

1926.  
NEW ZEALAND.

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# FIRE BRIGADES OF THE DOMINION

(REPORT ON THE) FOR THE YEAR ENDED 30TH JUNE, 1926, BY INSPECTOR OF  
FIRE BRIGADES.

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

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

SIR,— Office of the Inspector of Fire Brigades, Wellington, 14th August, 1926.  
Herewith I have the honour to lay before you my eighteenth annual report for the year ended the 30th June, 1926, relative to the working of the Fire Brigades Act, and including matter in connection therewith.

During the year three new fire districts have been constituted—viz., Pukekohe, on the 30th November, 1925; Wellington, 20th April, 1926; and Mount Roskill, 28th May, 1926. Following is a list of the forty-six fire districts now constituted :—

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

Brigades working under Fire Board control, their stations and equipment, were officially inspected as follows :—

Auckland—May 27 and 28, 1926.	Masterton—April 13, 1926.
Balclutha—March 10, 1926.	Milton—March 12, 1926.
Christchurch—May 13 and 14, 1926.	Napier—June 14, 1926.
Dannevirke—May 5, 1926.	New Plymouth—October 28, 1925.
Dargaville—January 21, 1926.	Oamaru—May 11, 1926.
Dunedin—March 6, 1926.	Ohakune—February 16, 1926.
Eltham—October 13, 1925.	Otaki—February 11, 1926.
Feilding—May 6, 1926.	Palmerston North—January 7, 1926.
Foxton—April 27, 1926.	Petone—June 21, 1926.
Gisborne—March 26, 1926.	Port Chalmers—March 4, 1926.
Greymouth—December 1, 1925.	Rotorua—November 16, 1925.
Hamilton—January 28, 1926.	Taumarunui—February 15, 1926.
Hastings—June 15, 1926.	Tauranga—November 12, 1925.
Hawera—December 14, 1925.	Te Aroha—November 10, 1925.
Hokitika—December 3, 1925.	Timaru—December 7, 1925.
Invercargill—March 8, 1926.	Waihi—November 11, 1925.
Kaiapoi—May 12, 1926.	Waitara—October 29, 1925.
Kaitangata—March 9, 1926.	Wanganui—December 16, 1925.
Lawrence—March 11, 1926.	Westport—December 2, 1925.
Levin—April 26, 1926.	Whangarei—January 20, 1926.

A number of special visits have been made, of which the following are the principal :—

Wanganui—September 7, 1925 : Annual meeting of brigade.

Auckland—September 22, 1925 : New station, Point Chevalier district. Meeting U.F.B.A. Executive.

Onehunga—September 23, 1925 : Inspection of brigade and district.

Otaki Sanatorium—September 30, 1925 : Inspection and report.

Dunedin—October 13, 1925 : Conference with Exhibition Programme Committee.

Hawera—December 14, 1925 : Testing new motor fire-engine.

Rotorua—January 26, 1926 : Testing new motor fire-engine.

Palmerston North—February 23, 1926 : Testing new motor fire-engine.

Wairoa—March 24, 1926 : General inspection and report upon fire protection of town.

Pahiatua—April 12, 1926 : General inspection and report upon fire protection, water-supply, &c.

Palmerston North—May 20, 1926 : Hose-testing.

Wanganui—May 21, 1926 : Hose-testing.

Auckland—May 27, 1926 : Special Board meeting.

Pukekohe—May 28, 1926 : General inspection.

Onehunga—May 26, 1926 : Board meeting.

Martinborough—June 24, 1926 : General inspection, and report upon fire protection, water-supply, &c.

Trentham Camp—October 20 and April 8 : Inspections and reports.

Following upon an invitation from the executive officers of the United Fire Brigades Association, I attended their annual conference and the subsequent demonstration held in Dunedin in March last, also delivering 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. Several interesting and instructive papers and reports were read at the conference. A large collection of fire-fighting plant and appliances were on exhibition on the competition-grounds, where working demonstrations of high-capacity turbine, trailer, and first-aid pumping outfits, chemical fire-extinguishers, collapsible escape-ladders, &c., were given.

At 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 ; also, as usual, advice has been given to local bodies and others in regard to fire-prevention, water-supply, &c., and specifications for the supply of plant and appliances have been drawn up.

During the year the Department has, on behalf of various Fire Boards and of the United Fire Brigades Association, imported and distributed, in accordance with the requisitions received, over 21,000 ft. of fire-hose, as also various fire appliances and fire-brigade equipment that is not at present manufactured in the Dominion.

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

Auckland : New station to serve the Point Chevalier district, now nearing completion ; new 50 h.p. motor first-aid hose-and-ladder tender.

Balclutha : New 22 h.p. motor hose-and-ladder tender.

Christchurch : New district station in Sydenham, now nearing completion.

Eltham : New 22 h.p. motor hose-and-ladder tender.

Gisborne : Installation of a four-circuit fifty-seven-call-point street fire-alarm system.

Greymouth : New 20/25 h.p. motor, 200/250 g.p.m. turbine first-aid, hose-and-ladder combination machine.

Hawera : New 30/35 h.p. motor, 250/300 g.p.m. turbine, first-aid, hose-and-ladder combination machine.

Invercargill : New Central Fire Station, nearing completion.

Napier : Installation three-circuit twenty-five-call-point street fire-alarm system.

Oamaru : Addition of second story to Central Fire Station building.

Palmerston North : New 30/35 h.p. motor, 250/300 g.p.m. turbine, first-aid, hose-and-ladder combination machine ; new Central Fire Station nearly ready for occupation.

Rotorua : New 30/35 h.p. 250/300 g.p.m. turbine, first-aid, hose-and-ladder combination machine.

Taumarunui : Installation electric fire-alarm syren.

Te Aroha : Installation electric fire-alarm syren.

Wanganui : New station to serve the Castlecliff district.

Superintendents of Brigades have reported the following casualties as having occurred in their respective districts :—

Auckland—March 19th, 1926 : Married woman, Mrs. Power, knocked down by fire motor-engine, with fatal results.

Dunedin—July 30th, 1925 : Elderly woman, Mrs. Harneiss, severely burned about the body, was removed to hospital and died there three days later. June 16th, 1926—Leonard Philip was burnt to death in the room of a dwellinghouse.

Eltham—March 24th, 1926 : Four inmates of a boardinghouse (two male lodgers and two female employees) were burnt to death, and a fifth person, a male lodger, was badly injured in escaping from the building, but since recovered.

Hamilton—January 27th, 1926 : The Superintendent of the brigade fell through glass veranda and sustained broken collarbone and injury to elbow. February 13th, 1926—A fireman broke his wrist through falling whilst working at a fire.

A number of other casualties to firemen and civilians have been reported, but none of them of a very serious nature.

The returns show an increase in the number of calls under all headings except that of chimney-fires. The number of calls received throughout the fire district for 1925-26 totalled 1,785, as against 1,628 for 1924-25, an increase of 157. The 1,785 calls are made up under the different headings as follows: Fires, 898 (828); increase, 70. Chimney-fires, 231 (238); decrease, 7. Bush and rubbish fires, 320 (254); increase, 66. False alarms, 276 (257); increase, 19. Out-of-district fires, 60 (51); increase, 9.

Of the 898 fires, 42 are reported as due to incendiarism, 11 as having occurred on unoccupied premises, and 282 as of unknown origin. The principal causes as shown by the returns are—electricity, 75—of that number 15 are due to domestic irons being left with the current switched on; sparks from copper-fires and fireplaces, 65; smoking and cigarette-butts, 51; motors backfiring and short circuits, &c., 48; lighted matches thrown down, &c., 38.

The total fire loss throughout the fire districts for the twelve months ended 30th June, 1926, amounted to £352,638, as against £306,114 for the previous twelve months, an increase of £46,524. The four heaviest district losses occurred in Dunedin (£59,631), Christchurch (£35,913), Auckland (£26,613), and Greymouth (£25,227).

According to the census of March last the population of New Zealand totals 1,379,487, and of that number 480,365, or 34·8 per cent., are inhabitants of the fire districts. The insured fire loss throughout the whole of the Dominion for the twelve months ended 31st December, 1925, amounted to £840,735, and the proportionate loss in the forty fire districts for the corresponding twelve months was £212,796, or 8s. 10d. *per capita*; whilst the insured loss for the rest of the Dominion (*i.e.*, loss in fire districts deducted) amounted to £627,939, or 14s. *per capita*. The fire waste throughout the Dominion for the year 1925 is estimated at £1,050,919, or 15s. 3d. per head of population.

A serious aspect of the year's working is the large number (42) of fires returned as due to incendiarism. Serious also is the number (123) of fires under the heading of electric irons, matches, smoking, cigarette-butts, and live ashes, practically all due to sheer carelessness. There are presumably many more under the same headings, but fire having destroyed all trace of the cause they are hidden amongst the 282 fires returned as of "unknown" origin. Obviously the fault lies in a widely spread want of a sense of responsibility in such matters, to counteract which it is necessary to get in early, and the remedy is, first, as advocated years ago, adoption of the system in vogue in America, making instruction in fire-prevention matters, for one hour per month, compulsory in State colleges and schools. In this connection the United Fire Brigade Association in March, 1921, at their conference in Napier, passed a resolution asking Government to adopt a similar system in New Zealand. Secondly, to follow the example of other countries and inaugurate an annual "fire-prevention week"—indeed, this could well be carried out in conjunction with the "health week" already established in several of our towns.

The returns show that only eight new installations of automatic fire-alarms and automatic sprinklers have been installed during the year, and, to quote from previous reports, after all that has been preached and published throughout the Dominion in regard to the well-authenticated efficiency of certain sprinkler and automatic fire-alarm systems as safeguards against serious fire loss it is surprising that more owners of properties such as the larger emporiums, factories, mills, &c., do not install one or other of the systems on their premises. In addition to an almost complete immunity from serious fire loss the insurance companies allow a large rebate of premium where property is so protected. The installation of these automatic safeguards is a good, sound business proposition, and the sooner owners of large properties realize that fact and act accordingly the better it will be for themselves and others.

Appended are brief detailed 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. Minister of Internal Affairs, Wellington.

## DETAILED REPORTS.

### AUCKLAND.

Inspections, 27th and 28th May, 1926. The several fire-stations and their equipment were found in proper order, and the inspection was satisfactory throughout.

At a meeting of the Fire Board held on the 26th May certain recommendations were made in respect to the Headquarters Station.

During the year a 50 h.p. motor hose-tender fitted with a first-aid pumping outfit, 35 ft. extension ladder, &c., has been added to the brigade equipment; also a new substation of brick construction, to serve the Point Chevalier district, is in course of erection, and is now nearly ready for occupation.

There still remains the provision of married quarters at the Remuera District Station to be considered.

## BALCLUTHA.

Inspection, 10th March, 1926. Two officers and eight firemen were in attendance at the inspection muster. The station and equipment were in good order.

During the course of the inspection drills it was apparent that more drill and instruction are necessary, which should be carried out on the lines demonstrated at the time of my visit.

During the year the brigade equipment has been improved by addition of a 22 h.p. motor-hose-and-ladder tender. Attention was called to a number of matters requiring action.

According to the returns furnished to this Department of the two fires which occurred in Balclutha during the twelve months, out of a total brigade membership of thirteen only six men were in attendance at the first fire, and only four at the second. As both alarms were given on the fire-bell it is remarkable there should have been such a poor attendance, particularly so in the case of the first fire, which occurred on the 25th January, and which was evidently a "working fire" of some little magnitude. Apparently there is something wrong in some direction, and the Board should make inquiry into the matter.

## CHRISTCHURCH.

Inspection, 13th and 14th May, 1926. The turnout at the several stations was carried out smartly and efficiently, and the stations and their equipment were found in good order.

During the year the fire-main service has been considerably extended in the north and eastern portions of the city.

There has been some delay in completing erection of the new Sydenham District Station, but it should be ready for occupation shortly.

In view of the necessity for providing married quarters for firemen and the difficulty now generally experienced in obtaining auxiliary firemen, I have suggested to the Board the advisability of turning the unused rooms at the St. Albans Substation into a set of married quarters, which can be done at comparatively little cost.

## DANNEVIRKE.

Inspection, 5th May, 1926. One officer and eighteen firemen present at the inspection muster. The inspection drills were carried out in a satisfactory manner, and the station and equipment were in good order. Altogether there is a very creditable improvement in the general efficiency of this brigade and its equipment. At the ten alarms there was an attendance of 89 per cent. of the total strength of the brigade—a very good record.

Last year the Board accepted a tender for the installation of a two-circuit sixteen-call-point system of street fire-alarms, but up to the present erection of the aerial wiring has not been commenced.

## DARGAVILLE.

Inspection, 21st January, 1926. Two officers and ten firemen were in attendance at the inspection muster. The inspection drills were carried out in a satisfactory manner, and the station and equipment were in good order. Attendance at the seven fire calls averaged 61 per cent. of the strength. The poor average is due to the limited area over which the fire-bell can be heard. This defect came under my notice at the time of my visit and was reported to the Board.

The brigade deserve credit for the work at the fire which occurred on the premises of the North Auckland Co-operative Farmers' Company.

Recommendations were made in regard to formation of a Fire Police Corps in Dargaville.

## DUNEDIN.

Inspection, 5th March, 1926. The turnout at the Central and South Dunedin Stations were smartly and efficiently carried out. All stations and equipment were in good order and condition.

The water-supply for fire-extinction purposes in certain sections of the city is not satisfactory, and if there is no prospect of immediate improvement the provision of a motor pumping unit is necessary in both South Dunedin and Roslyn.

I had again to call attention to the necessity for better protection from fire in the Mornington, North-east Valley, and Anderson's Bay districts.

## ELTHAM.

Inspection, 29th October, 1925. 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 in good order and condition. Attendance at the five fires averaged 96 per cent. of the total strength—an excellent record.

The brigade has been provided with a new 22 h.p. motor hose-and-ladder tender. The design and body-work is a credit to the local builder.

The water-supply for fire-extinction purposes is still in an unsatisfactory state, and is a matter that calls for serious and prompt attention.

## FEILDING.

Inspection, 6th May, 1926. At the inspection muster two officers and fourteen firemen were in attendance. The inspection drills were carried out in a satisfactory manner, and there is quite an improvement in that respect. The station and equipment were found in good order. Attendance at the seven general alarms averaged 77 per cent. of the total strength—a fair record.

The street hydrants and their indicators were in better working-condition than formerly, but some few still require attention, and particular care is necessary when tarring the surface of streets that the hydrant-covers are kept clear.

I had again to recommend that if the work of improving the water-supply is not taken in hand and gone on with at once the brigade should be provided with a pumping unit.

#### FOXTON.

Inspection, 27th April, 1926. At the inspection muster there was present two officers and eight firemen. Of the remaining strength two were away sick and four were absent from the town. There was a decided improvement in the carrying-out of the required inspection drills by those members of the brigade who were present. Attendance at the six general alarms averaged 70 per cent. of the membership—just a fair average.

The fire which destroyed the Town Hall accounted for £6,250 out of £6,400, the total fire loss for the year.

Recommendations as to some minor equipment requirements were made to the Board, and the formation of a Fire Police Corps advocated.

#### GISBORNE.

An inspection of the Gisborne Brigade and its equipment was made on the 24th March, 1926, all members of the brigade being present at the inspection muster. The inspection drills were carried out in an efficient manner, and the station and equipment were in good order. The attendance at the twenty-eight alarms averages 80.1 per cent. of the membership—a good average.

During the year the Board has made extensive improvements in the fire protection of the town. A street fire-alarm system has been installed, consisting of fifty-seven call-boxes on four circuits, and two motor trailer pumps have been added to the equipment; also it has been decided to install an electric fire-alarm siren. With the provision of a 50 ft. fire-ladder the brigade will be thoroughly well equipped, and the establishment of a Volunteer Fire Police Corps will tend materially to more efficient results.

#### GREYMOUTH.

Inspection, 1st December, 1925. Two officers and seventeen firemen were in attendance at the inspection muster. The stations and equipment were found in good order. The attendance at the fifteen fire calls averaged 81 per cent. of the total membership of the brigade—a good record.

The gravitation water-supply for fire-extinction purposes is still causing anxiety, and the Board have purchased a 20/25 h.p. motor pumping combination machine, the main pump having an output capacity under pressure of 200/250 g.p.m., which will somewhat improve the position; also a site for a new substation has been purchased in High Street.

#### HAMILTON.

Inspection, 28th January, 1926. Two officers and twenty-one firemen were in attendance at the inspection parade. The inspection drills were carried out in an efficient manner, and the station and equipment were all in good order. Attendance at the twenty-eight general alarms averaged 84.6 per cent. of the strength of the brigade—a good record.

The plant has been increased by addition of a 20 h.p. motor runabout fitted up as an emergency hose-tender.

In my report to the Board (5th February, 1926) I considered it again necessary to comment upon the exceptionally low pressure and limited volume of the water-supply available for fire-extinction purposes in Hamilton, and in view of the large number of new buildings erected and in course of erection, together with the recent increase in the fire-district area, the position becomes more acute every day; also the said conditions emphasize the need for erection of a sub-fire-station in the Frankton section of the town.

#### HASTINGS.

Inspection, 15th June, 1926. At the inspection muster the full strength of the brigade (two officers, sixteen firemen, and two messengers) was in attendance. The inspection drills were carried out in a satisfactory manner, and the station and equipment, with the exception of some of the hose, were in good order and condition. The attendance at twenty-eight general alarms averaged 78.5 per cent. of the total brigade strength—a fair record.

The stock of fire-hose was low to a risky degree, but a further supply has since been purchased; also some minor matters required attention.

A tender has been accepted for the installation of a street fire-alarm system.

#### HAWERA.

Inspection, 14th December, 1925. Two officers and fourteen firemen were in attendance at the inspection muster. The station and equipment were found in good order. The attendance at eight general alarms averaged 63 per cent. of the total membership—not a good average.

A test was made of the pumping outfit of the newly acquired 30/35 h.p. motor combination machine. The main turbine vacuum and first-aid pumps were all in good working-order, the maximum output was slightly in excess of the guaranteed quantity, and the machine appears to be equal to the specifications in all respects.

During the year a street fire-alarm system, consisting of two circuits having twenty call-boxes thereon, was installed and placed in commission on the 22nd February last.

Improvements have been made in the water-supply which will materially increase the efficiency of the service for fire-extinction purposes.

#### HOKITIKA.

Inspection, 3rd December, 1925. Two officers and seventeen firemen were in attendance at the inspection muster. Certain inspection drills were carried out in a satisfactory manner, instruction was given in the standardized four-men squad drill, and formation of a Volunteer Fire Police Corps was recommended. Attendance at the thirteen fire calls averaged 87 per cent. of the total membership—a good record.

A serious feature of the year's work is the number of fires attributed to incendiarism: no less than six out of the total of twelve fires are reported as due to that cause.

#### INVERCARGILL.

Inspection, 8th March, 1926. The inspection drills were carried out smartly and in an efficient manner. With the exception of some trouble with the exhauster pump when testing for vacuum and which was rectified later, the plant and appliances were in proper working-order.

The numerical strength of the brigade was still too low, but this is to be rectified when the new station is completed. The water-supply for fire-extinction purposes is much improved since my previous inspection.

The escape-ladder is old-fashioned and too unwieldy for present-day usage. A more modern type of fire-ladder is required.

A new Central Fire Station is in course of erection, and should be ready for occupation shortly.

A Volunteer Fire Police Corps should be inaugurated.

#### KAIAPOI.

Inspection, 12th May, 1926. One officer and seven firemen were present at the inspection muster. The inspection drills were carried out in a creditable manner, and the station and appliances were in good order. Attendance at the nine fire calls averaged 95.5 per cent. of the total membership of the brigade—an excellent record.

The brigade is numerically weak, and the membership should be increased as soon as possible.

The river-sumps, from which water for fire-extinction purposes is principally drawn, were in a more or less ineffective condition. A strainer should be fixed on each of the sump suction-pipe outfits. Both matters call for prompt attention.

#### KAITANGATA.

Inspection, 9th March, 1926. Two officers and five firemen were in attendance at the inspection muster. The inspection drills were carried out in a satisfactory manner, and the men are being drilled on proper lines, but the brigade is numerically weak.

Only one fire, causing very slight damage, occurred during the year.

#### LAWRENCE.

Inspection, 11th March, 1926. One officer and seven firemen in attendance at the inspection muster. Instruction was given, and practice in the standardized squad drill was carried out. Some minor matters requiring attention were pointed out, also provision of a motor hose-tender was recommended.

#### LEVIN.

Inspection, 26th April, 1926. At the inspection muster two officers and eleven firemen were in attendance. The inspection drills were carried out in a satisfactory manner, and there is a decided improvement in that respect. The station and equipment were in good order. The attendance at the seven general alarms averaged 75 per cent. of the total membership—a fair average.

#### MASTERTON.

Inspection, 13th April, 1926. At the inspection muster two officers and sixteen firemen were on parade. The various inspection drills were carried out in a satisfactory manner, and there is a decided improvement in that respect. The station and equipment were in good order. Attendance at the nineteen general alarms averaged 89 per cent. of the total strength—a very good record.

Attention was called to some minor matters requiring rectification.

During the year a number of new water-mains have been laid, with a corresponding improvement in the water-supply for fire-extinction purposes.

#### MILTON.

Inspection, 12th March, 1926. At the inspection muster two officers and ten firemen were on parade. The inspection drills were carried out satisfactorily. There is a steady improvement in efficiency, and the station and equipment are maintained in good order.

The stock of fire-hose is too low: 500 ft. of new hose is required.

Several minor matters required attention.

#### NAPIER.

Inspection, 14th June, 1926. At the inspection musters at both town and Port stations respectively all members of the brigade were present or accounted for. The inspection drill of the town brigade was carried out in a fairly satisfactory manner, but there is still room for improvement. At the Port, however, it was clearly evident that that section of the brigade was in need of more instruction and drill.

The town station and its equipment were in first-class order; but the Port Station badly needs enlargement and renovation, and the proposed alterations should be carried out as soon as possible.

During the year a street-alarm system, consisting of three circuits with twenty-five call-boxes thereon, has been installed and placed in commission.

#### NEW PLYMOUTH.

Inspection, 28th October, 1926. At the inspection muster two officers and twenty-two fireman were on parade. The various inspection drills were carried out smartly and in a satisfactory manner, showing considerable improvement in that respect. The station and equipment were in good order. Attendance at the fourteen fire calls averaged 79 per cent. of the total strength—a good record.

Recommendations were made at a meeting with the Board as follows: Provision of a station and equipment in the rapidly growing western district; agreement with Harbour Board; provision of smoke-helmets; formation of a Volunteer Fire Police Corps, &c.

A Fire Police Corps has since been established in New Plymouth.

#### OAMARU.

Inspection, 11th May, 1926. Two officers and nine firemen were in attendance at the inspection muster. There was quite an improvement in the carrying-out of the inspection drills, and further instruction was given therein. The equipment was in good order. Attendance at the fourteen fire calls averaged 70·1 per cent. of the total strength—a fair record.

A second story on the present Central Station building is now in course of construction, and the additional accommodation will add greatly to the efficient working of the brigade.

Formation of a Volunteer Fire Police Corps was recommended.

#### OHAKUNE.

Inspection, 16th February, 1926. Two officers and seven firemen, out of a total strength of fourteen, were in attendance at the inspection muster. Attendance at the eleven fire calls averaged 64·4 per cent of the strength. Whilst there was a low average of attendance in both cases, in the local circumstances it may be regarded as a fair record.

Whilst the trailer pump was at work for inspection purposes a slight mishap occurred, otherwise the pump is in good order and worked well.

The new hose recommended in my report of the 25th May last had not been procured, and the stock of hose was short to a serious degree. Other matters previously recommended also required attention.

#### OTAKI.

Inspection, 11th February, 1926. Two officers and ten firemen were in attendance at the inspection muster. There was considerable improvement in the carrying-out of the inspection drills, and further instruction was given therein.

A number of the street fire-hydrants were in a most unsatisfactory condition, overgrown with herbage, &c., and is a matter that requires prompt attention.

A new Central Fire-station is in course of erection, and a 22 h.p. motor hose-and-ladder tender is on order.

#### PALMERSTON NORTH.

Inspection, 7th January, 1926. At the inspection muster two officers and thirteen firemen were on parade. The various inspection drills were carried out in the usual efficient manner, and all equipment was in good working-order.

A new 30/35 h.p. 250/300 g.p.m. motor pump and a first-aid combination machine were placed in commission in February last. A new Central Fire-station is in course of erection, and is nearly ready for occupation; also an electrically operated syren is being installed, which will replace the bell as a fire-alarm.

With the opening of the new station the Fire Board will have equipped the brigade to a high degree of efficiency, but the water-supply for fire-extinction purposes is most unsatisfactory and to a degree that may easily result in disastrous consequences.

The establishment of a Fire Police Corps would prove a valuable auxiliary to the brigade.

#### PETONE.

Inspection, 21st June, 1926. Two officers and thirteen firemen in attendance at the inspection parade. As at previous inspections, the inspection drills were carried out in a highly efficient manner, and the station, motors, and other equipment were in first-class order. At the fifteen general alarms there was an average attendance of 78·2 per cent. of the brigade strength—a fair record.

During the course of the inspection, to augment the pressure then showing on the gauge, the pumping-station was rung up, but it was sixteen minutes later before the increased pressure became

available. This points to a serious flaw in the arrangement, and calls for prompt attention. An accident occurred to one of the fire-motors whilst proceeding along Adelaide Street at a very moderate speed, tearing off the off-side running-board and box, &c., and was apparently due to a loose iron grating over a steel manhole. Two firemen were injured, but, fortunately, not seriously so.

Petone is growing very rapidly, and altogether conditions warrant the appointment of a second permanent fireman.

#### PORT CHALMERS.

Inspection, 4th March, 1926. At the inspection muster two officers and seven firemen were present—a satisfactory attendance in the local circumstances. There was a decided improvement in the personnel of the brigade, and the equipment was in good order. Attendance at the fire-alarms averaged 55.4 per cent. of the total strength—not a good record.

Five hundred feet of new hose was required, and I again recommended purchase of a site for the erection of a new Central Station on the crest of the hill.

#### ROTORUA.

Inspection, 16th November, 1925. At the inspection muster two officers and fourteen firemen were on parade. The inspection drills were carried out in a smart and efficient manner, and the station and equipment were in thorough good order. Attendance at the twenty-three alarms averaged 80.3 per cent. of the brigade strength—a good record.

A second visit was paid to Rotorua on the 26th January for the purpose of testing the newly acquired 30/35 h.p. 250/300 g.p.m. motor combination fire-engine. The pumping unit and the machine generally proved up to specifications.

#### TAUMARUNUI.

Inspection, 15th February, 1926. At the inspection muster two officers and twelve firemen were in attendance. The various inspection drills were carried out in a satisfactory manner, and the station and equipment were all in good order. At the five fire calls the attendance averaged 80 per cent. of the total membership of the brigade—a good record.

The newly installed electric fire-alarm syren was sounded for experimental purposes, and observations in different parts of the town whilst the syren was in action tended to show that it will prove a very efficient alarm.

#### TAURANGA.

Inspection, 12th November, 1925. At the inspection muster two officers and eleven firemen were in attendance. The inspection drills were carried out in a smart and satisfactory manner, and the station and equipment were in good order. Attendance at the six fire-alarm classes averaged 83.5 per cent. of the total membership—a good record.

In my report to the Board following upon my inspection I considered it necessary to comment as follows: "I note that fire-prevention conditions are in the same unsatisfactory state they were at the time of my previous inspection and report in November last year, and dangerous conditions are becoming still more acute owing to the steadily decreasing efficiency for fire-extinction purposes of the borough water-supply, and which further accentuates the need of prompt action on the part of your Board to install some means of summoning the brigade in case of an outbreak of fire."

Since then several recommendations have been adopted. In view of the extension of the present fire-station a portion of the adjoining section has been purchased from the Borough Council. The Board has resolved to install an electric syren fire-alarm system having eight fire-alarm call-points. Also some improvement has been made in the water-supply.

#### TE AROHA.

Inspection, 10th November, 1925. Two officers and thirteen firemen were in attendance at the inspection muster. The inspection drills were carried out in a satisfactory manner, there being a decided improvement in the squad work. With the exception of some lengths of hose which required patching, the station and equipment were in good order. Attendance at the eight fire calls averaged 82 per cent. of the total strength—a good record.

I noted some of the street hydrant-indicators were still missing, and the timing of the electric syren required some adjustment.

#### TIMARU.

Inspection, 7th December, 1925. Two officers and twenty-two firemen were in attendance at the inspection muster. The various inspection drills were carried out in the usual efficient manner, and the station and equipment were in first-class order.

Attendance at the thirty-seven fire calls averaged 78 per cent. of the total strength of the brigade—a good record.

The question of purchasing sections adjoining the Central Station site for the purpose of extending the present station building, together with other matters, was fully discussed with the Chairman and other members of the Fire Board, and the enrolment of a Volunteer Fire Police Corps was recommended.

#### WAIHI.

Inspection, 11th November, 1925. Two officers and twelve firemen were in attendance at the inspection muster. The inspection drills were carried out in a satisfactory manner, there being quite



an improvement in that respect. Attendance at the twenty-nine fire calls averaged 77 per cent. of the total strength of the brigade—a good record.

In December, 1925, owing to its having become defective and unreliable and also causing an excessive number of false alarms, the old street fire-alarm system was dismantled. A recommendation was made that a newer and reliable system should be installed. A tender at a very reasonable cost was submitted to the Board for the supply of a system having sixteen call-points, but so far has not been accepted. In view of the unsatisfactory condition of the water-supply for fire-extinction purposes and the disproportionate number of outbreaks of fire occurring in Waihi, the Board would be well advised to install some fire-alarm system as soon as possible.

#### WAITARA.

Inspection, 29th October, 1925. One officer and eleven firemen were in attendance at the inspection muster. There was a very considerable improvement in the carrying-out of the inspection drills, and the equipment was in good order, with exception of some leaky lengths of hose, for the repair of which the brigade should be provided with a hose-repairing outfit.

#### WANGANUI.

Inspection, 16th December, 1926. At the inspection musters two officers and nineteen firemen were on parade at the City Central Station, and one officer and eleven firemen at the Castlecliff Station. The various wet and dry inspection drills were carried out in a smart and efficient manner.

The stations and equipment, with the exception of one motor, were found in good order. In regard to the motor mentioned, and which has been in active commission for some fifteen years, the Board has since decided to replace it, and have ordered an English machine for that purpose.

During the year a new district station of brick construction has been erected in Castlecliff at a cost of some £6,000, and was officially opened and occupied by the brigade in February last.

#### WESTPORT.

Inspection, 2nd December, 1925. One officer and fourteen firemen were in attendance at the inspection muster. As at the time of my previous visit, it was apparent that the brigade was in need of more instruction, and all future drill should be carried out on the standard squad lines. There was an average attendance at the five alarms of 73·6 per cent. of the total strength—a fair record.

The old street fire-alarm system has been dismantled, and a more reliable system should be installed without delay.

The brigade is very badly off for uniforms, and they do not possess a suitable fire-ladder of sufficient length to reach the roofs of a number of buildings in the town, nor have they yet been provided with a hand-pump or a hose-repairing outfit. Altogether the fire-protection equipment in Westport is not very satisfactory.

#### WHANGAREI.

Inspection, 20th January, 1926. Two officers and sixteen firemen were on parade at the inspection muster. The inspection drills were carried out in a satisfactory manner, and the plant and appliances were in good order and condition. Attendance at the fourteen general alarms averaged 69 per cent. of the total strength, which is under the general average of attendances.

Several matters were reported to the Board as requiring attention, and the fixing of another alarm call-point towards the lower end of Cameron Street was recommended.

## TABLES.

## 1. SUMMARY OF FIRE CALLS, 1925-26.

District.	Fires.	Chimney Fires.	Bush, Grass, and Rubbish Fires.	False Alarms.	Out of District.	Totals.
Auckland .. .. .	217	29	45	88	9	388
Balclutha .. .. .	2	..	..	..	..	2
Christchurch .. .. .	138	25	29	69	21	282
Dannevirke .. .. .	7	1	..	..	2	10
Dargaville .. .. .	3	..	3	..	1	7
Dunedin .. .. .	132	83	35	46	2	298
Eltham .. .. .	5	..	2	..	..	7
Feilding .. .. .	5	2	3	..	..	10
Foxton .. .. .	2	..	4	..	1	7
Gisborne .. .. .	23	..	9	3	3	38
Greymouth .. .. .	11	1	1	2	..	15
Hamilton .. .. .	20	1	16	5	1	43
Hastings .. .. .	27	6	8	..	..	41
Hawera .. .. .	6	3	3	1	1	14
Hokitika .. .. .	12	..	1	..	..	13
Invercargill .. .. .	29	13	8	10	1	61
Kaipoi .. .. .	7	..	1	..	1	9
Kaitangata .. .. .	1	..	..	..	..	1
Lawrence .. .. .	1	..	..	..	..	1
Levin .. .. .	3	1	3	1	2	10
Masterton .. .. .	19	5	17	2	..	43
Milton .. .. .	3	5	1	..	..	9
Napier .. .. .	23	4	8	2	2	39
New Plymouth .. .. .	13	8	9	..	..	30
Oamaru .. .. .	2	7	3	2	..	14
Ohakune .. .. .	6	..	5	..	..	11
Otaki .. .. .	1	..	1	..	..	2
Palmerston North .. .. .	43	7	8	18	5	81
Petone .. .. .	11	..	..	3	3	17
Port Chalmers .. .. .	4	..	1	..	..	5
Rotorua .. .. .	12	5	6	..	..	23
Taumarunui .. .. .	3	..	..	1	1	5
Tauranga .. .. .	3	..	3	..	..	6
Te Aroha .. .. .	2	3	..	2	1	8
Timaru .. .. .	21	3	11	1	1	37
Waihi .. .. .	17	..	4	8	..	29
Waitara .. .. .	2	..	..	..	..	2
Wanganui .. .. .	51	14	69	11	2	147
Westport .. .. .	1	4	..	..	..	5
Whangarei .. .. .	10	1	3	1	..	15
Totals .. .. .	898	231	320	276	60	1,785

## 2. SUMMARY OF FIRE LOSSES.

District.	Insured.	Uninsured.	Totals.	District.	Insured.	Uninsured.	Totals.
	£	£	£		£	£	£
Auckland .. ..	25,939	674	26,613	Milton .. ..	325	180	505
Balclutha .. ..	200	2	202	Napier .. ..	6,928	3,432	10,360
Christchurch .. ..	31,378	4,535	35,913	New Plymouth .. ..	9,573	20	9,593
Dannevirke .. ..	1,207	80	1,287	Oamaru .. ..	1,205	1,595	2,800
Dargaville .. ..	4,246	1,687	5,933	Ohakune .. ..	2,685	1,225	3,910
Dunedin .. ..	56,806	2,825	59,631	Otaki .. ..	..	112	112
Eltham .. ..	1,974	375	2,349	Palmerston North .. ..	24,362	7,275	31,637
Feilding .. ..	15	3	18	Petone .. ..	2,780	453	3,233
Foxton .. ..	4,170	2,230	6,400	Port Chalmers .. ..	1,965	170	2,135
Gisborne .. ..	10,177	5,227	15,404	Rotorua .. ..	2,848	1,168	4,016
Greymouth .. ..	18,009	7,218	25,227	Taumarunui .. ..	662	..	662
Hamilton .. ..	4,798	140	4,938	Tauranga .. ..	1,869	200	2,069
Hastings .. ..	11,829	5,218	17,047	Te Aroha .. ..	1,535	425	1,960
Hawera .. ..	735	3	738	Timaru .. ..	6,745	3,368	10,113
Hokitika .. ..	6,270	2,321	8,591	Waihi .. ..	3,768	1,695	5,463
Invercargill .. ..	17,479	365	17,844	Waitara .. ..	1,270	500	1,770
Kaipoi .. ..	2,005	816	2,821	Wanganui .. ..	5,187	1,508	6,695
Kaitangata .. ..	..	3	3	Westport .. ..	140	60	200
Lawrence .. ..	..	..	..	Whangarei .. ..	1,405	2,295	3,700
Levin .. ..	2,209	..	2,209				
Masterton .. ..	8,920	9,617	18,537	Totals .. ..	283,618	69,020	352,638

## 3. COST OF FIRE BRIGADES (CAPITAL EXPENDITURE INCLUDED).

As taken from the Estimates for the respective Years.

District.	Year ending 30th June, 1921.	Year ending 30th June, 1922.	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.
	£	£	£	£	£	£	£
Auckland .. ..	17,000	18,375	16,325	16,700	18,400	20,000	21,000
Balclutha .. ..	140	350	400	400	500	500	500
Christchurch .. ..	9,650	14,113	12,100	12,100	13,000	13,000	12,000
Dannevirke .. ..	617	672	585	739	620	614	636
Dargaville .. ..	523	675	504	816	600	675	675
Dunedin .. ..	11,500	13,500	13,500	13,500	13,500	15,500	15,500
Eltham .. ..	..	..	..	..	750	600	500
Feilding .. ..	568	594	648	623	554	639	528
Foxton .. ..	..	..	250	397	626	594	467
Gisborne .. ..	1,586	1,517	1,734	2,188	2,200	2,462	3,104
Greymouth .. ..	943	890	887	948	949	1,005	1,483
Hamilton .. ..	1,449	1,900	2,350	2,650	2,800	2,930	2,650
Hastings .. ..	1,024	978	837	1,012	1,206	1,120	1,330
Hawera .. ..	764	751	837	713	1,241	1,302	1,320
Hokitika .. ..	550	425	570	570	480	550	500
Invercargill .. ..	..	..	..	10,300	3,200	4,300	4,755
Kaipoi .. ..	..	..	..	947	1,279	663	636
Kaitangata .. ..	..	260	192	175	290	230	186
Lawrence .. ..	80	80	80	90	100	90	100
Levin .. ..	660	1,086	921	799	803	586	617
Masterton .. ..	1,536	2,029	1,880	1,946	1,649	1,790	1,728
Milton .. ..	232	250	167	240	340	200	178
Napier .. ..	..	2,190	1,671	2,886	3,522	3,852	3,730
New Plymouth .. ..	1,500	2,435	2,183	1,965	1,953	2,076	1,960
Oamaru .. ..	800	800	750	800	950	1,050	1,250
Ohakune .. ..	468	462	435	348	420	537	474
Onehunga .. ..	..	..	..	..	..	..	1,670
Otaki .. ..	..	..	..	..	..	325	399
Pahiatua .. ..	..	..	..	..	..	..	590
Palmerston North .. ..	2,055	2,417	2,100	2,143	2,224	4,502	4,298
Petone .. ..	893	1,030	1,306	1,450	1,394	1,484	1,591
Port Chalmers .. ..	400	400	325	310	269	252	214
Pukekohe .. ..	..	..	..	..	..	..	330
Rotorua .. ..	875	1,424	1,340	1,328	1,356	958	1,000
Taumarunui .. ..	510	600	640	650	445	530	500
Tauranga .. ..	414	547	541	499	559	509	659
Te Aroha .. ..	500	731	683	573	621	778	833
Timaru .. ..	1,750	2,400	1,750	1,850	2,250	2,050	2,350
Waihi .. ..	930	990	710	822	651	837	583
Waitara .. ..	143	209	200	120	220	234	263
Wanganui .. ..	4,505	5,255	4,800	4,450	7,050	7,400	8,150
Wellington .. ..	..	..	..	..	..	..	18,715
Westport .. ..	..	..	..	..	550	630	570
Whangarei .. ..	576	680	550	1,000	1,016	1,018	890
Totals .. ..	66,433	82,484	74,754	89,052	90,541	98,372	121,412



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

	Auckland.	Baldutha.	Christchurch.	Dannevirke.	Dargaville.	Dunedin.	Eltham.	Felding.	Foxton.	Gisborne.	Greymouth.	Hamilton.
Brigades, total strength of	70	13	39	20	20	46	16	20	15	25	21	25
Fire-stations—												
Residential ..	4	1	4	1	1	3	1	1	1	1	1	1
Non-residential ..	1	..	..	..	..	..	..	1	..	..	5	1
Fire-alarms—												
Circuits (C.), boxes (B.) ..	28 (C.), 254 (B.)	..	21 (C.), 154 (B.)	..	..	14 (C.), 140 (B.)	..	..	..	4 (C.), 57 (B.)	..	4 (C.), 34 (B.)
Automatic, private ..	70	..	38	..	..	33	..	..	..	..	..	2
Telephones (points) ..	18	3	8	1	10	5	3	3	4	4	6	2
Motors—												
Hose-and-ladder tenders (h.p.) ..	5 (40)	1 (22)	3 (2, 35; 1, 25)	1 (40)	..	..	1 (22)	2 (22, 20)	1 (22)	1 (35)	..	..
First-aid, hose-and-ladder (h.p.) ..	4 (65, 50, 38, 30)	..	5 (70; 3, 50; 1, 20)	..	..	5 (75; 3, 60; 38)	..	..	..	1 (50) Trailers	1 (22)	..
Pump, hose-and-ladder (h.p.) ..	1 (110)	..	..	..	..	..	..	..	..	2 (36) Trailers	..	..
First-aid, pump, hose-and-ladder (h.p.)	..	..	..	..	..	1 (90)	..	..	..	..	1 (25)	1 (40)
General utility ..	2 (20)	..	1 (20)	..	..	1 (20)	..	..	..	..	..	1 (22)
Petrol-electric, ladders (height) ..	1 (87')	..	1 (85')	..	..	1 (83')	..	..	..	..	..	..
Fire-engines, steam (g.p.m.) ..	..	..	..	..	..	..	..	..	..	1 (600)	1 (600)	..
Chemical-engines, hand-drawn (gals.) ..	..	..	..	..	..	..	..	..	1 (40)	..	1 (40)	..
Hose-carts, reels, hand-drawn ..	1	1	2	2	1	..	2	2	..	2	6	2
Ladders—												
Motor-traction (height) ..	1 (65')	..	1 (65')	..	..	1 (80')	..	..	..	..	..	..
Extension (height) (on motor)* ..	2 (22'), 2 (35')*	..	6 (2, 40'; 4, 35')*	1 (35')*	1 (25')*	5 (50', 32'; 3, 30')*	2 (34'; 20')	1 (30')	1 (26')*	1 (35')*	1 (35')*	2 (35', 30', 1, 50')*
Single, coupling (total length) ..	12 (240')	3 (58')	22 (320')	5 (108')	1 (25')	..	1 (25')	8 (95')	..	5 (80')	5 (98')	3 (48')
Jumping-sheets ..	5	..	3	..	..	1	..	..	..	..	1	1
Smoke-jackets (J.), helmets (H.), masks (M.)	2 (J.), 4 (H.)	..	1 (J.), 3 (H.)	2 (M.)	..	1 (J.), 1 (H.)	2 (H.)	7 (M.)	..	1 (H.)	..	2 (M.)
Hand-pumps ..	5	1	7	1	1	7	1	2	1	1	1	1
Hand-chemical extinguishers ..	10	1	10	2	..	6	1	2	2	4	2	2
Portable standpipes—												
Ratchet valves ..	17	1	1	..	1	11	1	..	..	..	..	2
Double heads ..	..	2	19	8	1	6	3	7	3	7	9	..
Single heads ..	6	..	1	..	2	1	..	1	..	4	1	6
Hose—												
Rubber-lined (diameter) ..	2,000' (2½"); 720' (¾")	..	2,600' (2½")	..	..	200' (2½")	..	..	..	..	..	..
Unlined (diameter) ..	11,650' (2½"); 386' (¾")	1,700' (2½")	12,050' (2½")	2,900' (2½")	2,000' (2½")	13,500' (2½")	2,500' (2½")	2,900' (2½")	1,500' (2½")	3,500' (2½")	4,000' (2½")	4,700' (2½")
Water-supply (P. = pumping; G. = gravitation)	P. and G.	P. and 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	70-80	95-105	80-85	85-95	100-150	75-90	85-105	53-120	95-114	65-95	45-50



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

	Palmerston North.	Petone.	Port Chalmers.	Rotorua.	Taumarunui.	Tauranga.	Te Aroha.	Timaru.	Waihi.	Waikato.	Wanganui.	Westport.	Whangarei.	Totals.
Brigades, total strength of	26	17	13	19	22	17	16	23	16	15	34	22	20	870
Fire-stations—														
Residential	2	1	..	1	1	1	1	1	1	1	2	1	1	46
Non-residential	1	..	2	1	1	1	..	..	..	1	..	..	1	27
Fire-alarms—														
Circuits (C.), boxes (B.)	1 (C.), 9 (B.)	1 (C.), 17 (B.)	..	3 (C.), 16 (B.)	..	..	1 (B.)	6 (C.), 27 (B.)	..	..	9 (C.), 86 (B.)	..	1 (C.), 2 (B.)	106 (C.), 891 (B.)
Automatic, private	1	..	..	..	..	..	..	2	1	..	14	..	..	170
Telephones (points)	2	1	..	2	4	2	4	3	7	..	3	4	4	146
Motors—														
Hose-and-ladder tenders (h.p.)	1 (25)	1 (30)	1 (22)	1 (50)	1 (22)	1 (22)	1 (22)	..	1 (22)	1 (22)	2 (60, 20)	1 (35)	1 (22)	33
First-aid, hose-and-ladder (h.p.)	..	..	..	..	..	1 (22)	..	..	..	..	1 (40)	..	..	25
Pump, hose-and-ladder (h.p.)	1 (50)	..	..	..	..	..	..	1 (60)	..	..	..	..	..	8 & 3 Trailers.
First-aid, pump, hose-and-ladder (h.p.)	1 (35)	1 (40)	..	1 (35)	..	..	..	1 (45)	..	..	2 (60, 35)	..	..	14
General utility	..	..	..	..	..	..	..	..	..	..	1 (22)	..	..	7
Petrol-electric, ladders (height)	..	..	..	..	..	..	..	..	..	..	..	..	..	3
Fire-engines, steam (g.p.m.)	..	..	..	..	..	..	..	..	..	..	..	1 (300)	..	7 & 2 Manuals.
Chemical-engines, hand-drawn (gals.)	..	..	..	..	..	..	..	..	..	..	..	..	..	4
Hose-carts, reels, hand-drawn	2	1	2	2	2	2	1	1	2	1	..	1	1	63
Ladders—														
Motor-traction (height)	..	..	..	..	..	..	..	..	..	..	..	..	..	3
Extension (height) (on motor*)	3 (60', 35', 30')	1 (35')	1 (26')	2 (35')	1 (26')	1 (34')	1 (30')	2 (60', 30')	1 (30')	1 (30')	3 (60', 35', 30')	1 (28')	1 (50')	66
Single, coupling (total length)	9 (106')	4 (32')	1 (20')	3 (61')	2 (20')	2 (55')	4 (55')	4 (55')	2 (42')	2 (35')	4 (52')	2 (47')	2 (55')	151
Jumping-sheets	1	1	..	1	1 (H.)	..	..	2 (H.)	..	..	2	..	..	21
Smoke-jackets (J.), helmets (H.), masks (M.)	..	1 (H.)	..	1 (H.)	..	..	..	..	..	..	2 (H.)	..	2 (M.)	4 (J.), 25 (H.), 15 (M.)
Hand-pumps	2	2	2	1	2	2	1	2	1	1	2	1	2	79
Hand chemical extinguishers	5	2	..	4	2	..	2	4	3	..	4	2	2	116
Portable standpipes—														
Ratchet valves	1	2	1	1	..	..	1	4	..	3	6	2	..	62
Double heads	5	2	2	1	3	4	2	4	3	..	7	4	4	155
Single heads	4	5	..	5	1	1	..	..	1	..	2	4	2	69
Hose—														
Rubber-lined (diameter)	..	..	160' (1")	200' (2½")	..	180' (¾")	..	180' (¾")	..	..	110' (2½")	..	..	4,600' (2½"), 710' (2½")
Unlined (diameter)	5,000' (2½")	4,100' (2½")	1,450' (2½")	1,850' (2½")	2,400' (2½")	2,300' (2½")	2,000' (2½")	3,000' (2½")	1,800' (2½")	1,500' (2½")	12,000' (2½")	2,300' (2½")	2,000' (2½")	35,100' (2½"), 113,350' (2½")
Water-supply (P. = pumping; G. = gravitation)	G.	P. and G.	G.	G.	G.	G.	G.	G.	G.	G.	G.	G.	G.	..
Pressure, average, noon-midnight	40-75	51-72	110-150	60-64	100-125	75-110	120-125	70-75	90-100	90-120	100-140	90-125	150-165	..

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1900-1901 (continued)

Year	Month	Day	Time	Place	Latitude	Longitude	Altitude	Remarks	Remarks	Remarks						
1900	12	27	11-180	Q	105-152	52-110	100-100	20-12	70-100	60-110	20-150	20-120	100-182			
1900	12	27	11-180	Q	105-152	52-110	100-100	20-12	Q	70-100	Q	60-110	Q	100-182	100	100
				Q					Q							
				Q					Q							
				Q					Q							
1900	12	27	11-180	Q	105-152	52-110	100-100	20-12	Q	70-100	Q	60-110	Q	100-182	100	100
				Q					Q							
				Q					Q							
1900	12	27	11-180	Q	105-152	52-110	100-100	20-12	Q	70-100	Q	60-110	Q	100-182	100	100
				Q					Q							
				Q					Q							
1900	12	27	11-180	Q	105-152	52-110	100-100	20-12	Q	70-100	Q	60-110	Q	100-182	100	100
				Q					Q							
				Q					Q							
1900	12	27	11-180	Q	105-152	52-110	100-100	20-12	Q	70-100	Q	60-110	Q	100-182	100	100
				Q					Q							
				Q					Q							

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