining 104 are private manual alarms (these latter are alarm-boxes of various patterns operated by hand, fixed within the various buildings and connected with the fire-brigade station)—an increase for the nine months of seven auto-detector and six manual alarms.

After all the publicity that has been given in regard to the almost certain immunity from serious loss by fire in auto-protected buildings the small increase in the number of installations is disappointing, particularly so in view of it having been pointed out for years past that these auto-detector systems can be installed at very little and in some cases no actual extra cost to the proprietors of the larger business or manufacturing establishments. Much authentic evidence has been published from time to time in regard to the proved reliability and efficacy of the various auto-detector and sprinkler systems in eliminating the disastrous “late call,” and so reducing to a minimum the losses due to outbreaks of fire in the larger risks. In that reference follows an extract from the summing-up of the evidence given before the Royal Commission on Fire-prevention in Great Britain, and published in the findings of the said Commission: “It seems that in the United States, as in this country, these sprinklers were first brought into general use in connection with cotton-mills [one of the greatest of trade fire risks]. The percentage of fire loss where they were installed was so small in comparison with the premiums charged that certain mutual insurance companies were formed, and the claims presented were so few that these companies were able to return most of the premium income to their subscribers. [Evidence was given that one large company yearly returned to its subscribers an average of 93 per cent. of the premium paid.] From cotton-mills the practice of fitting them extended to other mills and industrial establishments in general. The results were on the whole so satisfactory that the insurance companies found themselves in this country, as in the United States, in a position to allow substantial rebates, ranging from 45 per cent. to a maximum of 80 per cent. where there were also other appliances, for their installation under approved conditions.” In the face of such authentic and convincing evidence of the effectiveness of the combination detector and sprinkler system, as also in the case of the auto-detector systems, in which latter reference records covering a period of ten years prove that the fire loss in auto-protected buildings amounted to only 2.61 per cent. of the premiums paid, as against a loss of 51 per cent. in the case of non-protected buildings, it is surprising that their value as a preventive against serious loss has not been more generally recognized in a practical manner by the proprietors of the larger establishments in New Zealand.

When making reference to the excessive fire waste in this Dominion I consider it necessary to state that it is not due to any comparative inefficiency of the New Zealand fire brigades but to the abnormal number of outbreaks of fire. Analysis of a number of fire brigade annual reports issued in other and widely separated parts of the British Empire show that on a population basis the “fire calls” received by those brigades average only one-fourth of the number received by the brigades of the combined fire districts in this Dominion.

Incendiarism is returned as the cause of forty-one fires, and thirty-two fires occurred in unoccupied buildings. The following particulars are some of the instances taken from the fire reports in proof that carelessness is the main factor in the outbreaks of fire. Matches thrown down alight, smoking and smouldering cigarette-butts are returned as the cause of 159 fires; sparks from washing-coppers and domestic fireplaces as accountable for ninety-six; electric irons, gas-rings, and kerosene heaters for fifty; lighted candles and live ashes for forty-three, striking matches, smoking, and naked lights in proximity to benzine for thirty. Lighted matches thrown down are returned as responsible for a loss of £24,119, smoking and cigarette-butts for £16,165, sparks from washing-coppers and domestic fireplaces for £13,112, domestic electric irons and radiators for £10,483, clothes airing before the fire for £3,665—a loss amounting to £67,544, practically all due to sheer carelessness in some form. And these are only the principal items; there are numerous smaller losses in the same category; and it should be remembered that these figures cover a period of nine months only. In the matter of this

general carelessness, whilst the framing of more stringent building by-laws, stricter regulations governing installations of electricity in its various uses, holding inquests in certain cases of outbreaks of fire, will all have some salutary result, in my opinion, and as adopted in other countries, where the fire losses are high but from 23 to 29 per cent. lower per head of population than that prevailing in New Zealand, the most effective remedy is the teaching of fire-prevention in our schools; and I would again recommend that lessons in fire-prevention be made a compulsory subject in the curriculum of the schools in this Dominion.

Referring to the serious losses occasioned by forgetfulness to switch the current off electric smoothing-irons: there has been recently placed upon the market an iron which has a permanent thermostat fixed inside the box that before the heat reaches the danger-point automatically cuts off the current. As a practical experiment the iron was stood upon a piece of common cotton shirting; after the switch had been on thirteen and a half minutes the thermostat operated, cutting off the current in the iron, and the shirting had then scorched to a medium dark-brown colour, which would probably be some 50° to 70° F. above the actual charring or ignition point. Use of irons of this description would certainly greatly minimize the danger of fire due to the cause in question.

A factor in the rapid spread of fire, and consequently in the heavier comparative fire loss, is the lining of so many buildings with scrim and paper—this more particularly applying to dwellings. In a short time the scrim and paper become dry as tinder; and it is really amazing the manner in which the fire in a building so lined spreads throughout all or most of the rooms in the structure without showing any bulk of fire or intensive destruction in any one room. In this age, when there are so many patented materials on the market at reasonable cost, some of them fire-resisting in a good degree, substitution thereof in place of scrim and paper would prove a sound economic proposition, as well as an improvement from an hygienic point of view.

In the larger towns a number of miniature factories, principally of the tailoring or dressmaking description, employing mostly girls, are now established on upper floors of some fairly tall buildings, and, as far as my knowledge goes most of them at any rate provide alternative means of escape in case of fire, but it is quite a question as to how many of the employees have any practical knowledge of, or are even aware of, the position of the means of escape other than the regular exits from the building; and this is a matter that should be attended to by the officers of the local fire brigade.

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 of fires 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.

The several stations visited, together with their equipment, were found in proper order, and the turnout in each case was smartly carried out. A practical test of the turbine pump and first-aid pumping outfit on the recently acquired motor combination unit was carried on the wharf on the 18th instant with quite satisfactory results. The extensive additions to the Remuera district station are approaching completion. A suitable site for erection of a station for protection of the Avondale district has been purchased, and the Board is now negotiating for purchase of a suitable site in the recently incorporated Tamaki district. A letter has been forwarded to the Board in regard to indicating the position of street fire-hydrants by means of splashes of whitewash.

BALCLUTHA.

Inspection, 18th January, 1928. Two officers and seven firemen in attendance at the inspection muster. The inspection drills were not carried out in a satisfactory manner: this not due to any fault on the part of the men, but to certain circumstances as set out in my report to the Board, and calling for action on their part. The attendance at fire calls averaged 60.5 per cent. of the total strength—the same percentage as last year. This average is considerably below that of other brigades generally, and rather points to the fact that the main fire-alarm bell is not sufficiently effective for the purpose. An electric siren directly connected with the Telephone Exchange should be installed.

CHRISTCHURCH.

The inspection drills 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. The Christchurch Railway Brigade has been disbanded, and seven street fire-alarm boxes, connected with the city fire-alarm system, have been fixed at various suitable points on the railway property; also, the railway steam fire-engine is to be put into proper running-order, and held at the service of the city brigade for use in case of emergency.

DANNEVIRKE.

The full strength of officers and men—eighteen all told—were in attendance at the inspection muster. The inspection drills were carried out in a smart and efficient manner, and station and equipment were found in good order. The attendance at fourteen general alarms averaged 80·6 per cent. of the total membership of the brigade—a good record. The brigade equipment is equal to requirements for the time being.

DARGAVILLE.

Inspection, 8th December, 1927. One officer and fifteen firemen present at the inspection muster. The inspection drills were carried out in a very satisfactory manner. Attendance at the sixteen fire calls averaged 70·1 per cent. of the total strength—a fair record. The station and equipment, with exception of branches and nozzles, were found in good order. Two new branches and four new nozzles are required.

DUNEDIN.

Inspection, 13th and 19th January, 1928. The inspection drills and turnouts at the several stations were performed in a smart and efficient manner, and all stations and equipment were found in good order. The newly acquired motor combination unit stationed in Roslyn appears to me heavy for work in that particular district; a lighter and fast machine would be more suitable. The long delay, for legal reasons unavoidable, in erection of the proposed new headquarters station on the site purchased in 1924 is very unfortunate, and this combined with the need for erection of substations in the Anderson's Bay and Mornington districts leaves much to be desired in fire-protection matters in the Dunedin Fire District.

A second visit was made for the purpose of consulting with the Board and the Board's architect in connection with the plans for the proposed new headquarters fire-station.

ELTHAM.

Inspection, 10th November, 1927. Two officers and twelve 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 six fire calls averaged 83 per cent. of the total strength—a good record. Provision of additional accommodation at the fire-station is required, and the brigade should be provided with "fire-foam" extincteurs.

FEILDING.

Two officers and thirteen firemen were in attendance at the inspection muster. The inspection drills were carried out in a satisfactory manner, and station and equipment were found in good order. Attendance at nine general alarms averaged 70·7 per cent. of the total strength—a fair record. Several recommendations were made, in particular that an electric gong be fixed in the engine-house connected by direct wire with the Telephone Exchange.

FOXTON.

Inspection, 27th March, 1928. Two officers and ten firemen were present at the inspection muster. The inspection drills were carried out in a satisfactory manner. The equipment was in good order and the station in better condition than hitherto. The attendance at thirteen fire calls averaged 50·2 per cent. of the total strength—a low average, but probably due to the present ineffective alarm-siren. A more powerful siren connected by direct wire to the Telephone Exchange should be installed. The stock of fire-hose is insufficient, and a better and more uniform method of marking the positions of the street fire-hydrants is very necessary.

GISBORNE.

Inspection, 14th March, 1928. Two officers, twenty firemen, and four cadets were present at the inspection muster; also a strong detachment of the recently organized Volunteer Fire Police Corps was on parade. The required inspection drills were carried out in an efficient manner, and the station and equipment were found in good order. Attendance at thirty-six general fire calls averaged 87 per cent. of the total strength—a good record. A first-aid pumping outfit should be installed on the first fire-call motor; also, a more suitable fire-ladder is required—probably a 35 ft. trussed extension ladder will meet requirements for the present.

GREYMOUTH.

Inspection, 7th February, 1928. The total strength of the brigade—two officers and eighteen firemen—were in attendance at the inspection muster. The various inspection drills were carried out in a satisfactory manner, and the station and equipment found in good order. Attendance at the nine fire calls averaged 87 per cent. of the total strength—a good record. The water-supply for fire-extinction purposes is still unsatisfactory, but I understand the Borough Council have the matter now in hand.

HAMILTON.

Inspection, 10th May, 1927. Two officers and twenty-two firemen were in attendance at the inspection muster. A contingent of officers and members of the Volunteer Fire Police Corps was also on parade. The inspection drills were carried out in a very efficient manner, and the station and equipment were in first-class order. The attendance at thirty-eight general alarms averaged 76·5 per cent. of the total strength—a fair record. Purchase of a section of land for erection of a fire-station in the Frankton district was again recommended, particularly in view of the inadequate water-supply for fire-extinction purposes in the Hamilton Fire District, to which matter attention has been regularly called for years past and this has now assumed a very serious aspect.

HASTINGS.

Inspection, 1st November, 1927. The full strength of the brigade—two officers and eighteen firemen—were in attendance at the inspection muster. The various inspection drills were carried out efficiently, and station and equipment found in first-class order. Attendance at fifteen general alarms averaged 69·3 per cent. of the total strength of the brigade—a fair record. Additions and structural alterations now being carried out at the central station will improve the working efficiency of the brigade.

HAWERA.

Inspection, 7th November, 1927. 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 station and equipment found in first-class order. There has been a very low average of attendance at fire calls during the last three years, this due most probably to the ineffectiveness of the firebell alarm. However, a powerful electric siren has been installed, and a better attendance may be expected in future. Certain recommendations were made as to additions and alterations at the central station which will give better facilities for carrying out the brigade work, also as to the purchase of additional land adjoining the present central-station site.

HOKITIKA.

Inspection, 9th February, 1928. Two officers and twenty-two firemen were on parade at the inspection muster. The inspection drills were carried out in an efficient manner, and the several hose-reel stations and the equipment were found in good order and condition. The attendance at the nine fire calls averaged 85·5 per cent. of the total strength—a good record. Certain recommendations were made in my report to the Board.

INVERCARGILL.

Inspection, 16th January, 1928. The Deputy Superintendent and sixteen firemen were on parade at the inspection muster. The inspection drills were carried out in a smart and efficient manner, and station and equipment were in first-class order. For years past in each of my reports comment has been made upon the inadequate water-supply for fire-extinction purposes in Invercargill, both as to volume and pressure. Very dangerous conditions exist to-day in that respect, which may easily result in a most disastrous fire at any moment.

KAIAPOI.

Two officers and eleven firemen were in attendance at the inspection muster. The inspection drills were carried out in a willing and fairly creditable manner, but more instruction and drill is necessary. The attendance at the six fire calls averaged 65·7 per cent. of the total strength. The station, motor-pump, and other equipment were in good order. Attention was again called to the necessity of sinking a sump in the North Road for the protection of a number of properties in that vicinity.

KAITANGATA.

Inspection, 17th January, 1928. One officer and five firemen only, out of a total strength of twelve, were in attendance at the inspection parade—not a satisfactory muster. As reported last year, the motor first-aid and hose tender is faulty in design and badly constructed. The body of the machine requires remodelling and fitting with an hydraulic hose-reel; also, the present water-main should be extended along Edison Street—not a costly undertaking—which would afford a reasonable degree of protection for a very large number of the buildings in the town.

LAWRENCE.

Inspection, 13th January, 1928. Two officers and eight firemen were in attendance at the inspection muster. During the course of the inspection drills it was apparent that more practice in the squad drill is necessary. The stock of fire-hose is dangerously low, only 304 ft. of good serviceable hose being available; also, as pointed out in my previous report, the water-reticulation pipes, through excessive corrosion, are in a dangerous condition as for fire-prevention purposes; further, there are not sufficient street fire-hydrants fitted on the mains.

LEVIN.

Inspection, 26th March, 1928. Two officers and twelve firemen were in attendance at the inspection muster. A contingent of the recently formed Volunteer Fire Police Corps was also in attendance. The inspection drills were carried out in a smart and efficient manner, and station and equipment were found in first-class order. Attendance at the five fire calls averaged 82·5 per cent. of the total strength—a good record.

MASTERTON.

Two officers and eight firemen were on parade at the inspection muster—in the circumstances a creditable attendance. Certain drills were carried out in a satisfactory manner, and the station and equipment were found in good order and condition. Attendance at nine general fire calls averaged 75·2 per cent. of the total strength—a fair record. During the course of the inspection drill the suction-pipe of the Church Street sump was found to be defective.

MILTON.

Inspection, 12th January, 1928. Two officers and ten firemen were in attendance at the inspection muster. The inspection drills were carried out in a satisfactory manner, showing a decided improvement on my previous inspection. The station and equipment were found in good order and condition. A test off the 6 in. main in Unwin Street showed the pressure of water to be most inadequate for fire-suppression purpose.

MOUNT ROSKILL.

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 first-class order. The attendance at twenty-six general alarms averaged only 32·5 per cent. of the total strength. As at the six fires that occurred between the hours of 11 p.m. and 5.30 a.m. only six men, or 33 per cent., of the total strength, were in attendance, it would appear that the alarm-siren is not sufficiently powerful.

NAPIER.

Inspection, 12th March, 1928. At the central station two officers and nineteen firemen were on parade. At the Port station the full strength of the section—one officer and eleven firemen—were in attendance. The inspection drills at the central station were carried out in a satisfactory manner. The Port section deserve special commendation in that particular. Some new branches and nozzles are required at the central station. The motor-pump and suction-hose at the Port station required attention, also a hot-water system should be installed at this station. Other than the above requirements, both stations and equipment were found in good order and condition. A recommendation was made that a Volunteer Fire Police Corps should be organized in Napier.

NEW PLYMOUTH.

Inspection, 8th November, 1927. At the inspection muster the full strength of the Brigade, twenty-five officers and men, were on parade. The inspection drills were carried out in a satisfactory manner, and the station and equipment found in good order and condition. The attendance at fifteen general fire calls averaged 77·6 per cent. of the total membership—a fair record. A recommendation was made that a suitably equipped workshop and reserve hose storeroom should be erected. Other minor recommendations were also made.

OAMARU.

Inspection, 10th January, 1928. Two officers and eleven firemen were in attendance. The required inspection drills were carried out in a satisfactory manner, showing quite an improvement in that respect, and the station was in good order. Some of the hose was leaky—not in fit condition for use at a fire; it should be repaired or condemned. Some of the street hydrants were entirely covered with road-metal or bitumen; more attention should be paid to keeping them in good working-order. Attendance at the six fire calls averaged 77·7 per cent. of the total strength—a fair record.

OHAKUNE.

Inspection, 30th January, 1928. Two officers and nine firemen were in attendance at the inspection muster. The required inspection drills were carried out in a satisfactory manner. Attendance at the nineteen fire calls averaged 70·2 per cent. of the total membership—a fair record. The station and trailer motor-pump were in good order, but in regard to the newly acquired motor hose-and-ladder tender a new body is urgently required. At present the hose and appliance box is too small to carry the necessary equipment; there is no driver's footboard, and the feet of men on the front seat might easily become entangled in the uncovered crank-shaft flexible joint; nor is there any running footboarding to enable men to mount the machine: further, in accordance with the Motor Regulations, the machine must be fitted with a siren in place of the present feeble whistle. Other minor recommendations were made in my report to the Board.

ONEHUNGA.

Inspection, 9th December, 1927. 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 appliances were in first-class order and condition. Attendance at the eighteen actual fires averaged 72·2 per cent. of the total membership—a fair record. Some minor recommendations were made at the time and in my report.

A second visit to the central fire station was made on the 16th June, 1928, when examination of the system of routine work and duties, as also the record and detailed reports, proved the system and the work at fires to be quite equal to any of the more efficient brigades under my supervision.

OTAKI.

Inspection, 8th March, 1928. Two officers and twelve firemen were in attendance at the inspection muster. The inspection drills were carried out in a satisfactory manner, showing considerable improvement in that respect. The station and equipment, with exception of the fire-alarm siren, were found in good order and condition. Attendance at five general alarms of fire averaged 71.8 per cent. of the total strength—a fair record. In regard to the siren, a more powerful instrument should be installed.

PAHIATUA.

Two officers and eight firemen were in attendance at the inspection muster. The inspection drills were carried out in a fairly satisfactory manner, but more drill and instruction is necessary. Attendance at the nine fire calls averaged 76.6 per cent. of the total strength—a fair record. The brigade is numerically weak, and the authorized strength should be increased to not less than fourteen all told. As there does not appear to be any immediate prospect of extension of the reticulation or of any other material improvement in the water-supply for fire-extinction purposes, the Board should take into consideration the provision of a pumping outfit. Several minor matters, as pointed out at the time, require attention.

PALMERSTON NORTH.

Inspection, 21st February, 1928. Two officers and nineteen firemen were on parade at the inspection muster. Owing to water-shortage only dry drill was required, which was carried out in a very smart and efficient manner. The station and equipment were found in their usual good order and condition. Conditions in regard to the water-supply for fire-extinction purposes have assumed a very serious aspect in Palmerston North. At times a pressure of only 15 lb. is registered on the station gauge, and it necessitates the utmost vigilance on the part of both citizens and the fire brigade to prevent outbreaks of fire, which may easily result in most disastrous consequences in such circumstances.

PETONE.

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 equipment were in their customary good order. Attendance at the twelve general alarms averaged 60.8 per cent. of the total membership. A section with a five-roomed cottage thereon adjoining the central-station site has been purchased, and utilized for married quarters. Although attention has been regularly called for years past to the inadequate supply of water for fire-extinction purposes in Petone, no improvement has yet been carried out, and conditions in that respect have become very serious.

PORT CHALMERS.

Inspection, 13th January, 1928. Two officers and six firemen were present at the inspection muster—a good attendance in the circumstances. The inspection drills were carried out in a satisfactory manner. The motor hose-tender was not in good running-order at the time, otherwise the equipment was in good order. The attendance at the eight fire calls averaged 79.1 per cent. of the total membership—a good record.

PUKEKOHE.

Two officers and eleven firemen were in attendance at the inspection muster. The inspection drills were carried out in a smart and efficient manner, and the equipment was in good order. Attendance at the eight general alarms averaged 79.6 per cent. of the total strength—a good record. The present station-shed is in a very dilapidated condition, with practically no accommodation for the men. A new site was purchased some eighteen months ago, but so far erection of the proposed new station has not been begun. No improvement has been made in the water reticulation for fire-extinction purposes, and this also is a matter that requires attention.

ROTORUA.

Inspection, 13th December, 1927. Two officers and fifteen 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 equipment were found in their usual good order and condition. The attendance at the twenty-eight general alarms averaged 72.1 per cent. of the total membership—a fair record. The time is fast approaching when it will be necessary to provide further residential accommodation at the fire-station, and the Board would be well advised to secure additional land adjoining the section on which the station now stands.

TAUMARUNUI.

Inspection, 31st January, 1928. Two officers and thirteen firemen were in attendance at the inspection muster. 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 eleven fire calls averaged 83.5 per cent. of the total strength of the brigade—a good record. An 18 h.p. 25 cwt. English motor-chassis was purchased, a well-designed body built thereon locally, and the machine is giving very satisfactory results. The older motor hose-tender is to be retained for stand-by purposes, &c. Also, a 30 ft. Ajax extension ladder has been added to the equipment.

TAURANGA.

Inspection, 14th December, 1927. One officer and fourteen firemen were in attendance at the inspection muster. The inspection drills were carried out in a satisfactory manner, and the equipment was in good order. Attendance at the five fire calls averaged 94.4 per cent. of the total strength—a very good record. A street fire-alarm system consisting of one circuit with eight call-boxes thereon

has been installed. An English 22.5 h.p. 30 cwt. motor-chassis has been purchased, a body built thereon locally, and fitted with the CO₂ 30-gallon chemical apparatus originally carried on the replaced motor. On the evening of my inspection the station gauge registered only 45 lb. pressure, which with 50 ft. of hose and a $\frac{3}{4}$ in. nozzle dropped to 15 lb. pressure. This, if a true indication, reveals a serious condition in regard to the water-supply for fire-extinction purposes.

TE AROHA.

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 in good order. Attendance at the nine fire calls averaged 90.2 per cent. of the total membership—a very good record. The present motor hose-tender is certainly underpowered, and its weight-carrying capacity quite too low for the work it is called upon to do, in regard to hill-climbing efficiency and to the number of men riding on the machine. The Board would be well advised to limit the number of men carried on the machine to not more than eight in all. The extension ladder to which I have several times previously called attention as being unsafe for fire-brigade usage is being still carried on the motor-tender.

TE AWAMUTU.

Inspection, 24th November, 1927. Two officers and nine firemen were in attendance at the inspection muster. There was a very creditable improvement in the carrying-out of the inspection drills. The station and (with some exceptions, pointed out at the time) the equipment were in good order. With a total strength of fourteen, attendance at six general alarms averaged only 59.3 per cent. of the membership—not a good record. The extension ladder is not the most suitable for fire-brigade work, and will require care when handling it at a fire. I again recommend installation of a hot-water service at the fire-station, as also other minor matters requiring attention.

TIMARU.

Two officers and twenty 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 in good order and condition. Attendance at twenty-two fire calls averaged 83.1 per cent. of the total membership—a good record. A permanent Superintendent has been appointed, and an additional permanent fireman placed on the strength. A section with residence thereon has been purchased for use of the Superintendent, also a second section, all adjoining the central-station site, has been purchased, and two cottage sets of quarters for the accommodation of married firemen are now in course of erection.

WAIHI.

Inspection, 15th December, 1927. One officer and ten firemen were in attendance at the inspection muster. The inspection drills were carried out in a willing and satisfactory manner, and there is continued improvement in that respect. The equipment was found in good working-order with exception of the nozzles. Attendance at the twenty-three fire calls averaged 57.2 per cent. of the total membership. A set of new nozzles is required. The water-supply for fire-extinction purposes in Waihi is not satisfactory, due to limited reticulation and small diameter of many of the fire-mains. A local system of street fire alarms is now being installed.

WAIPIKURAU.

Inspection, 31st October, 1927. Two officers and twelve firemen were in attendance at the inspection muster. The inspection drills were carried out in a satisfactory manner. Attendance at the five fire calls averaged 70 per cent. of the total membership—a fair record. The test of the newly installed electric fire-alarm siren proved satisfactory, and the body of the new motor-chassis then in course of construction is well designed for its purpose. At the time of my inspection provision of more effective equipment was in a state of transition, and required prompt action, but since that date most of the necessary equipment has been provided.

WAIROA.

Inspection, 13th March, 1928. Two officers and six firemen were in attendance at the inspection muster. The required inspection drills, both oral and practical, were carried out in a creditable manner, and the station and equipment were found in good order. Attendance at the six fire calls averaged 62.5 per cent. of the total membership. Under local conditions the brigade is numerically weak, and the authorized strength should be increased to sixteen. The stock of fire-hose is insufficient, and a further supply should be provided; also, some of the street hydrants and the indicators are overgrown with grass or other herbage, and that is a matter requiring constant attention. The siren alarm was out of order; subsequent examination showed the mechanism obstructed by birds' nests. The louvres should be removed and the turret enclosed with wide-meshed wire netting.

WAITARA.

Inspection, 9th November, 1927. Two officers and eight firemen were in attendance at the inspection muster. During the course of the inspection drill, whilst showing an improvement, it was apparent that more drill and instruction in the squad drills was necessary. Attendance at the three fire calls averaged 81.3 per cent. of the total strength—a good record. The brigade should be provided with an extincteur of the "fire-foam" type.

WANGANUI.

Inspection, 1st March, 1928. Two officers and twenty-one firemen were in attendance at the inspection muster. A strong contingent of officers and members of the Volunteer Fire Police Corps were also on parade. The various inspection drills were carried out in a smart and efficient manner, and station and all equipment were found in first-class order. A workshop has been erected, but requires furnishing with certain machinery to utilize it to advantage.

The present station-site, in accordance with present ideas, is already congested, and previous recommendations are repeated in regard to purchase of additional land. Through want of foresight in this matter quite a number of Fire Boards have found in the past, and some at the present moment are finding acquirement of land adjoining their fire-stations a costly matter, hence the previous recommendations to the Wanganui Fire Board for purchase of certain property adjoining the present central-station site.

WELLINGTON.

All stations, appliances, and other equipment were found in proper order. There has been a large expenditure on capital account in the Wellington Fire District during the past year, principally for two new substations erected and placed in commission—one in Miramar, having two sets of married quarters, &c., the other in Brooklyn, with three sets of married quarters, &c. Major additions to equipment include two 40–45 h.p. motor combination fire-engines fitted with 300/350 g.p.m. turbine pumps, first-aid pumping outfit, ladder, &c.; also two commercial chassis purchased, and bodies built thereon locally, to serve as hose-and-ladder tenders.

WESTPORT.

Inspection, 8th February, 1928. One officer and sixteen firemen were in attendance at the inspection muster. In my observation the members of the brigade are an active and willing body of men, but during the course of the required inspection drills it was clearly evident that more regular drill and instruction is necessary to attain the efficiency expected from a smart brigade. Attendance at the six fire calls averaged 67·6 per cent. of the total strength. Failing installation of a proved and reliable street fire-alarm system, a suggestion was made that an electric fire-alarm siren, having a direct wire connected with the telephone exchanged, be installed.

WHANGAREI.

Inspection, 7th December, 1927. Two officers and eleven firemen were in attendance at the inspection muster. The inspection drills were carried out in a smart and satisfactory manner, and the station and appliances were in good order. Attendance at fourteen general fire calls averaged 66·7 per cent. of the total membership. A 48 h.p. motor first-aid ladder-and-hose tender has been added to the equipment. Minor recommendations were made in my report to the Board.

TABLES.

1. SUMMARY OF FIRE CALLS, 1927-28.

District.	Fires.	Chimney Fires.	Bush, Grass, and Rubbish Fires.	False Alarms.	Out of District.	Totals.
Auckland	178	18	164	73	29	462
Balclutha	3	..	..	..	..	3
Christchurch	117	19	29	62	15	242
Dannevirke	8	1	1	3	2	15
Dargaville	11	..	5	..	..	16
Dunedin	114	49	38	78	..	279
Eltham	6	..	..	..	..	6
Feilding	8	1	2	..	..	11
Foxton	5	..	8	..	..	13
Gisborne	30	1	2	1	5	39
Greymouth	6	1	2	..	..	9
Hamilton	22	5	35	3	1	66
Hastings	12	1	6	1	..	20
Hawera	4	5	3	2	3	17
Hokitika	7	1	..	1	..	9
Invercargill	25	9	15	14	..	63
Kaipoi	3	1	2	..	..	6
Kaitangata	1	..	..	..	..	1
Lawrence	1	..	..	..	..	1
Levin	4	1	..	..	..	5
Masterton	11	5	8	2	2	28
Milton	1	1	..	..	..	2
Mount Roskill	11	3	17	2	4	37
Napier	28	5	1	3	..	37
New Plymouth	17	1	1	1	..	20
Oamaru	5	1	..	..	..	6
Ohakune	11	..	8	..	..	19
Onehunga	18	1	32	4	6	61
Otaki	4	..	2	..	..	6
Pahiatua	2	2	2	3	..	9
Palmerston North	46	7	46	30	7	136
Petone	6	..	3	4	..	13
Port Chalmers	4	..	4	..	..	8
Pukekohe	6	..	1	2	..	9
Rotorua	12	5	12	2	..	31
Taumarunui	9	..	1	1	..	11
Tauranga	5	..	..	..	..	5
Te Aroha	6	..	2	1	..	9
Te Awamutu	2	3	2	..	..	7
Timaru	14	3	4	2	..	23
Waihi	12	..	11	..	..	23
Waipukurau	3	..	2	..	..	5
Wairoa	6	..	..	..	..	6
Waitara	1	..	2	..	..	3
Wanganui	45	8	152	13	10	228
Wellington	178	57	147	106	6	494
Westport	5	..	1	..	..	6
Whangarei	11	1	3	..	1	16
Totals	1,044	216	776	614	91	2,541

2. SUMMARY OF FIRE LOSSES, 1927-28.

District.	Insured.	Uninsured.	Totals.	District.	Insured.	Uninsured.	Totals.
	£	£	£		£	£	£
Auckland	105,626	5,279	110,905	Oamaru	2,870	5,005	7,875
Balclutha	1,800	110	1,910	Ohakune	4,625	3,815	8,440
Christchurch ..	65,988	1,022	67,010	Onehunga	3,074	315	3,389
Dannevirke	3,676	10	3,686	Otaki	2,255	600	2,855
Dargaville	13,764	124	13,888	Pahiatua	1,150	775	1,925
Dunedin	22,224	888	23,112	Palmerston North ..	10,554	233	10,787
Eltham	1,607	110	1,717	Petone	756	25	781
Feilding	831	95	926	Port Chalmers	560	350	910
Foxton	602	200	802	Pukekohe	4,905	775	5,680
Gisborne	14,334	3,170	17,504	Rotorua	1,759	880	2,639
Greymouth	645	..	645	Taumarunui	7,392	550	7,942
Hamilton	2,713	332	3,045	Tauranga .. ..	..	8	8
Hastings	2,192	280	2,472	Te Aroha	4,094	161	4,255
Hawera	16	8	24	Te Awamutu	4,510	..	4,510
Hokitika	4,755	1,852	6,607	Timaru	2,034	71	2,105
Invercargill	15,856	57	15,913	Waihi	1,857	1,380	3,237
Kaipoi	25,764	220	25,984	Waipukurau	354	360	714
Kaitangata	150	200	350	Wairoa	2,167	213	2,380
Lawrence	560	..	560	Waitara	520	230	750
Levin	2,075	152	2,227	Wanganui	5,056	467	5,523
Masterton	2,025	250	2,275	Wellington	78,963	10,452	89,415
Milton .. ..	..	20	20	Westport	100	26	126
Mount Roskill ..	1,660	210	1,870	Whangarei	7,039	2,775	9,814
Napier	13,277	3,075	16,352				
New Plymouth ..	2,133	674	2,807	Totals	450,867	47,804	498,671

3. COST OF FIRE BRIGADES (CAPITAL EXPENDITURE INCLUDED).
As taken from the Estimates for the respective Years.

District.	Year ending 30th June, 1923.	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.
	£	£	£	£	£	£	£
Auckland	16,325	16,700	18,400	20,000	21,000	15,000	23,000
Balclutha	400	400	500	500	500	425	450
Christchurch ..	12,100	12,100	13,000	13,000	12,000	9,000	12,000
Dannevirke	585	739	620	614	636	662	792
Dargaville	504	816	600	675	675	450	674
Dunedin	13,500	13,500	13,500	15,500	15,500	11,625	15,700
Eltham .. ..	..	..	750	600	500	437	350
Feilding	648	623	554	639	528	843	776
Foxton	250	397	626	594	467	388	465
Gisborne	1,734	2,188	2,200	2,462	3,104	3,346	2,393
Greymouth	887	948	949	1,005	1,483	1,250	1,025
Hamilton	2,350	2,650	2,800	2,930	2,650	1,906	2,725
Hastings	837	1,012	1,206	1,120	1,330	1,490	1,400
Hawera	837	713	1,241	1,302	1,320	956	1,349
Hikurangi .. ..	..	..	..	..	..	..	511
Hokitika	570	570	480	550	500	512	583
Invercargill .. ..	..	10,300	3,200	4,300	4,755	4,331	5,448
Kaipoi .. ..	..	947	1,279	663	636	535	683
Kaitangata	192	175	290	230	186	161	270
Lawrence	80	90	100	90	100	75	100
Levin	921	799	803	586	617	600	730
Masterton	1,880	1,946	1,649	1,790	1,728	1,298	1,771
Milton	167	240	340	200	178	100	200
Mount Roskill ..	..	..	..	..	..	1,264	1,300
Napier	1,671	2,886	3,522	3,852	3,730	3,335	4,094
New Plymouth ..	2,183	1,965	1,953	2,076	1,960	1,642	1,887
Oamaru	750	800	950	1,050	1,250	1,300	1,300
Ohakune	435	348	420	537	474	500	550
Onehunga .. ..	..	..	..	..	1,670	1,334	1,655
Otaki .. ..	..	..	..	325	399	416	275
Pahiatua .. ..	..	..	..	..	590	320	333
Palmerston North ..	2,100	2,143	2,224	4,502	4,298	3,269	4,128
Petone	1,306	1,450	1,394	1,484	1,591	1,227	1,929
Port Chalmers ..	325	310	269	252	214	220	212
Pukekohe .. ..	..	..	..	..	330	745	882
Rotorua	1,340	1,328	1,356	958	1,000	890	1,293
Taumarunui	640	650	445	530	500	414	592
Tauranga	541	499	559	509	659	588	953
Te Aroha	683	573	621	778	833	680	680
Te Awamutu .. ..	..	..	..	..	..	420	570
Timaru	1,750	1,850	2,250	2,050	2,350	2,400	3,000
Waihi	710	822	651	837	583	622	734
Waipukurau .. ..	..	..	..	..	..	495	320
Wairoa .. ..	..	..	..	..	..	491	467
Waitara	200	120	220	234	263	198	237
Wanganui	4,800	4,450	7,050	7,400	8,150	6,000	8,000
Wellington .. ..	..	..	..	..	18,715	25,400	26,400
Westport .. ..	..	..	550	630	570	500	500
Whangarei	550	1,000	1,016	1,018	890	800	1,130
Totals	74,754	89,052	90,541	98,372	121,412	110,476	136,816

5. SUMMARY.—PERSONNEL, PLANT, AND APPLIANCES.

	Auckland.	Baldutha.	Christchurch.	Dannevirke.	Dargaville.	Dunedin.	Eltham.	Feilding.	Foxton.	Gisborne.	Greymouth.	Hamilton.
Brigades, total strength of	84	14	43	20	20	50	17	20	15	25	20	24
Fire-stations—												
Residential	5	1	4	1	1	3	1	1	1	1	2	1
Non-residential	1	..	..	..	..	..	..	1	..	..	5	1
Fire-alarms—												
Circuits (C), boxes (B)	35 (C), 294 (B)	..	21 (C), 166 (B)	2 (C), 16 (B)	..	15 (C), 157 (B)	..	..	..	4 (C), 58 (B)	..	4 (C), 41 (B)
Automatic, private	74	..	46	..	..	40	..	..	..	..	..	6
Telephones (points)	20	3	8	2	4	7	3	3	4	..	8	2
Motors—												
Hose-and-ladder tenders (h.p.)	5 (40)	1 (22)	..	1 (40)	1 (20)	1 (38)	1 (22)	1 (20)	1 (22)	1 (30)	..	1 (20)
First-aid, hose-and-ladder (h.p.)	3 (65, 50, 38)	..	3 (40, 40, 25)	..	..	4 (70, 3, 60)	..	..	..	1 (50)	1 (22)	..
Pump, hose-and-ladder (h.p.)	1 (110)	..	2 (70, 30)	..	..	..	..	1 (30)	..	2 (36) Trailers	..	1 (60)
First-aid, pump, hose-and-ladder (h.p.)	1 (50)	..	3 (50)	..	..	2 (90, 45)	..	..	..	..	1 (30)	1 (40)
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')	..	..	..	..	..	..
Extension (height) on motors*	2 (22')*, 2 (35')*	1 (24')*	6 (20 to 45)*	1 (35')*	1 (35')*	2 (20'; 4 30')*	1 (34')*	2 (30', 30')*	1 (26')*	2 (35', 24')*	1 (35')*	3 (50', 35', 30')*
Single, coupling (total feet)	18 (300')	3 (57')	16 (160')	4 (82')	1 (25')	1 (25')	3 (61')	5 (61')	..	3 (66')	5 (120')	3 (36')
Jumping-sheets	5	..	3	..	..	1	..	..	..	1	1	1
Smoke jackets (J), helmets (H), masks (M)	2 (J), 4 (H)	..	1 (J), 3 (H)	2 (H)	..	1 (J), 2 (H)	2 (H)	4 (M)	..	1 (H)	..	1 (M)
Hand-pumps	5	1	8	2	1	6	1	1	1	1	1	1
Hand chemical extinguishers	10	2	10	2	..	9	2	2	2	4	2	3
Portable standpipes—												
Ratchet valves	19	..	1	..	1	12	1	..	..	..	..	2
Double heads	..	2	19	8	2	7	3	6	3	7	9	2
Single heads	7	..	1	..	2	1	..	..	..	4	1	6
Hose—												
Rubber-lined (diameter)	1,400' (2 $\frac{3}{4}$ ")	..	1,900' (2 $\frac{3}{4}$ ")	100' (2 $\frac{3}{4}$ ")	..	200' (2 $\frac{3}{4}$")	..	..	..	..	..	500' (2 $\frac{3}{4}$ ")
Unlined (diameter)	400' (4") ; 12,100' (2 $\frac{3}{4}$ ")	1,600 (2 $\frac{1}{2}$ ")	15,182' (2 $\frac{3}{4}$ ")	3,500 (2 $\frac{1}{2}$ ")	1,600' (2 $\frac{1}{2}$ ")	15,550' (2 $\frac{1}{2}$ ")	2,500' (2 $\frac{1}{2}$ ")	2,400' (2 $\frac{1}{2}$ ")	1,500' (2 $\frac{1}{2}$ ")	3,500' (2 $\frac{1}{2}$ ")	3,000' (2 $\frac{1}{2}$ ")	3,500' (2 $\frac{1}{2}$ ")
Rubber, first-aid (diameter)	1,080' (4")	..	800' (4")	..	..	700' (4")	..	180' (4")	..	180' (4")	180' (4")	180' (4")
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	95-105	80-85	85-95	80-140	75-90	85-105	53-120	86-114	45-85	40-45

5. SUMMARY.—PERSONNEL, PLANT, AND APPLIANCES—continued.

	Hastings.	Hawera.	Hokitika.	Invercargill.	Kaipoi.	Kaitangata.	Lawrence.	Levin.	Masterton.	Milton.	Mt. Roskill.	Napier.	New Plymouth.	Oamaru.
Brigades, total strength of	20	20	30	21	14	12	12	16	20	14	18	37	25	17
Fire-stations—														
Residential ..	1	1	..	1	1	..	..	1	1	1	1	2	1	1
Non-residential ..	..	..	5	..	..	1	..	..	..	..	..	1	..	1
Fire-alarms—														
Circuits (C), boxes (B) ..	4 (C), 30 (B)	2 (C), 20 (B)	..	4 (C), 36 (B)	..	..	..	1 (C), 6 (B)	6 (C), 16 (B)	..	..	3 (C), 26 (B)	2 (C), 28 (B)	..
Automatic, private ..	..	1	..	9	..	..	..	..	1	..	..	..	..	..
Telephones (points) ..	3	1	4	2	1	..	..	3	2	2	1	6	3	1
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 (35, 30)	..	..	..	..	1 (22)	..	..	1 (25)	..	..	1 (35)	..	1 (40)
Pump, hose-and-ladder (h.p.) ..	..	..	..	1 (60)	1 (22)	..	..	..	..	..	..	..	..	..
First-aid, pump, hose-and-ladder (h.p.) ..	..	1 (35)	..	1 (75)	..	..	..	..	1 (45)	..	1 (30)	2 (65, 40)	1 (65)	1 (40)
General utility	..	..	..	1 (20)	..	..	..	..	..	..	..	1 (20)	..	..
Petrol-electric, ladders (height) ..	..	..	1 (380)	..	1 (300)	..	..	..	..	..	..	..	..	..
Fire-engines, steam (g.p.m.) ..	..	..	5	..	..	2	..	..	..	..	..	..	..	..
Hose-carts, reels (hand-drawn) ..	2	2	..	1	1	..	2	1	2	1	..	2	1	1
Ladders—														
Motor-traction (height) ..	2 (35', 25')*	2 (35', 35')*	1 (36')	3 (50', 35', 30')*	1 (30')*	1 (20')	..	1 (24')*	2 (30', 35')*	1 (16')*	1 (30')	3 (60', 35', 35')*	2 (50', 35')*	2 (30', 35')*
Extension (height) on motors*	..	7 (121')	3 (59')	2 (55')	3 (24')	..	2 (49')	3 (63')	5 (65')	1 (25')	1 (10')	10 (261')	6 (100')	2 (41')
Single, coupling (total feet) ..	2 (35')	..	..	1	3 (H)	..	..	1	..	..	..	2	1	..
Jumping-sheets ..	2	..	..	2 (H)	..	..	..	2 (H)	2 (H)	..	2 (M)	8 (H)	2 (H)	1 (H)
Smoke jackets (J), helmets (H), masks (M)	3 (M)	1 (H)	..	..	..	..	..	..	..	..	..	..	..	..
Hand-pumps ..	2	2	2	3	1	4	1	1	1	1	..	2	2	2
Hand chemical extinguishers ..	2	2	..	8	2	..	2	2	2	3	2	8	10	1
Portable standpipes—														
Ratchet valves ..	..	1	..	..	..	..	1	1	2	..	..	..	..	1
Double heads ..	5	3	5	2	..	..	1	1	3	2	3	12	7	4
Single heads ..	..	2	2	8	..	..	..	2	3	..	..	2	1	1
Hose—														
Rubber-lined (diameter) ..	300' (2½")	..	..	..	3,000' (2½")	1,600' (2½")	..	..	50' (2½")	..	..	500' (2½")	..	..
Unlined (diameter) ..	2,500' (2½")	3,000' (2½")	2,500' (2½")	6,500' (2½")	..	120' (1")	900' (2½")	2,000' (2½")	2,350' (2½")	1,700' (2½")	2,000' (2½")	8,500' (2½")	3,950' (2½")	2,400' (2½")
Rubber, first-aid (diameter) ..	180' (¾")	180' (¾")	..	160' (¾")	..	G	..	..	120' (¾")	100' (¾")	120' (¾")	360' (¾")	200' (¾")	180' (¾")
Water-supply (P = pumping; G = gravitation)	..	P and G	G	P and G	River and sumps	(partial)	G	G	G	P and G	G	P and G	G	G
Pressure, average, noon-midnight ..	126-135	30-70	75-100	45	..	70	65-80	90-100	80-95	60	45-60	65-139	110-125	90-100

5. SUMMARY.—PERSONNEL, PLANT, AND APPLIANCES—continued.

—	Ohakune.	Onehunga.	Otaki.	Pahiatua.	Palmerston North.	Petone.	Port Chalmers.	Pukekohe.	Rotorua.	Taumarunui.	Tauranga.	Te Aroha.
Brigades, total strength of	14	18	18	14	25	19	11	14	20	21	16	16
Fire-stations—												
Residential	1	1	1	1	2	1	..	..	1	1	1	1
Non-residential	..	..	..	..	..	..	..	1	1	1	1	..
Fire-alarms—												
Circuits (C), boxes (B)	..	2 (C), 34 (B)	..	..	5 (C), 40 (B)	1 (C), 21 (B)	..	4 (C), 7 (B)	3 (C), 24 (B)	..	1 (C), 8 (B)	2 (C), 3 (B)
Automatic, private	..	..	..	..	2	..	..	..	..	..	..	..
Telephones (points)	2	1	1	1	2	2	..	3	2	4	2	4
Motors—												
Hose-and-ladder tenders (h.p.)	1 (20)	..	1 (20)	1 (20)	1 (25)	1 (30)	..	1 (20)	1 (50)	2 (18, 20)	..	1 (20)
First-aid, hose-and-ladder (h.p.)	..	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 (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	2	1	2	1	2	2	2	1
Ladders—												
Motor-traction (height)	..	1 (35)*	1 (26)*	1 (24)*	3 (60', 30', 22')*	1 (35)*	1 (26')	1 (28)*	2 (35', 35')	2 (30', 26')*	1 (34)*	1 (30)*
Extension (height) on motors*	..	2 (25')	2 (24')	3 (50')	10 (116')	5 (40')	1 (20')	2	6 (91')	3 (45')	2 (55')	2 (30')
Single, coupling (total feet)	2 (32')	1	1 (M)	..	1 (H)	1 (H)	..	..	1 (H)	1 (H)	..	..
Jumping-sheets	..	2 (H)	..	..	..	..	..	..	..	..	..	..
Smoke jackets (J), helmets (H), masks (M)	..	..	..	..	..	..	..	..	..	..	..	..
Hand-pumps	2	..	2	1	2	2	2	1	1	1	2	1
Hand chemical extinguishers	2	3	1	1	1	3	..	2	4	4	..	2
Portable standpipes—												
Ratchet valves	..	..	..	..	1	..	1	1	1	..	..	1
Double heads	..	4	2	4	5	2	2	2	1	4	4	2
Single heads	1	..	..	..	4	5	..	..	5	..	1	..
Hose—												
Rubber-lined (diameter)	..	200' (2½")	..	..	50' (2½")	150' (2½")	..	..	250' (2½")	..	..	..
Unlined (diameter)	1,350' (2½")	2,800' (2½")	1,800' (2½")	1,600' (2½")	6,000' (2½")	4,550' (2½")	1,000' (2½")	1,600' (2½")	1,750' (2½")	2,700' (2½")	2,300' (2½")	2,000' (2½")
Rubber, first-aid (diameter)	..	160' (¾")	..	..	120' (¾")	120' (¾")	160' (1")	..	160' (¾")	..	120' (¾")	..
Water - supply (P = pumping; G = gravitation)	..	P and G	G	G	G	G	G	G	G	G	G	G
Pressure, average, noon-midnight	..	100	120-135	60-62	Uncertain	50-68	110-150	75-100	60-64	100-125	70-80	100-130

5. SUMMARY.—PERSONNEL, PLANT, AND APPLIANCES—continued.

	Te Anauutu.	Timaru.	Waihi.	Wairoa.	Waitara.	Waipukurau.	Wanganui.	Wellington.	Westport.	Whangarei.	Totals.
Brigades, total strength of...	15	24	16	16	16	16	32	81	21	20	1,091
Fire-stations—											
Residential ..	1	1	1	1	1	..	2	3	1	1	57
Non-residential ..	1	1	..	..	..	1	2	5	1	..	35
Fire-alarms—											
Circuits (C), boxes (B) ..	..	6 (C), 27 (B)	4 (C), 16 (B)	..	..	1 (C), 4 (B)	9 (C), 87 (B)	18 (C), 117 (B)	..	2 (B)	159 (C), 1,265 (B)
Automatic, private ..	..	2	1	..	..	..	22	73	..	..	277
Telephones (points) ..	2	3	7	1	..	2	3	11	4	4	159
Motors—											
Hose-and-ladder tenders (h.p.) ..	1 (20)	..	1 (20)	1 (20)	1 (20)	1 (20)	2 (60, 20)	6 (23-55)	1 (35)	1 (22)	45
First-aid, hose-and-ladder (h.p.) ..	..	..	..	..	..	..	..	..	..	..	20
Pump, hose-and-ladder (h.p.) ..	..	1 (60)	..	..	..	..	..	1 (70)	..	..	12
First-aid, pump, hose-and-ladder (h.p.) ..	..	1 (45)	..	..	..	..	3 (60, 45, 35)	2 (45, 45)	..	1 (45)	27
General utility ..	..	1 (20)	..	..	..	..	1 (20)	1 (20)	..	..	9
Petrol-electric, ladders (height) ..	..	..	..	..	..	..	..	1 (85)	..	..	4
Fire-engines, steam (g.p.m.) ..	..	..	..	..	..	..	..	1 (650)	..	..	4
Hose-carts, reels (hand-drawn) ..	1	1	2	1	2	1	..	4	3	1	73
Ladders—											
Motor-traction (height) ..	..	..	..	..	..	..	..	1 (60)	..	..	4
Extension (height) on motors* ..	1 (35)*	2 (60', 35')*	1 (30')*	1 (24')*	1 (24')*	1 (30')*	3 (60', 35', 35')	9 (on motors)	1 (28')*	1 (30')*	86
Single, coupling (total feet) ..	1 (25')	8 (205')	4 (96')	..	1 (25')	3 (50')	6 (77')	14 (145')	2 (47')	2 (75')	190
Jumping-sheets ..	..	1	..	..	..	..	2	2	..	..	28
Smoke jackets (J), helmets (H), masks (M) ..	..	2 (H)	..	2 (H)	..	2 (H)	2 (H)	2 (H), 1 (J), 1 (M)	..	2 (H)	5 (J), 54 (H), 12 (M)
Hand-pumps ..	1	2	1	1	..	2	4	14	1	1	97
Hand chemical extinguishers ..	..	6	3	2	1	2	7	17	2	2	57
Portable standpipes—											
Ratchet valves ..	1	4	..	..	..	..	7	..	2	..	61
Double heads ..	1	4	..	3	3	2	6	11	5	3	91
Single heads ..	1	..	..	1	..	1	2	21	4	1	90
Hose—											
Rubber-lined (diameter) ..	..	..	..	..	..	..	680' (24")	4,600' (24")	..	..	2,980' (24"), 7,900' (24")
Unlined (diameter) ..	1,500' (24")	3,000' (24")	1,800' (24")	1,800' (24")	1,500' (24")	2,000' (24")	13,800' (24")	13,000' (24"), 7,000' (24")	2,700' (24")	3,000' (24")	136,300' (24"), 39,582' (24")
Rubber, first-aid (diameter) ..	..	120' (4")	..	..	..	..	500' (4")	600' (4")	..	120' (4")	400' (4"), 280' (1")
Water-supply (P = pumping; G = gravitation) ..	G	G	G	G	G	G	G	G	G	G	..
Pressure, average, noon-midnight ..	70-110	70-75	80-100	100-105	100-120	50-60	100-140	120-135	90-100	120-165	..

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