

SESSION II.  
1912.  
NEW ZEALAND.

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# FIRE BRIGADES OF THE DOMINION

(REPORT ON THE), BY THE INSPECTOR OF FIRE BRIGADES, FOR THE YEAR  
ENDED 30TH JUNE, 1912.

*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, 1st July, 1912.

Herewith I have the honour to lay before you my fourth annual report, for the year ended 30th June, 1912, relative to the working of the Fire Brigades Act, and including matters in connection therewith.

The number of proclaimed fire districts has been increased by the addition of Rotorua: a poll was held in that town in November last, and the proposal was carried practically unanimously, there being only two dissentient votes recorded: thus making a total of twenty Fire Boards now in existence—viz., Auckland, Christchurch, Dannevirke, Dunedin, Feilding, Gisborne, Greymouth, Hastings, Hawera, Hokitika, Lawrence, Maori Hill, Masterton, Milton, New Plymouth, Oamaru, Palmerston North, Petone, Rotorua, Whangarei.

The Fire Brigades Act, No. 63 of 1908, requires as a preliminary to the proclamation of a fire district that the proposal must be submitted to a poll of the ratepayers, and section 3 of the amended Act, 1908, No. 243, reads as follows: "No proposal submitted to the ratepayers of a district under section four of the principal Act or under section two of this Act shall be deemed to be carried unless at least one-third of the ratepayers of that district have validly exercised their votes in respect of that proposal." This clause, owing to the difficulty of getting the requisite proportion of ratepayers to record their votes, is under ordinary circumstances almost prohibitive, as proved in the case of Grey Lynn, where a poll was held on the 12th October last, and, although the majority of those who voted were in favour of the borough being proclaimed a fire district, the total number of votes recorded were over 50 per cent. short of the number required to make the poll valid.

There are now twenty-three fire brigades and two fire police corps working under the control of Fire Boards, and I have officially inspected the brigades, their stations and equipment, &c., as follows:—

Auckland: November 28 and 29, 1911; April 26, 1912.  
Christchurch: October 26 and 27, 1911; March 25 and 26, 1912.  
Dannevirke: November 8, 1911; June 4, 1912.  
Dunedin: September 23 and 27, 1911; February 2 and 7, 1912.  
South Dunedin: September 28, 1911; February 3, 1912.  
Caversham: September 28, 1911.  
Feilding: August 29, 1911; January 15 and 16, 1912.  
Gisborne: October 12 and 13, 1911; February 19 and 20, 1912.  
Greymouth: November 15, 1911; March 21, 1912.  
Hastings: October 9, 1911; February 15 and June 5, 1912.  
Hawera: September 1, 1911; January 18, 1912.

Hokitika: November 16, 1911; March 20, 1912.  
 Lawrence: September 26, 1911; February 6, 1912.  
 Maori Hill: September 22, 1911; February 1, 1912.  
 Masterton: November 9, December 18 and 19, 1911; June 7, 1912.  
 Milton: September 25, 1911; February 5, 1912.  
 New Plymouth: August 30, 1911; January 17 and 18, 1912.  
 Fitzroy: May 22, 1912.  
 Oamaru: September 20, 1911; January 30, 1912.  
 Palmerston North: December 11, 1911; May 14, 1912.  
 Petone: December 15, 1911; January 26 and June 21, 1912.  
 Rotorua: June 28, 1912.  
 Whangarei: November 30 and December 1, 1911; April 23 and 24, 1912.

At the conclusion of each inspection drill any faults shown whilst carrying out the work, or any defects in the appliances in use, were pointed out, and a short address delivered on various matters in connection with fire-brigade work.

In addition to the above-mentioned statutory inspections, following upon the request of the various bodies interested, and with the sanction of the Minister of Internal Affairs, special visits have been paid as follows:—

Lower Hutt: July 6, 1911—Inspection and report upon the safety of public buildings in the borough.  
 Palmerston North: July 19, 1911.—Annual meeting.  
 Wanganui: July 28, 1911—Annual meeting.  
 Ruakura: October 19 and November 25, 1911—Government Experimental Farm: Inspection and report upon fire protection for the building on the estate.  
 Ashburton: October 24 and 25, 1911—Inspection and report upon the efficiency of the brigade, the water-supply, and fire protection of the borough.  
 Petone: November 21, 1911—Inspection and report upon suitability of competition plans for the proposed new central fire-station.  
 Hamilton: November 23 and 24, 1911—Inspection and report upon the efficiency of the brigade, the water-supply, and fire protection of the borough.  
 Waipukurau: December 19 and 20, 1911—Inspection and report upon the establishment of a brigade, the water-supply, and fire protection of the borough.  
 Petone: January 12, 1912—Conference with Fire Board.  
 Rotorua: March 3 to 5, 1912—United Fire Brigades Association Annual Conference: Address delivered to the delegates on matters affecting fire-brigade work and practical demonstration concerning defectively constructed nozzles.  
 Ohakune: April 29, 1912—Inspection and report upon the safety of public halls, the water-supply, and fire protection of the borough.  
 Christchurch: May 2, 1912.—Conference with Fire Board.  
 Weraroa: May 13, 1912.—Government Experimental Farm: Report upon fire protection of the buildings there situated.  
 New Plymouth: May 21 to 23, 1912—Conference with Fire Board, inspection and report upon fire protection for Greater New Plymouth.  
 Moumahaki: May 24, 1912—Government Experimental Farm: Report upon fire protection for the buildings on the estate.  
 Arataki: June 6, 1912—Government Experimental Farm: Report upon fire protection.

In all a total of sixty-two visits was paid, and, in addition, a number of reports dealing with fire-protection matters, including new station plans, has been furnished to different local bodies, specifications drawn up for new machines, supervision exercised over the manufacture of new appliances, &c.

Following upon an invitation received from the executive of the United Fire Brigades Association, I attended their annual conference held at Rotorua on the 3rd and 4th March last, and delivered an address to the delegates on matters in connection with fire protection and fire-brigade work in general, also giving a practical illustration of the effect on fires of streams of water when projected by badly designed and defective nozzles as compared with those of proper construction when in good order. It was evident during the progress of the conference that a majority of the delegates present realized the necessity, in the interest of increasing the efficiency of their brigades, for improving the biennial demonstration competitions in the way of bringing them into line with more modern and practical methods, and a start is to be made in that direction by placing an event on the programme next year based on essentially practical lines.

A most important matter, and one greatly affecting the efficient fire-extinction work of the brigades is that of the standardization of appliances. During the course of my inspections of the brigades working under the jurisdiction of Fire Boards, many times I have had occasion to point out to them defects in the appliances with which they are working. Hose of all descriptions, some of it so rough and corrugated interiorly that many pounds of pressure is wasted; branches of all length and tapers—a new one I recently measured was  $2\frac{4}{16}$  in. at the base tapering

to  $1\frac{1}{8}$  in. at the lip—some far from round, others very roughly finished inside; stand-pipes of all sizes with shanks ranging from 11 in. to 30 in. in length, some so short that they can only be shipped on certain hydrants in the town; nozzles with all sorts of curves and tapers, some so faultily designed that a jet of water, instead of being projected in ratio to the pressure, broke into spray a few feet from the branch; in one case two 1 in. nozzles had recently been purchased from a manufacturer, and upon examining them I found that one measured  $1\frac{7}{8}$  in. at the base and the other  $1\frac{1}{8}$  in.; couplings, nominally all of the standard V thread pattern, having different pitches of thread and external diameters, and as a consequence non-interchangeable gear is found in the same fire-station: these and other defects are conditions existing to-day in a number of the brigades, and it is a matter, seeing it possesses the requisite authority, that the United Fire Brigades Association might very well deal with.

In the majority of the brigades a steady improvement in the discipline, drills, and method of work generally is evident.

About the usual number of accidents—none fatal—has been sustained by firemen in the execution of their duty. The most serious were as follows:—

*Auckland.*—November 16, 1911: During the progress of a fire one fireman cut the tendons of his left hand, and another received injuries to his head and shoulders.

February 21, 1912: Fireman burnt about face and head, caused by a gas-explosion.

*Christchurch.*—June 3, 1912: Firemen received burns on face and hands.

*Dunedin.*—May 29, 1912: Four ladders were coupled together when a centre-section coupling broke; two firemen were on the ladder—both were injured, one sustaining compound fracture of the right leg below the knee.

The following casualties to civilians have been reported by Superintendents of brigades as having occurred in their respective districts:—

*Auckland.*—August 11, 1911: A five-roomed cottage was destroyed by fire, and the occupant, Mrs. Julia Kelly, burnt to death. October 30, 1911: A shed owned by the City Council, used for boiling tar, on fire, and a Council employee was severely burnt about the face and legs, afterwards dying from the injuries.

*Christchurch.*—June, 11, 1912: Small fire in private dwellinghouse—two aged ladies were severely burnt and were removed to the Hospital, one subsequently dying as a result of the injuries.

The principal improvements in equipments that have been effected or are in course of being carried out are as follows: New central stations erected and occupied in Dunedin and Hastings respectively. A fire-ladder, 87 ft. in height when fully extended, electrically driven and manipulated imported for Auckland, and a 75 h.p. hose and chemical motor-car for Dunedin. New central stations are in course of erection in Greymouth, Dannevirke, and Petone, all three are approaching completion. New motor-cars are on order: For Auckland a 60 h.p. hose tender; Palmerston North, a 60 h.p. combined hose, chemical, and ladder car. Plans have been approved for a new central station in Gisborne. New Plymouth, plans are being prepared for a section of a new central station, and tenders are being called for a 75 h.p. combined hose, chemical pump, and ladder motor-car. Additions have been made to the street fire-alarm systems in Auckland and Christchurch, and in the latter city two more private thermostatic alarms have been installed. The defective smaller appliances are gradually being replaced with those of more efficient design and construction. Detailed information on the subject of equipment will be found in an attached summary.

A word of warning is necessary in reference to hand chemical extinguishers. There is now a large number of them in New Zealand, and in travelling about I have come across them, supposedly ready for service, in all sorts of conditions—some absolutely empty, others half-full, others with no soda in the water, &c.; also, I have seen several cylinders that have burst when seeking to discharge them, in two cases with a narrow escape from a bad accident. Elsewhere serious injuries have been incurred from this cause. These extinguishers have abundantly proved their value, but if they are to be of service when the emergency arises a little care is necessary, and to that end the following precautions should be adopted: The extinguishers should be periodically discharged and refilled. When discharging everybody connected with the premises, male or female, young or old, should witness the operation at least once, so that they may become familiar with the process. In instantaneous use lies its greatest value. Before recharging the cylinder should be thoroughly washed out for the purpose of removing any trace of acid that might remain. When charging care must be taken that the soda is thoroughly dissolved. Distilled water is best for the purpose, otherwise the soda may crystallize and so stop the vent, with the result that, if there should be any weakness in the cylinder itself, caused by corrosion or being of poor quality, &c., an explosion follows. When recharging see the cylinder-vent, the hose, and the nozzle are clear of any obstruction. Do not forget to put the charge of acid in its place. If the suggested precautions are observed the CO<sub>2</sub> extinguiser will do a fair proportion of what is claimed for it.

The total number of calls received throughout the combined fire districts—namely, 686—shows a decrease of 55 when compared with the number received during the previous year; there was also a decrease in the number of actual fires that occurred—viz., 347, against 366 for the year ending 30th June, 1911.

There is a considerable increase in the number of fires returned as due to incendiarism, unknown causes, and in unoccupied houses, as follows:—

					Incendiarism.	Unknown Causes.	Unoccupied Houses.
1911-12	...	...	...	...	21	125	22
1910-11	...	...	...	...	12	94	15
Increase	...	...	...	...	9	31	7

Unfortunately, there has been a large increase in the amount of property destroyed by fire, insured and non-insured, as compared with the previous year:—

			Insured. £	Uninsured. £	Totals. £
1911-12	...	...	174,651	42,387	217,038
1910-11	...	...	75,708	27,989	103,697
Increase	...	...	£98,943	£14,398	£113,341

The most notable fire of the year occurred in Auckland in November last. The fire took place in a large rambling building occupied as a wholesale dry-goods warehouse, involving a loss totalling some £115,000.

#### *Insurance Losses.*

The insurance loss throughout the Dominion for the year ending 31st December, 1911, amounted to £456,489. The amount is, if anything, understated, and compares as follows:—

Year ending 31/12/11, £456,489.	Average 7 years ending 31/12/10	£421,228
„ 31/12/10, £392,670.	Loss, year ending 31/12/11	£456,489
Increase ...	£63,819	Increase ... £35,261

#### *Fire Waste.*

Adopting the same line of deduction as in previous years, and adding 33½ per cent. to the insurance loss so as to arrive at the approximate fire waste, the comparisons are as follows:—

Year ending 31/12/11, £608,652.	Average 7 years ending 31/12/10	£561,638
„ 31/12/10, £523,560.	Fire waste, year ending 31/12/11	£608,652
Increase ...	£84,092	Increase ... £47,014

The total loss caused by fire throughout the Dominion in the last eight years amounts to the great sum of £4,540,116. Taking the population of New Zealand as numbering 1,009,000 on 31st December last, the fire loss for the year then ending averaged 12s. 0½d. per capita against “10s. 2d. per head in the United States of America, and a little over 1s. 4d. per capita in Europe.” This must be, as in previous years, very near if not actually the world’s record loss per head of population; and, although the attention of the public has been periodically drawn to the matter, so far there has been no concerted movement in the direction of an endeavour to reduce this excessive loss.

Again, as in past years, an analysis of the reports sent in from various districts show that over or excessive insurance is much in evidence, and there can be no doubt that it is one of the principal factors as a cause of the heavy fire loss that prevails, inducing as it does, in addition to but entirely outside the question of the criminal moral hazard, a general carelessness in respect to fire that would not obtain otherwise. Following is an extract taken from the annual report of the General Manager of the New Zealand State Fire Insurance Office: “In comparison with other countries, this Dominion does not hold an enviable position in connection with its fire-loss rates. There are many natural features which contribute to a high loss ratio, but it seems to me that one of the worst contributing agencies is overinsurance.”

The Fire Boards are undoubtedly doing what lays within their province, but before the excessive fire waste now prevailing can be brought within reasonable bounds concerted action is necessary between the public bodies and private companies interested, and the general public must be educated up to a sense of the national loss that is going on.

Very comprehensive efforts are now being made throughout the United States of America to grapple with this problem, and in that connection the following is of interest: “In the year 1911 New York City’s contribution to the national ash-heaps was less than in former years. This was due to the extra attention that is being paid to the prevention of fires and to the educative force of the new Bureau of Fire-prevention. The bureau, a new institution, deals with the prevention of fire, inspection of buildings and their construction not only with a view to fire-resistance but also with regard to means of escape in case of fire. Throughout the country there is now a strong movement in favour of schools of instruction being formed. Fire-marshals are being appointed in the various States. These will either have such schools formed or they will send round instructions as to how fires and fire waste may be avoided, incendiaries run to the open and prosecuted, the causes of fires ascertained, and the like.”

As one of the factors towards the object in view I would, as for years past, strongly advocate the more general installation of private automatic fire-alarms and sprinklers in direct connection with local fire-brigade stations. Seeing the high state of efficiency these alarms have reached, it is much to be regretted that more of them are not installed throughout the Dominion, particularly in the larger wholesale warehouses and department stores. Strong evidence in favour of their general adoption is given in the following extracts taken from a paper entitled "What is Wrong with Fire Insurance," published in the English periodical *Fire*: "In dealing with an outbreak of fire it must be remembered that the all-important factor is the saving of time, especially when life is endangered. Delay of a few minutes at the commencement of an outbreak may possibly cause loss of life and involve the destruction of a vast amount of property. The remedy then must be something which will detect the hidden fire, and so save the initial few minutes. Rapidity of detection and of service in communicating the alarm being the outstanding features of automatic fire-detectors, the question arises, If all this is correct, why are not more premises protected by these ever-vigilant detectors? After some ten years' working the automatic fire-alarm companies are able to show that the losses sustained by the insurance companies on detector-protected risks are less than 5 per cent. of the premiums paid, as against the average loss-ratio of 53 per cent. in respect of unprotected property."

Appended are 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; also detailed reports dealing with each fire district.

I have, &c.,

THOS. T. HUGO,

Inspector of Fire Brigades.

#### 1. SUMMARY OF FIRE CALLS.

District.	Fires.	Chimney Fires.	Bush, Grass, and Rubbish Fires.	False Alarms.	Out of District.	Total.
Auckland .. ..	77	19	19	43	6	164
Christchurch .. ..	93	6	6	150	1	256
Dannevirke .. ..	7	..	..	3	2	12
Dunedin .. ..	50	13	7	20	1	91
Feilding .. ..	9	1	1	..	..	11
Gisborne .. ..	22	..	1	9	1	33
Greymouth .. ..	4	1	..	..	..	5
Hastings .. ..	12	1	1	..	..	14
Hawera .. ..	4	1	..	..	..	5
Hokitika .. ..	5	..	1	..	..	6
Lawrence .. ..	1	..	..	..	..	1
Maori Hill .. ..	2	..	1	..	..	3
Masterton .. ..	9	..	1	1	2	13
Milton .. ..	5	..	..	..	..	5
New Plymouth .. ..	6	..	1	2	1	10
Oamaru .. ..	5	..	..	..	..	5
Palmerston North .. ..	19	3	2	2	..	26
Petone .. ..	10	..	..	8	..	18
Whangarei .. ..	7	..	1	..	..	8
Totals .. ..	347	45	42	238	14	686

## 2. SUMMARY OF FIRE LOSSES.

District.					Insured.	Uninsured.	Totals.
					£	£	£
Auckland	..	..	..	..	101,145	20,570	121,715
Christchurch	..	..	..	..	8,605	740	9,345
Dannevirke	..	..	..	..	820	96	916
Dunedin	..	..	..	..	22,477	305	22,782
Feilding	..	..	..	..	2,535	1,171	3,706
Gisborne	..	..	..	..	4,805	1,055	5,860
Greymouth	..	..	..	..	700	400	1,100
Hastings	..	..	..	..	2,229	580	2,809
Hawera ..	..	..	..	..	8,440	6,350	14,790
Hokitika	..	..	..	..	58	18	76
Lawrence	..	..	..	..	..	1	1
Maori Hill	..	..	..	..	575	125	700
Masterton	..	..	..	..	2,153	3,309	5,462
Milton ..	..	..	..	..	10,810	4,081	14,891
New Plymouth	..	..	..	..	727	33	760
Oamaru	..	..	..	..	512	272	784
Palmerston North	..	..	..	..	2,560	1,317	3,877
Petone ..	..	..	..	..	2,583	626	3,209
Whangarei	..	..	..	..	2,917	1,338	4,255
Totals	..	..	..	..	174,651	42,387	217,038

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

As taken from the Estimates for the Respective Years.

District.					Year ending 30th June, 1910.			Year ending 30th June, 1911.			Year ending 30th June, 1912.			Year ending 30th June, 1913.		
					£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Auckland	..	..	..	..	7,276	0	0	7,454	0	0	8,174	0	0	8,190	0	0
Christchurch	..	..	..	..	7,547	0	0	6,849	0	0	6,645	0	0	7,830	0	0
Dannevirke	..	..	..	..	590	5	3	595	11	6	592	9	4	685	6	0
Dunedin	..	..	..	..	6,000	0	0	6,000	0	0	6,500	0	0	6,500	0	0
Feilding	..	..	..	..	460	0	0	542	0	0	590	0	0	600	0	0
Gisborne	..	..	..	..	524	8	5	541	8	2	1,159	4	6	382	19	10
Greymouth	..	..	..	..	685	10	0	806	4	0	850	6	0	950	0	0
Hastings	..	..	..	..	708	10	0	756	8	6	1,096	0	0	1,051	0	0
Hawera ..	..	..	..	..	450	0	0	443	0	0	496	0	0	509	15	9
Hokitika	..	..	..	..	645	0	0	475	0	0	500	0	0	433	6	8
Lawrence	..	..	..	..	100	0	0	100	0	0	75	2	6	75	6	2
Maori Hill	..	..	..	..	381	0	0	255	0	0	242	0	0	225	0	0
Masterton	..	..	..	..	1,334	14	0	926	11	0	1,023	19	0	1,136	14	0
Milton	..	..	..	..	300	0	0	280	0	0	140	0	0	120	0	0
New Plymouth	..	..	..	..	472	0	0	457	5	2	559	2	0	1,058	0	3
Oamaru	..	..	..	..	538	8	0	500	0	0	500	0	0	360	0	0
Palmerston North	..	..	..	..	1,436	13	0	1,504	0	0	1,699	14	0	1,724	1	4
Petone	..	..	..	..	915	4	11	657	7	5	762	6	7	1,247	7	6
Whangarei	..	..	..	..	366	0	0	250	0	0	300	0	0	550	0	0
Totals	..	..	..	..	30,730	13	7	29,392	15	9	31,905	3	11	33,628	17	6

## 4. SUMMARY OF CAUSES.

	Auckland.	Christchurch.	Danvirke.	Dunedin.	Fellding.	Gisborne.	Greymouth.	Hastings.	Hawera.	Hokitika.	Lawrence.	Maori Hill.	Masterton.	Milton.	New Plymouth.	Oamaru.	Palmerston North.	Petone.	Rotorua.	Whangarei.	Totals.
Ashes, live ..	2	3	..	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9
Benzene in proximity to lights, ..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..	4
„ lighting fires with ..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
„ upsetting, explosions ..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3
„ vapour, proximity to lights ..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Boiling-over of fat ..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
„ tar ..	1	2	..	1	..	2	..	..	1	..	..	..	..	..	1	..	1	..	..	..	9
Candles, drapery, &c., in contact with lighted ..	5	6	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13
„ knocked over ..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	3
„ left burning ..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	3
Carburettor, back-firing of ..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Clothes, airing before fire ..	2	..	..	..	..	2	..	..	..	..	..	..	1	..	..	..	..	..	..	..	5
Defective building ..	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
„ chimneys and hearths ..	1	3	..	1	..	..	..	1	..	1	..	1	..	..	..	..	..	..	..	..	8
„ kitchen-ranges ..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Electric lighting, fusing of wires ..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Gas, defective fittings ..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
„ in act of lighting, shops ..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
„ rings and stoves ..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	3
Ignition, ether vapour ..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
„ picture films ..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Incendiarism ..	..	9	..	..	..	1	..	..	..	..	..	..	..	2	2	1	1	..	..	5	21
Kerosene-lamp explosions ..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	3
Kerosene-lamps knocked over ..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	2
Kerosene-stoves overheating ..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Lights, naked ..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Lime, slaking by rain ..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Matches, children playing with ..	1	1	..	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5
„ rats gnawing ..	..	..	..	..	..	2	..	..	..	1	..	..	..	..	..	..	..	1	..	..	4
„ thrown down alight ..	3	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6
„ trodden upon ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	3
Overheating of bearings ..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
„ beeswax polish ..	2	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6
„ exhaust-pipe ..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
„ timber in proximity to furnaces ..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Painters burning off paint ..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	1
Phosphorus on fire ..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Putting hot iron away in wooden box ..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Previous outbreaks, sparks from ..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	2
Smoking ..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	3
„ in bed ..	2	1	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5
Sparks from chimneys ..	..	..	..	1	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	3
„ copper-fires ..	1	2	..	3	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7
„ fireplaces ..	5	7	..	4	..	4	..	..	1	..	..	1	1	..	..	..	4	..	..	..	27
„ furnaces ..	2	4	..	4	..	1	1	..	..	..	..	..	..	..	..	..	1	..	..	..	13
„ stove ..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Spirit-lamps upset ..	1	1	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	2
Spontaneous combustion ..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	4
Tramps ..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Unknown ..	38	24	5	15	6	6	3	10	2	1	1	..	3	2	1	3	5	5	..	2	132
Totals ..	77	93	7	50	9	22	4	12	4	5	1	2	9	5	6	5	19	10	..	7	347

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

	Auckland.	Christchurch.	Dannevirke.	Dunedin.	Feilding.	Gasborne.	Grey-mouth.	Hastings.	Hawera.	Hokitika.	Lawrence.	Maori Hill.	Masterton.	Milton.	New Plymouth.	Oamaru.	Palmerston North.	Petone.	Rotorna.	Whangarei.	Totals.
Brigades, total strength of	61	42	22	57	25	28	21	28	26	30	12	20	23	15	44	17	26	18	16	20	551
Fire police, total strength of	..	..	..	..	..	..	..	19	..	..	..	..	17	..	..	..	..	..	..	..	36
Fire-stations, residential ..	3	4	1	1	1	1	4	1	1	..	..	..	2	1	2	1	1	1	1	1	23
" non-residential ..	..	..	1	2	..	..	..	..	1	5	1	2	1	..	4	..	1	..	..	2	27
Street fire-alarms—(C) circuits, (B) boxes	11 C., 85 B.	16 C., 88 B.	..	2 C., 20 B.	..	..	..	..	..	..	..	1 C., 5 B., 5 C., 12 B.	..	..	..	..	..	1 C., 6 B.	..	..	36 C., 216 B., 44
Automatic fire-alarms, private	7	12	..	22	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	44
Telephones, points ..	9	Tel.	Tel.	Tel.	Tel.	Tel.	4	Tel.	5	3	..	..	Tel.	..	Tel.	Tel.	Tel.	Tel.	..	Tel.	..
Horses ..	2	4	..	5	1	1 on hire	1 on hire	2 on hire	..	1 on hire	..	..	2	..	..	1	2	1 on hire	..	..	23
Motors, hose and ladder (h.p.)	2 (60, 38)	1 (10)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3
" chemical, hose and ladder (h.p.)	..	3 (30, 30, 14)	..	2 (55, 75)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5
" pump, hose and ladder (h.p.)	1, 800 G.	1, 450 G.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
" electric, ladder (height)	1 (87 ft.)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Fire-engines, steam (gallons)	1 (450)	3 (450, 350, 260)	..	1 (150)	..	1 (600)	1 (600)	1 (800)	1	1 (380)	..	..	1 (350)	..	..	..	..	1 (60)	..	..	9
" manual (gallons)	..	..	..	..	..	..	..	..	..	2 (80, 80)	..	..	1	2 (25, 25)	..	..	..	..	..	..	11
" chemical, horse-drawn	..	3 (140, 140, 70)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3
" chemical, hand-drawn	..	..	..	..	..	..	..	1 (40)	1 (60)	..	..	..	..	1 (60)	..	..	..	..	..	..	3
Hose carts or reels, horse-drawn	2	..	..	3	1	..	..	..	..	..	..	..	..	..	..	1	2	1	..	..	10
Hose carts or reels, hand-drawn	1	7	2	4	2	3	4	2	3	5	1	2	4	..	9	2	4	2	2	4	63
Ladders, escape, horse-drawn (height)	1 (60)	1 (64)	..	1 (80)	..	..	1 (35)	..	..	..	..	..	..	..	..	..	..	..	..	..	4
" coupling (total heights)	4 (26'), 2 (36')	26 (233')	..	16 (160')	5 (50')	3 (30')	..	3 (30')	3 (30')	2 (34')	2 (30')	2 (20')	2 (20')	2 (36')	7	2 (20')	6 (64')	8 (76')	2 (16')	2 (30')	99
" single lengths (total heights)	6 (118')	2 (24')	5 (105')	2 (55')	2 (45')	4 (100')	3 (61')	5 (118')	4 (72')	3 (63')	1 (25')	1 (12')	6 (129')	1 (35')	2 (40')	2 (41')	..	1 (22')	3 (61')	6 (60')	59
Jumping-sheets (sq. ft.) ..	3 (10')	3 (8')	..	1 (10')	..	..	1 (10')	2 (10' 6")	..	..	..	..	..	..	1 (12')	..	1 (12')	..	..	..	12
Smoke-jackets (J), helmets	2 J.	1 J.	..	2 J.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6
Hand-pumps ..	4	5	2	2	1	1	1	2	2	2	1	..	2	..	2	1	2	2	2	2	34
Hand chemical extinguishers	2	4	..	2	..	..	..	..	..	..	..	2	1	2	..	1	1	..	..	..	17
Stand-pipes, ratchet valves	8	1	..	7	..	..	..	..	1	..	..	..	2	..	1	..	..	..	1	..	25
" double heads	..	23	6	5	6	6	10	5	5	5	2	4	2	..	11	5	6	1	..	..	102
" single heads	..	..	..	..	..	2	1	1	..	2	..	..	4	..	4	2	4	6	3	3	34
Hose, canvas, rubber-lined	3,000	2,900	2,300	..	2,600	3,000	4,000	2,000	2,300	3,000	1,260	1,800	3,798	850	5,750	2,400	4,000	2,564	900	1,500	5,900
" unlined ..	3,850	10,640	..	7,100	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	65,612
Water-supply (G = gravitation)	20-120	100-105	80-85	110-150	100-115	90-110	106-113	125-125	30-75	105-110	67-71	120-150	50-75	..	100-123	90-100	85-110	64-68	60-70	113-120	..
Pressure, average, noon-midnight	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..



### AUCKLAND.

Two inspections of the Auckland Fire Brigade, its stations and equipment, have been held—viz., 28th and 29th November, 1911, and 26th April, 1912.

The several turnouts of the brigade and its appliances were accomplished in quick time, and the various drills required were carried out smartly and efficiently.

The stations and equipment are maintained in good order and condition.

Following is a report in the above connection forwarded to the secretary of the Fire Board:—

“SIR,—

“10th January, 1912.

“I have the honour to inform you that I held an inspection of the Auckland Fire Brigade, its stations and equipment, on the 28th and 29th of November last.

“A false alarm of fire was given at 8.12 p.m. on the evening of the 28th from the alarm-box situated at the corner of Wellesley and Hobson Streets. The first motor from the Central Station, with the Superintendent and eleven firemen, arrived at 8.13.39 p.m.; the second motor from the same station, with the Deputy Superintendent and ten men, arrived at 8.13.54 p.m.; and the Ponsonby Station motor at 8.14.14 p.m. The first water was shown at 8.14.3 p.m., or 2 minutes 3 seconds from the time the alarm was given. These results were very satisfactory.

“The subsequent drills and turnouts at the different stations were also performed in a satisfactory manner.

“The plant and appliances I found in good order and condition.

“The internal arrangements of the proposed new building to be erected on the Beresford Street frontage of the Central Station site have been designed in a very suitable and satisfactory manner, and this addition, with the other proposed alterations, should provide ample residential accommodation at this station.

“Whilst in Auckland I noted the unsatisfactory conditions in connection with street fire-hydrant indicators throughout the city. Altogether absent in some cases, they are generally quite too small and indistinguishable, particularly at night-time, when they are most needed. It must be apparent how necessary it is to the efficient work of the brigade that they should, immediately upon their arrival, be able to pick up the street hydrants with the least possible delay. A uniform system of prominent indicators is an important factor in enabling that to be done, and I would recommend that your Board should suggest to the City Council the advisability of adopting a system similar to that now being installed in Christchurch—viz., a glazed white tile about 14 in. long on the edge of the footpath, 8 in. broad from the edge of the curb back on the footpath, moulded with a lip 4 in. in depth, the tile let in flush with the lip, showing on the street face of the curb: the surface of the tile corrugated to prevent persons from slipping on it.

“I have, &c.,

“THOS. T. HUGO,

“Inspector of Fire Brigades.”

The plans for the additions to the Central Fire-station, to be erected on the Beresford Street frontage, include two sets of married quarters and accommodation for twenty-two single firemen, and the building is now being proceeded with.

The City Council are replacing the old street fire-hydrant indicators with those of a more useful pattern.

A combined turntable ladder and hose car ordered in England has been landed, and will be put in commission shortly. The motive power of the car is electricity, and the same power is used for working the ladder, which can be extended to a height of 87 ft. The machine should prove a most valuable addition to the plant of the brigade.

The Board has recently ordered from England a new 60 h.p. motor hose-car for the use of the brigade.

During the year ending 30th June, 1912, the brigade has attended 164 calls, as against 167 for the previous year, of which number 77 were actual fires occurring in the city.

The fire loss for the year amounted to £121,715, as compared with £6,982, an increase of £114,733. Of the total loss £115,000 was due to the fire that took place on the premises of Messrs. Macky, Logan, and others on the 16th November, 1911.

The estimated cost of the brigade for the year 1912-13 is £8,190, as against £8,174 for 1911-12, an increase of £16.

### CHRISTCHURCH.

Two inspections of the Christchurch Fire Brigade, its stations and equipment, have been made—viz., 26th and 27th October, 1911, and 25th March, 1912. At the request of the Fire Board a special visit was paid to Christchurch on the 2nd May last for consultation purposes.

The following two reports, forwarded to the secretary of the Board, and dated 4th November, 1911, and 12th April, 1912, cover the respective inspections:—

“SIR,—

“4th November, 1911.

“I have the honour to submit for the consideration of your Board the following report in connection with my inspection of the Christchurch Fire Brigade on the 26th and 27th ultimo.

“A surprise false alarm of fire was given from the box situated at the corner of Lichfield and Colombo Streets at 8.34 p.m. on the 26th ultimo. No answering ring was received from the bell placed above the alarm-box, but upon making inquiries at the station later the fireman on

duty in the watch-room admitted that he had forgotten to give the reply ring, and upon testing the line the bell was found to be in order. The first motor passed the post at 8.36.30 p.m., the second (turbine pump) arrived at 8.37.30 p.m., the horsed escape at 8.38.10 p.m., and the two-horsed chemical from Chester Street at 8.38.40 p.m. There were in attendance the Superintendent and fifteen officers and men. The motor pump was got to work from the sump at the same corner, showing water at 8.40.26 p.m.

"As a result of a second turnout at the Central Station both motors got away in 20 seconds.

"There is an evident improvement in the drill carried out with both ladders, but some parts of the physical drill is still performed in a perfunctory manner.

"A false alarm was given the same evening at the Chester Street Station at 9.52 p.m., when the two-horsed chemical was turned out in 1 minute 50 seconds, and the steamer in 3 minutes 5 seconds.

"The Sydenham and St. Albans fire-stations were inspected on the 27th; the turnout was satisfactory in each case, and the stations and appliances were found in good order. A great improvement has been made in the utility, &c., of the Sydenham Station by the provision of the set of married quarters

"I would again call the attention of your Board to the desirability of placing additional street hydrants—pillar hydrants for preference—in the more congested parts of the city, or at least in the vicinity of the more hazardous block risks.

"Whilst in Christchurch I had the opportunity of examining the plans for the proposed new Central Fire-station, and, as pointed out to the Chairman of your Board, I consider that modifications in some instances and rearrangements in others would very considerably improve the efficiency of the building as a fire-station.

"I have, &c.,

THOS. T. HUGO,

Inspector of Fire Brigades.

"SIR,—

"12th April, 1912.

"An inspection of the Christchurch Fire Brigade, its stations and equipment, was made on the 25th and 26th March last.

"The turnout at the Sydenham Station in the afternoon was not a satisfactory one, the delay being caused by the man on duty not properly understanding what he should have done when called out.

"At St. Albans Station there was only one man present, the other permanent man stationed there being absent at the time on hydrant-inspection duty.

"At the inspection muster on the evening of the 25th at the Central Station there were present the Superintendent, the Deputy Superintendent, and fifteen firemen.

"The motor turbine was got to work from the main in Madras Street; the valves and screwed inlets for connecting the pump to the mains, and so thereby drawing the water directly therefrom, have not yet been fitted, and the portable dam had to be brought into use, the result serving to accentuate the need of having the connections fitted as soon as possible. The water-tower and ladder escape, as also the motor hose-reel, was got to work, jumping-sheet practice carried out, &c.

"It was very evident during the course of carrying out the various drills that there was an absence of any proper system or organization, and that the men were much in need of a thorough course of drill.

"In testing the nozzles in actual service it was found that some of them were badly defective. All the nozzles should be tested, and those found defective replaced. As it is, some new nozzles of intermediate size are required; and, as pointed out on previous occasions, nozzles of a larger diameter than  $\frac{3}{4}$  in. should be used on the first deliveries. When obtaining new nozzles, care should be taken that only those of standard pattern be purchased.

"A pressure-gauge should be installed in the watch-room at the Central Station, and the water-pressure showing thereon booked in the occurrence-book at stated times, not less than twice in the twenty-four hours; also, upon receipt of an alarm of fire, the pressure then showing should be booked by the man on duty immediately after he has performed his more urgent work. The alternative to the above is to install an automatic recorder. A plan of the water-main reticulation, and periodically brought up to date, should be hung in the station.

"The stations and appliances are maintained in good order and condition.

"I have, &c.,

THOS. T. HUGO,

Inspector of Fire Brigades."

The plans of the proposed new Central Fire-station are now in the hands of the architects for completion, and the Board propose to proceed with its erection in due course.

The City Council are now making improvements in the street fire-hydrant indicators.

Although the total number of false alarms received amounted to 150, there has been a large decrease in the number returned as due to maliciousness—44, as against 121 during the previous year. Presumably this is due to a considerable extent to the installation of gongs on the alarm-posts in the street.

During the past year the brigade has responded to 256 calls that included 93 actual fires, an increase of 26 fires when compared with the previous year.

The fire loss for the year amounted to £9,345, as against £12,728 for the previous year, a decrease of £3,383.

The estimated cost of the brigade for the year 1912-13 is £7,830, as against £6,645 for 1911-12, an increase of £1,185. The increase in the estimate is due to the purchase of a site for the proposed new Central Fire-station, &c.

## DANNEVIRKE.

Two inspections of the Dannevirke Fire Brigade and its equipment were made—viz., 8th November, 1911, and 12th June, 1912.

At the first inspection there were present the Superintendent, Deputy, and twelve firemen, or fourteen out of twenty then on the roll. The authorized strength of the brigade is twenty-four all told: this includes two messengers. During the course of the test drills it was evident that the members of the brigade required more drill and instruction generally.

The following report, forwarded to the secretary of the Board, covers the second inspection:—

"SIR,— "Office of the Inspector of Fire Brigades, Wellington, 15th June, 1912.  
"I have the honour to inform you that an inspection of the Dannevirke Fire Brigade and its equipment was held on the 4th instant.

"Out of the total strength of twenty-two on the roll there were present at the inspection muster the Superintendent, Deputy Superintendent, and twelve firemen, with five men on leave and three absent—not a satisfactory attendance; and this remark applies also to the attendance at the previous inspection held in November last.

"A test of the water-pressure was made at several points in the town, and an average standing pressure of 85 lb. was registered. A series of experiments with various lengths of hose and different-sized nozzles were also carried out.

"The plant and appliances at both stations are maintained generally in good order.

"When turning in new hose it should always be cut into uniform lengths of 100 ft. That at present in use has been cut altogether too short, and no two pieces appear to be of the same length. The whole supply should be measured, the length of each piece marked on its female coupling end, and the total amount in stock ascertained; the supply should not be allowed to fall below 2,000 ft. of good serviceable hose.

"A number of the branches are dented, and they require placing on a mandrel and straightening. Three new  $\frac{7}{8}$  in. nozzles are required.

"In company with the Chairman and another member of the Board, a visit was paid to the new Central Fire Station, now in course of erection, and various suggestions were made in that connection.

"I have, &c.,

Thos. T. Hugo,

"Inspector of Fire Brigades."

The new Central Station now in course of erection in Allardyce Street is nearing completion, and should be ready for occupation shortly.

The attendance of members of this brigade at the inspection musters and subsequent drills during the year just ended has been far from satisfactory, and points to a want of discipline in that respect. Not only has there been a very considerable delay in sending in the report of fires occurring in the district, but also the report-forms have been filled in in a very perfunctory manner.

During the year just ended seven fires have taken place in the district, the same number as in the previous year.

The fire loss amounted to £916, compared with £955 for 1911, a decrease of £39.

The estimated cost of the brigade for the year 1912-13 is £685 Gs., as against £592 9s. 4d. for 1911-12, an increase of £92 16s. 8d.

The increase in the estimates is due to (1) providing a horse for the hose-cart, hitherto drawn by hand; (2) removal of bell-tower to new-station site; (3) furnishing for new station.

## DUNEDIN.

Inspections of the Dunedin Fire Brigades, their stations and equipments, have been held as follows: Dunedin—27th September, 1911, 2nd and 7th February, 1912; South Dunedin—28th September and 3rd February; Caversham—28th September.

At the inspection of the South Dunedin section of the brigade on the 28th September there were present the Captain, Lieutenant, and eleven firemen, representing the full strength of the brigade—thirteen—then on the roll.

The various drills were carried out in a thoroughly competent manner, and a very efficient discipline is evident.

The station and equipment is maintained in good order and condition.

The two following reports, forwarded to the Secretary of the Board, and dated 5th October, 1911, and 27th February, 1912, respectively cover the other inspections:—

"SIR,— "5th October, 1911.  
"I have the honour to inform you that during the course of my inspection of the Dunedin City Fire Brigade on the evening of the 27th ultimo, it became apparent there was something wrong with the nozzles that were being used, the jet breaking or spraying in some cases within 15 ft. of the branch, instead of projecting a solid stream to a distance of at least 90 ft. Upon examination I find that all the nozzles over 1 in. in diameter are badly defective in their construction. It will be readily understood that this is a very serious matter, and properly designed nozzles should be obtained as soon as possible. I am sending you by post, for comparative purposes, a standard nozzle,  $\frac{7}{8}$  in. diameter, the only one I have available; also, I enclose herewith a copy of the *Fireman* for 1st December, 1909, containing on page 105 an instructive article on nozzles. As this paper is of value to me I shall be obliged if you will return it and the nozzle when finished with.

"I would again call attention to the small total number of men available for actual work at a fire during the hours that experience shows the greater average number of calls are received—between 7 p.m. and midnight.

"At the time of my inspection the strength of the brigade was twenty all told—viz., Superintendent, Deputy Superintendent, sixteen permanent and two auxiliary firemen; and during the hours named, of the permanent force there were available only eight all told, accounted for as follows—three on leave, four on theatre duty, one on station duty, one motor-driver, and one horse-driver—thus absorbing ten out of the eighteen, and leaving for actual fire work in the city the Superintendent, Deputy, six permanent and perhaps two auxiliary firemen—not a sufficient strength.

"During my inspection of the Caversham section of the brigade it became evident that the members required more drill.

"In am enclosing herewith a duty list form for the information of your Superintendent.

"I have, &c.,

"THOS. T. HUGO,

"Inspector of Fire Brigades."

"Sir,—

"27th February, 1912.

"Following upon my recent inspection of the Dunedin Fire Brigade, its stations and equipments, I beg to submit the following report for the consideration of your Board:—

"An inspection muster of the city section of the brigade was held at the Central Station on the evening of the 2nd instant, when there was present the Superintendent, Deputy Superintendent, twelve permanent and eleven auxiliary firemen, or twenty-five officers and men, out of the total strength of thirty attached to the Central Station district.

"The turnout was performed smartly, and the station and equipment found in good order and condition.

"I inspected the South Dunedin Station and equipment on the 3rd instant, and found everything in good order. A test of the pressure in and flow of water from the mains was carried out at various points in the city on the 2nd instant, and again on the 7th instant, between the hours of 7.30 p.m. and 10 p.m., when there would be very little "draw off." The following are the results obtained:—

"Cumberland Street, opposite Central Station: Pressure in main 130 lb.

"Athol Place: 3 in. main; pressure at hydrant 123 lb. with 300 ft. hose and  $\frac{7}{8}$  in. nozzle; the pressure at the branch was 28 lb.

"Leith Street: 3 in. main; pressure at hydrant 118 lb. with 300 ft. hose and  $\frac{3}{4}$  in. nozzle; the pressure at branch was 26 lb., and with 100 ft. hose and  $\frac{7}{8}$  in. nozzle gave 22 lb.

"Buller Street: 5 in. main; pressure at hydrant 147 lb., that with 100 ft. hose, and  $1\frac{1}{8}$  in. nozzle projected an *efficient* fire stream 30 ft. only, and when a second delivery was got to work from this main the first jet was only projected some 14 ft.

"Clyde Street: 3 in. main; pressure at hydrant 92 lb.; with 100 ft. hose and  $\frac{3}{4}$  in. nozzle the stream projected some 28 ft. only.

"Clyde Avenue: 3 in. main; pressure at hydrant 91 lb., that with 100 ft. hose and  $\frac{3}{4}$  in. nozzle gave a jet reaching some 10 ft.

"All hose used was  $2\frac{1}{2}$  in. unlined canvas.

"The results obtained from the foregoing tests prove very conclusively that the flow of water in the mains is badly obstructed either by extensive corrosion, silt-deposit, or both, and this to such an extent that I doubt if in some of the 3 in. mains there remains a clear waterway 1 in. in diameter. As an illustration of the extent of this obstruction take the case of Buller Street under the test conditions—i.e., a 5 in. main, 147 lb. hydrant pressure, 100 ft.  $2\frac{1}{2}$  in. unlined canvas hose with  $1\frac{1}{8}$  in. nozzle: there should have been projected an efficient fire-stream to a height of 80 ft. at an angle of  $45^\circ$  discharging from the nozzle over 280 gallons of water per minute, whereas there was a stream projected some 30 ft. with a discharge of about 120 gallons per minute. Again, in Clyde Street, in place of an efficient fire-stream being projected some 62 ft. with a nozzle discharge of over 120 gallons per minute, we have only a 28 ft. stream with a discharge of 60 gallons; with still worse results in Clyde Avenue, but this is partly due to the only hydrant in the street being placed close to a dead end.

"To sum up: The supply of water for fire-suppression purposes over large portions of the City of Dunedin is quite inadequate, due primarily to the generally small diameter of the pipes laid down, and, secondly, to the growth of obstruction in the pipes; and I would particularly mention in this respect the thickly populated district bounded by the harbour-front from St. Andrew Street to and along Castle Street as far north as Brook Street, in which the reticulation is by means of 3 in. mains and under, with the exception of a 5 in. main laid down Albany Street, also those blocks on the reclamation on both sides of the steamer-basin. Another matter affecting the efficiency of your water-reticulation service in relation to fire protection is the wide spacing of the street hydrants, that in some cases are over 5 chains apart; and this is contrary to the provisions of the Municipal Corporations Act, that limits the distance to 100 yards apart: also the faulty marking of a number of the hydrants, some of the indicators being very misleading and in some cases absent altogether.

"I have, &c.,

"THOS. T. HUGO,

"Inspector of Fire Brigades."

A new Central Station has been erected in Cumberland Street, and was officially opened in November last. The building is constructed of brick, two stories in height, and contains commodious engine-house having four front exit-doors, Board-room, Secretary's office, Superin-

tendent's office, watch-room, loose-boxes, and various workshops, large gymnasium, and six sets of quarters for married men, &c.

A new 75 h.p. combined hose and chemical motor has recently been imported, and is now in commission.

During the year just ended ninety-one calls have been attended by the brigade: they include fifty actual fires, or twenty-five less than during the previous year.

The fire loss amounted to £22,782, as compared with £30,987, a decrease of £8,205.

The estimated cost of the brigade for the year 1912-13 is £6,500, the same as for 1911-12.

#### FEILDING.

Two inspections of the Feilding Fire Brigade and its equipment have been made—viz., on the 29th August, 1911, and the 15th and 16th January, 1912. At the first inspection there were present the Superintendent, Deputy, fourteen firemen, and one messenger, that with one on duty, one sick, and two on leave, accounted for twenty-one out of a total strength of twenty-three then on the roll. A number of test drills were carried out: some considerable time was lost in getting the first delivery to work, but the remainder of the drills were performed in a fairly satisfactory manner.

The following report covers the second inspection:—

“SIR,—

“26th January, 1912.

“Following upon my inspection of the Feilding Fire Brigade and its station and equipment on the 15th and 16th instant, I have the honour to submit the following for the consideration of your Board:—

“At the inspection muster at 8.5 p.m. on the 15th there was present Superintendent, Deputy Superintendent, and sixteen firemen, that with one absent on duty accounted for nineteen out of a total strength of twenty-one then on the roll—a satisfactory attendance.

“A turnout of the hose-reel and a subsequent dry-hose drill was accomplished smartly, with the exception that one of the stand-pipes could not be shipped. A later examination proved the fault due to the lugs at the foot of the stand-pipe being too thick to allow of them catching under the lips of the hydrant: this has since been remedied.

“A test of the water-pressure was made directly off the main in Hobson Street that registered 95, and off the large main in Kimbolton Road that registered 98; also a series of experiments were carried out for the purpose of illustrating the loss of pressure caused by the addition of lengths, &c.

“The station and appliances are maintained in good order and condition.

“The brigade require a two-into-one union or collecting-piece. Some of the stand-pipes are so short in the shank that it is impossible to ship them in some of the deeper-seated hydrants, and these should be lengthened to a uniform length of 24 in.; also, some of the nozzles are not of good design, and as a consequence, instead of a solid jet being projected some considerable distance, the column of water breaks or sprays at a short distance from the nozzle: this is a matter that seriously affects the efficient work of the brigade, and nozzles of a better design should be obtained.

“In Feilding, as elsewhere, I notice a number of verandahs having all-glass roofs, some recently erected: such verandahs prove at times dangerous obstacles to firemen, and I would recommend your Board should suggest to the Borough Council the advisability of passing a by-law making it compulsory on the part of any person in the future erecting an all-glass-top verandah to provide a gangway along the whole length directly under the first-floor windows, not less than 2 ft. in width, with a solid panel 2 ft. wide running from the street-edge to the said gangway at both ends of the verandah. A similar by-law is working satisfactorily elsewhere.

“I have, &c.,

“THOS. T. HUGO,

“Inspector of Fire Brigades.”

During the past year nine fires have occurred in the district, or two more than in the previous year. The fire loss amounted to £3,706, compared with £1,236 for the previous year, an increase of £2,470.

The estimated cost of the brigade for the year 1912-13 is £600, as against £590 for 1911-12, an increase of £10.

#### GISBORNE.

Two inspections of the Gisborne Fire Brigade and its equipment have been held—viz., 12th and 13th October, 1911, and 19th and 20th February, 1912.

At the first inspection there were present the Superintendent, Deputy, seventeen firemen, and two cadets, that with four on leave accounted for twenty-five out of a total strength of twenty-six then on the roll.

Various test drills were carried out, and for the purpose of testing the time required to obtain water under pressure from the auxiliary fire-mains the stationary-engine fire was lit at 7.58 p.m., and a pressure of 75 lb. was recorded on the steam-gauge at 8.12.15 p.m. A fair pressure was shown when the water was turned on from a stand-pipe shipped at the corner of Gladstone Road and Peel Street.

During the progress of a fire that occurred on the night of the 14th October in Aberdeen Road I noted that the brigade had no lamps available; also that a considerable amount of the water-pressure was being lost owing to defective packing and washers on the stand-pipe then being used.

The following report, forwarded to the Secretary of the Board, covers the second inspection:—

SIR,—

“ 12th April, 1912.

“ An inspection of the Gisborne Fire Brigade, its stations and equipment, was made on the 19th and 20th February last.

“ At the inspection muster on the evening of the 19th there were present the Superintendent, Deputy Superintendent, twenty-one firemen and three cadets, that with two on leave accounted for the full strength of the brigade—viz., twenty-eight all told, a satisfactory attendance.

“ The appliances and gear are maintained in general good order and condition.

“ A test of the water-pressure was made, and the following pressures recorded: Palmerston Road, 117 lb.; Gladstone Road, 113 lb.; Peel Street, 114 lb.

“ Some of the hose used was found to be full of pinholes. The loss of pressure in one length, due to that cause, amounted to as much as 14 lb. Some of the nozzles used, though not the worst of their class, are not of the best design. Care should be taken when purchasing new gear that only standard patterns are accepted.

“ It is evident to me that the members of the brigade are not being given sufficient practice, drill, and instruction, and this matter should receive attention.

“ I have, &c.,

THOS. T. HUGO,

“ Inspector of Fire Brigades.”

The Board have under order a 50 h.p. motor-car to seat eight men, fitted with a chemical cylinder of 40 gallons capacity, a 35 ft. telescopic ladder, and to carry 1,600 ft. of hose, &c.

Plan for a new Central Station has been submitted to the Department, and approved of, subject to certain suggested alterations that have since been adopted by the Board.

During the year just ended thirty-three calls were received by the brigade, an increase of nine as compared with the previous year, of which twenty-two proved to be actual fires.

The fire loss amounted to £5,860, as against £7,892 for the previous year, a decrease of £1,532.

The estimated cost of the brigade for the year 1912-13 is £382 19s. 10d., as against £1,159 4s. 6d. for 1911-12, a decrease of £776 4s. 8d.

#### GREYMOUTH.

Two inspections of the Greymouth Fire Brigade and its equipment have been held—viz., 15th November, 1911, and 21st March, 1912.

At the first inspection there were present the Superintendent, Deputy, and seventeen firemen, that with one on leave accounted for twenty out of a total strength of twenty-one—a satisfactory attendance. Various test drills were carried out in an efficient manner.

At the second inspection there were present the Superintendent, Deputy, and fourteen firemen, that with four on leave accounted for the full strength of twenty then on the roll. The following report covers other matters in connection with the second inspection:—

SIR,—

“ 12th April, 1912.

“ An inspection of the Greymouth Fire Brigade, its station and equipment, was made on the 21st March last.

“ The arrangements made for the temporary housing of the fire appliances during the erection of the new Central Station are very satisfactory. The sub-stations and their equipment are maintained in good order.

“ A test of the water-pressure was made, and it was found that the gauge at the Town Hall was weak to the extent of registering 6 lb. more than the true pressure. Whilst the testing of the branches and nozzles was being carried out it was apparent that a considerable quantity of the hose in service was in a bad condition, and a further supply should be provided. Some of the branches are badly constructed, and nozzles of intermediate sizes,  $\frac{3}{4}$  in. and  $\frac{7}{8}$  in. are required.

“ I would again direct the attention of your Board (see previous report relating to the subject) to the entire unprotected condition of Preston Road and the Blaketown district. In view of the large number of new buildings lately erected in these neighbourhoods the position is becoming more risky every day. If there is no prospect of the high-pressure water-supply being extended in the near future, shallow wells might be sunk at certain points in proximity to the Lagoon, and the manual engine, at present lying in the Boundary Street Station, placed there. With the provision of a chemical engine in Blaketown and the establishment of a section of the brigade in that neighbourhood the foregoing suggestions, if carried out, would provide a reasonable degree of protection for the present.

“ I have, &c.,

THOS. T. HUGO,

“ Inspector of Fire Brigades.”

A new iron-framed bell-tower has been erected in Tainui Street.

The new Central Station now being erected on the site of the old station in Boundary Street is approaching completion, and will be ready for occupation shortly.

During the year just ended four fires have occurred in the district, the same number as during the previous year.

The fire loss amounted to £1,100, as compared with £1,363, a decrease of £263.

The estimated cost of the brigade for the year 1912-13 is £950, as against £850, an increase of £100.

## HASTINGS.

Three inspections of the Hastings Fire Brigade and the Fire Police Corps with their equipments have been made—viz., 9th October, 1911; 15th February and 5th June, 1912.

At the first inspection there were present of the fire brigade, Superintendent, nineteen firemen, and three messengers, that with four on leave accounted for the full strength of the brigade, twenty-seven then on the roll. Of the Fire Police there were in attendance Captain, two Lieutenants, and ten constables, that with five on leave and one sick accounted for nineteen out of the full strength of twenty all told.

Various test drills, wet and dry, were carried out in a satisfactory manner.

The following two reports, dated 27th February and 13th June respectively, cover the later inspections:—

“ Sir,—

“ 27th February, 1912.

“ An inspection of the Hastings Fire Brigade and the Fire Police Corps was held on Thursday evening, the 15th instant, when there was present, of the Fire Brigade, the Superintendent, Deputy Superintendent, twenty-one firemen, and three messengers; these, with two firemen on leave, account for the full strength of the brigade—viz., twenty-eight all told. Of the Fire Police Corps there was present the Captain, one Lieutenant, and six constables, with five on leave and five absent, or an attendance of eight out of a total strength of eighteen—an unsatisfactory result.

“ There was a turnout of the steam fire-engine and the chemical engine, with a discharge of the latter; but, seeing that the water from the newly installed high-pressure system will be available for fire-suppression purposes in the course of a few weeks' time, and that it is my intention, when such is the case, to hold a comprehensive inspection drill, no extensive drill was carried out on this occasion. An inspection of the nearly completed new Central Fire-station was made on the 16th instant, after which certain faults and deficiencies, mostly of a minor character, with the exception of the grading of the engine-house floor, was pointed out to the architect, who promised to have matters rectified.

“ In view of the near completion of the water-supply it is necessary to supply the brigade with suitable equipment, and I would recommend the following appliances should be provided: Four double-headed stand-pipes with 3 in. barrels; four branches; two  $\frac{7}{8}$  in., four 1 in., and one  $1\frac{1}{8}$  in. nozzles. A pressure-gauge should be fixed in the watch-room, as also a plan of the water-main reticulation hung there.

“ I have, &c.,

THOS. T. HUGO,

“ Inspector of Fire Brigades.”

SIR,—

“ Office of Inspector of Fire Brigades, Wellington, 13th June, 1912.

“ I have the honour to inform you that an inspection of the Hastings Fire Brigade and the Fire Police Corps with their equipments was held on the 5th instant. Of the brigade there were present the Superintendent, Deputy Superintendent, twenty firemen, and three messengers: that, with two on leave and one absent, accounts for the full strength of the brigade—twenty-eight—a satisfactory muster. Of the Fire Police, with a total strength of nineteen on the roll, there were present the Captain, two Lieutenants, and nine constables, with three on leave, two sick, and two absent—an improvement when compared with previous attendances of the members of this corps at my inspections.

“ Readings of the standing pressure on the newly installed high-pressure water-supply reticulation was taken at various points, the water being turned on from the reservoir for the purpose. The pressure registered at the corner of Market and Lydon Streets was 126 lb., and at two different points in Heretaunga Road 127 lb. and 127½ lb. respectively. These readings perfectly agree with the static head and the height of the water in the reservoir at the time—a very satisfactory result.

“ Certain experiments were carried out with different lengths of hose and nozzles, and during their course it was apparent that some of the hose was not in sufficiently good condition to stand the pressure of water that is now available, the whole stock of hose requires testing, and any lengths found defective either repaired or replaced. Also, difficulty was experienced with some of the couplings owing to there being several different gauges of thread amongst them: this, however, has been remedied.

“ As suggested while in Hastings, instead of building a gallows for the one purpose of hose-drying, the bell-tower at present standing on the Railway Reserve should be removed from thence and erected at the fire-station, its normal place: it could then be utilized for hose-drying, drill, and lookout purposes, &c. I noticed, during the course of the before-mentioned experiments, that there was a tendency to handle the appliances more roughly than was at all necessary: this should be corrected by the brigade officers whilst the usual drills are being carried out. There are several matters in connection with the station fittings, as pointed out in my previous report, not yet carried out, though I understand they will be attended to in due course.

“ I have, &c.,

THOS. T. HUGO,

“ Inspector of Fire Brigades.”

A new Central Fire-station of brick construction has been erected on the corner of Market and Lydon Streets, and the brigade is now in occupation. The building provides, on the ground floor, engine-house (36 ft. by 40 ft.), Board-room, watch-room, three bedrooms, three horse-stalls, and conveniences, &c.; on the first floor, married quarters for caretaker and recreation-room. Some details yet require attention.

A high-pressure water-supply has been installed; although not yet quite complete, the water is available for fire-extinction purposes over a considerable portion of the town. The engine-house is situated on Eastbourne Street. The water, drawn from wells, is pumped by means of two sets of Diesel engines and pumps, having a capacity of 600 gallons per minute each against a head of 403 ft., to a reinforced-concrete reservoir built on the Havelock Hills, having a head of 289 ft. from the pump-level to the outlet. The supply main running along the greater length of Heretaunga Street is 12 in. in diameter; none of the reticulation pipes is less than 4 in. in diameter, and the system is well gridironed. The street fire-hydrants have 3 in. waterways, and are spaced at an average of 250 ft. apart. The system has been well laid out, and the static pressure, averaging about 125 lb. throughout the town, should meet all reasonable requirements for fire-protection purposes.

During the year twelve fires have occurred in the district, four more than during the previous year.

The fire loss amounted to £2,809, as compared with £530, an increase of £2,279.

The estimated cost of the brigade for the year 1912-13 is £1,051, as against £1,096 for 1911-12, a decrease of £45.

#### HAWERA.

Two inspections of the Hawera Fire Brigade and its equipment have been held—viz., 1st September, 1911, and 18th January, 1912.

The following reports, forwarded to the secretary of the Board on 19th September, 7th October, and 26th January, cover the inspections, &c. :—

SIR,—

“ 19th September, 1911.

“ Following upon my inspection of the Hawera Fire Brigade on the 1st instant, I beg to direct the attention of your Board to the following matters :—

“ The ringing arrangements of the bell at the Central Fire Station, to which I have previously called attention, have not yet been improved, and I understand that at the last alarm given the chain slipped off the motor sprocket-wheel. This matter should receive prompt attention.

“ There are now a number of fairly large houses in Collins Street, and a water-main should be laid down in that street for fire-protection purposes, particularly in view of the comparatively low pressure, and that in the event of having to run out any long lines of hose very little water would be available.

“ I have, &c.,

THOS. T. HUGO,

“ Inspector of Fire Brigades.”

“ SIR,—

“ 7th October, 1911.

“ I beg to acknowledge receipt of your letter dated the 2nd instant, and, in reply thereto, have to inform you, in the first place, seeing that your water-supply is subject to intermittent diminution of pressure, I do not think it would be judicious on the part of your Board to get rid of their manual engine, and in any case think they would have some difficulty in disposing of it, as there have been for some time past several second-hand manuals advertised for sale.

“ As to chemical engines, they are undoubtedly an invaluable appliance in places where there is no supply or scarcity of water, but when there is a regular supply their value consists chiefly as a first-aid machine, and to ensure successful results must arrive on the scene of action very promptly. From their very nature—that is, carrying their own charges—they are somewhat heavy of transport by manual means; but, seeing that you have a number of houses wholly or partially isolated from the fire-service reticulation, and that your brigade is numerically strong, I am of opinion that a chemical engine would be suitable for and should be of good service in Hawera. I have not seen a catalogue, and am not acquainted with the details of the particular make of engine you mention, but if your Board decides to obtain one I would point out a number of these engines, of various sizes, that have given every satisfaction to the purchasers, have been manufactured in the Dominion, and at a price that compares favourably with the cost of the imported ones.

“ I have, &c.,

THOS. T. HUGO,

“ Inspector of Fire Brigades.”

“ SIR,—

“ 26th January, 1912.

“ Following upon my inspection of the Hawera Fire Brigade, its station and equipment, held on the 18th instant, I beg to submit the following report for the consideration of your Board :—

“ At the inspection muster at 8 p.m. there was present the Superintendent, Deputy Superintendent, and twenty officers and firemen, that, with two on duty and four on leave, accounted for the total strength of the brigade.

“ A series of tests of the water-pressure was carried out, with the following results: A hydrant was shipped on the 4 in. main, Union Street, and a pressure of 45 lb. was registered; orders were then given to cut off the pump drawing from the large supply main: in 3 minutes 10 seconds a pressure of 55 lb. registered, and this was the maximum obtained by that operation. Orders were then given to concentrate the water: this operation called for the closing-down of five different valves. Eleven minutes after the order was given the pressure had risen to 68 lb., and 3 minutes later to 89 lb., which was the maximum pressure registered in Union Street, as also off the 6 in. main in High Street, taking in all some 17 minutes to obtain this result.



"During the first progress of a fire, or for the first quarter of an hour at least, extra care and sound judgment must be exercised by the officers of the brigade if satisfactory results are to be obtained from the low pressure available—say, an average of 60 lb. over that time.

"Experiments were also carried out with various deliveries and lengths of hose, some of which pointed to the supposition that there must be considerable corrosion or other obstacle to the free flow of water in the Union Street main.

"Some of the nozzles used were of a defective design, the solid jet breaking at a comparatively short distance from the branch: this is a serious defect, particularly in your case, in view of the low water-pressure.

"The station and appliances are maintained in good order and condition, and the members of the brigade worked with a will and smartly in the carrying-out of the above experiments.

"I have, &c.,

THOS. T. HUGO,

"Inspector of Fire Brigades."

The supply of water available for fire-extinction purposes has been gradually decreasing both in volume and pressure for some time past, and at that the maximum pressure supposedly available has become intermittent, as according to the report of the Superintendent of the brigade the highest pressure he was able to obtain during the course of the fire that occurred on the 28th April last was not more than 60 lb. The Borough Council, however, are now taking steps to improve the supply, and following is a report in that connection, dated 12th June, and forwarded to the Town Clerk:—

"SIR,—

"Office of Inspector of Fire Brigades, Wellington, 12th June, 1912.

"In reply to your wire dated the 4th instant, and to your letter dated the 7th instant, I beg to inform you that I have considered the report dealing with the improvement of the water-supply in your Borough for fire-protection purposes, and consider the water-tower scheme, as laid out and recommended in that report, is entirely inadequate as to storage, volume, and pressure. I have had two consultations with Mr. Cameron, your Borough Engineer, and am of opinion that the scheme as finally proposed by him should meet the requirements of your borough for the time and under present conditions. At the same time I must state it is not a permanent solution of the question, as according to my deductions, drawn from such information as I have been able to obtain, it will be found necessary in the not-distant future to duplicate the supply main running from the head reservoir to the town. The principal points of the scheme as finally proposed by Mr. Cameron are shortly as follows: A storage-reservoir tower to be erected in the neighbourhood of the fire-station, having a storage capacity of 120,000 gallons, having a head of 140 ft. above the High Street level, or a guaranteed pressure of not less than 60 lb. A 10 in. main, for fire purposes only, to be laid from the tower along High Street as far as Victoria Street, and there connected with the town reticulation. An electric-driven direct-coupled pump of the Rees-Returbo type, having a capacity of 450 gallons per minute against a head of not less than 140 ft., housed at the foot of the tower, and having direct-suction connections to both the head reservoir 10 in. supply main and to the baths (bath having a holding-capacity of 1,000,000 gallons), to pump directly into the 10 in. fire main connected with the town reticulation, or into the tower reservoir, as may be required. A reflux or stop valve to be fitted on the 10 in. supply main leading from the head reservoir placed at a suitable point in Glover Road.

"I have, &c.,

THOS. T. HUGO,

"Inspector of Fire Brigades."

During the past year four fires have occurred in the district, or two less than during the previous year.

The fire loss amounted to £14,790, as compared with £3,945, an increase of £10,845.

The estimated cost of the brigade for the year 1912-13 is £509 15s. 9d., as against £496 for 1911-12, an increase of £13 15s. 9d.

#### HOKITIKA.

Two inspections of the Hokitika Fire Brigade, its stations and equipment, have been held—viz., 16th November, 1911, and 20th March, 1912.

At the first inspection muster there were in attendance the Superintendent, Deputy, and thirteen firemen: that, with four on leave, accounted for nineteen members. At the second inspection there were present the Superintendent, Deputy, and fifteen firemen: that, with one on duty and four on leave, accounted for twenty-two out of a total strength of twenty-eight. The attendance of members of the brigade shows an improvement, and compares favourably with the attendance during the previous year.

Various test drills, both wet and dry, were performed, and carried out smartly and in an efficient manner. The stations and equipment are maintained in good order and condition.

New nozzles of  $\frac{7}{8}$  in. and 1 in. diameter are required, and some of the branches are badly dented and require straightening.

During the course of the past year five fires have occurred in the district, or one less than during the previous year.

The fire loss amounted to £76, as compared with £62 for the previous year, an increase of £14.

The estimated cost of the brigade for 1912-13 is £433 6s. 8d., as against £500 for 1911-12, a decrease of £11 13s. 4d.

## LAWRENCE.

Two inspections of the Lawrence Fire Brigade and its equipments have been made—viz., 26th September, 1911, and 6th February, 1912.

At the first inspection there were present the Superintendent, Deputy, and nine firemen; these, with one on leave, accounted for the full strength of the brigade, twelve, then on the roll—a satisfactory attendance.

Various test drills were carried out smartly and in an efficient manner.

The following report, forwarded to the secretary of the brigade, covers the second inspection:—

“SIR,—

“18th June, 1912.

“In reply to your letter dated the 7th instant, I have the honour to inform you that I held an inspection of the Lawrence Fire Brigade and its equipments on the 6th February last. At that date the full strength of the brigade was eleven all told, and there were present at the inspection muster the Superintendent, Deputy Superintendent, and eight firemen; these, with one on leave, accounted for all—a satisfactory attendance.

“A series of tests of the water-pressure was made at several points in the town, with the following results: Ross Place, 6 in. main, standing pressure 67 lb.; Whitehaven Street, 4 in. main, 64 lb.; Irvine Street, 4 in. main, 61 lb.; when the water was concentrated in Ross Place a pressure of 71 lb. was registered.

“A number of experiments were carried out for the purpose of illustrating the efficient fire-streams available when using different lengths of hose with various-sized nozzles.

“The required work was carried out in an efficient manner, and the plant and appliances are maintained in good order and condition.

“As pointed out at the time, the outlet connections on the ratchet-valved stand-pipe should be screwed to standard gauge, and the connecting-pieces now in use done away with.

“I noted that no improvement had been made to the ringing-gear on the firebell.

“I have, &c.,

“THOS. T. HUGO,

“Inspector of Fire Brigades.”

Only one fire has occurred in the district during the year just ended, two less than during the previous year.

The fire loss amounted to £1, as compared with £190, a decrease of £189.

The estimated cost of the brigade for 1912–13 is £75 6s. 2d., as against £75 2s. 6d. for 1911–12, an increase of 3s. 8d.

## MAORI HILL.

Two inspections of the Maori Hill Fire Brigade, its stations and equipments, have been made—viz., 22nd September, 1911, and 1st February, 1912.

The following two reports, forwarded to the secretary of the Board, respectively cover both inspections:—

“SIR,—

“5th October, 1911.

“I would direct the attention of your Board to the advisability of connecting the Superintendent's house with the Central Fire Station by telephone. Living as he does in the Woodhaugh part of the borough, he has very little chance of knowing, at the time, of any fire occurring on the Hill, and it is of great importance that the Superintendent of any fire brigade should have the earliest information of an outbreak of fire taking place throughout the district he controls. Also, I would again recommend the providing of hand-pumps. The want of these appliances must have been very clearly demonstrated to the officers of your brigade during the progress of the late serious fire at the paper-mills.

“I have, &c.,

“THOS. T. HUGO,

“Inspector of Fire Brigades.”

“SIR,—

“12th April, 1912.

“An inspection of the Maori Hill Fire Brigade, its stations and equipment, was made on the 1st and 2nd February last.

“At the inspection muster there were present the Superintendent, Deputy Superintendent, and fourteen firemen; these, with two on duty at Woodhaugh and two on leave, accounted for the full strength of the brigade. The required work was carried out in an efficient manner.

“The stations and appliances are maintained in good order and condition.

“In testing the fire-alarm installation the signal from the Drivers Road alarm-box registered wrongly twice in succession. The Superintendent promised to have this matter attended to immediately.

“A plan of the water-main reticulation in the Maori Hill district should be hung in the fire-station.

“Some new nozzles, as explained and illustrated during the course of the inspection drill, are required.

“I have, &c.,

“THOS. T. HUGO,

“Inspector of Fire Brigades.”

No hand-pumps, as recommended several times, have yet been supplied to the brigade, nor has the Superintendent yet been provided with telephonic communication.

Two fires have occurred in the district, the same number as during the previous year.

The fire loss amounted to £700, as compared with £18,747, a decrease of £18,047.

The estimated cost of the brigade for the year 1912-13 is £225, as against £242 for the year 1911-12, a decrease of £117.

#### MASTERTON.

Two inspections of the Masterton Fire Brigade and the Fire Police Corps, with their equipments, have been made—viz., 18th and 19th December, 1911, and 7th June, 1912; also, a visit was paid to Masterton on the 9th November last.

The two following reports, forwarded to the secretary of the Board, dated 4th January and 12th June respectively, cover the inspections held:—

“SIR,—

“4th January, 1912.

“I have the honour to inform you that I inspected the Masterton Fire Brigade and the Fire Police Corps, with their equipments, &c., on the 18th and 19th ultimo, and beg to submit the following report for the consideration of your Board.

“Of the fire brigade there were present nineteen; these, with two on leave, account for twenty-one out of a total strength of twenty-two. Of the Fire Police Corps there were present sixteen, with two on leave, or eighteen accounted for out of twenty on the roll.

“The drills performed were carried out satisfactorily. The plant and appliances generally proved to be in good order and condition. One horse of the pair is inclined to be a little fractious, and requires more training for its work.

“The firebell at the Central Station was rung for testing purposes, and it was found that with the water-pressure registering 50 lb. to the square inch on the station-gauge the bell rang very slowly and feebly, leading to the supposition that with very little less pressure it will not ring at all. Those unsatisfactory conditions may be due largely to a considerable reduction in the available pressure, being caused by the comparatively small diameter (1½ in.) of the supply-pipe running from the 6 in. main in Queen Street to the engine, and in which pipe I understand there are two very acute elbows that would tend to further reduce the velocity. A suggestion has been made that a 2 in. pipe should be run from the 6 in. main in Dixon Street direct to the engine connection, and I would recommend that that should be done. Also, it might be possible to increase the bore of the engine; but that matter should be referred to some competent engineer to overhaul the engine and advise on the subject.

“According to the log kept at the Central Station the water-pressure not infrequently falls to below 40 lb. to the square inch, and I would recommend that a portable canvas cistern should be provided and carried on the fire-engine.

“At present the brigade do not carry any ladders when responding to an alarm of fire, and their absence at arrival on the scene may lead to serious and even fatal consequences; therefore I would recommend that four 10 ft. 6 in. coupling-ladders be provided; they can be fitted to and carried on the Fire Police van.

“Whilst in Masterton I noticed a number of verandahs having all-glass tops, some having the appearance of being only lately erected. These verandahs prove at times a very dangerous obstacle to firemen, and I would recommend your Board should suggest to the Borough Council the advisability of passing a by-law making it compulsory in future for any person erecting an all-glass-top verandah to provide a gangway not less than 2 ft. in width along the whole length directly under the first-floor windows, with a solid panel 2 ft. in width running from the street-edge to the said gangway at both ends of the verandah. A similar by-law is in operation elsewhere.

“I have, &c.,

“THOS. T. HUGO,

“Inspector of Fire Brigades.”

“SIR,—

“12th June, 1912.

“I have the honour to inform you that I held an inspection of the Masterton Fire Brigade and the Fire Police Corps on the 7th instant.

“Of the brigade there were present the Superintendent, Deputy Superintendent, and sixteen firemen; these, with one on leave and one absent, accounted for the full strength of the brigade—a satisfactory attendance.

“Of the Fire Police Corps, out of a total strength of twenty, there were present the Captain, three Lieutenants, and five constables; the remaining eight were accounted for as four on leave and four absent. This was not a satisfactory muster.

“A test of the water-pressure at various points was carried out. On the 6 in. main in Queen Street a standing pressure of 72 lb. was registered; when compared it showed that the station gauge was weak to the extent of registering 5 lb. more than the actual pressure. With 100 ft. of hose and a ¾ in. nozzle the working-pressure from this main was 49 lb., with 37 lb. at the nozzle. Worksoy Road, 4 in. main—standing-pressure, 74 lb.; working-pressure, same conditions, 47 lb. Hogg Crescent, 3 in. main—standing-pressure, 75 lb.; working-pressure, same conditions, 30 lb.

“As illustrated at the time, a couple of the nozzles used were defective, and should not be used for fire-extinction purposes. A number of the branches are more or less badly dented, and they should be put on a mandril and straightened.

"The hydrant-indicators lately placed in position, 7 in. by 3½ in., white, with red letters, are not distinctive enough to be of much service to the brigade on a dark night; they should be larger, and painted white with black letters.

"During the turnout drill with the engine it was apparent that one of the horses is still very fractious, and might be the cause of a serious delay at any time.

"The station and equipment are generally maintained in good order and condition.

"I understand it is customary at certain times to detail as many as six members of the Fire Police for duty at the Town Hall at one time, with two on duty simultaneously at the Picture Theatre, which reduces the number of the corps to twelve actually available for fire service should a fire break out during the time they are performing the said duty; for if it is necessary in the interest of the public safety to have six men stationed there at such times, it would not do for any of them to run away in the event of an alarm of fire. This, to say nothing of others temporarily absent from the town—a not uncommon occurrence—is an undue depletion of the strength of the Fire Police Corps as authorized by your Board, and better arrangements should be made in the matter.

"Having given the matter consideration in accordance with the request of members of your Board, I beg to inform you that I consider the car with motor-pump attached most suitable to your local conditions would be one having an engine of 50 B.h.p., geared to a top speed of thirty-five miles per hour on the level; pump to have a capacity of 300 to 400 gallons per minute, capable of working up to a pressure of 180 lb.; to carry eight men; telescopic fire-escape, having a perpendicular height of 40 ft. when extended; hose-box to carry 1,600 ft. 2½ in. unlined hose; accommodation for carrying stand-pipes and all necessary small gear, &c.

"I have, &c.,

"THOS. T. HUGO,

"Inspector of Fire Brigades."

The brigade attended thirteen calls, as against twenty for the previous year: that included nine actual fires occurring in the district, three less than last year.

The fire loss amounted to £5,462, as compared with £2,482, an increase of £2,980.

The estimated cost of the brigade for the year 1912-13 is £1,136 14s., as against £1,023 19s. for the year 1911-12, an increase of £112 15s.

#### MILTON.

Two inspections of the Milton Fire Brigade and its equipment have been made—viz., 25th September, 1911, and 5th February, 1912.

At the first inspection there were present the Superintendent and nine firemen, or ten out of a total strength of fifteen all told; the remaining five were on leave.

Various test drills were carried out in a satisfactory manner, though one of the small manual pumps proved to be out of order.

The following report, forwarded to the secretary of the Board, covers the second inspection:—

"SIR,—

"2nd April, 1912.

"An inspection of the Milton Fire Brigade, its station and equipment, was held on the 5th February last, when there were present the Superintendent and six firemen; these, with two on leave and four absent from the town, accounted for the full strength of the brigade.

"It will be noted that four firemen were away from the town, thus leaving ten all told as available for work at a fire. This is too small a number, and arrangements should be made whereby not less than the present authorized strength of fourteen will be available at all times in case of need.

"The station and appliances are maintained in good order and condition, and the defective manual pump has been put in good working-order.

"This brigade has not yet been supplied with hand-pumps as previously recommended, and I would again, as in previous reports, direct the attention of your Board to the dangerously inadequate supply of water available for fire-extinction purposes, and refer you to my letter on this subject dated 22nd February, 1911. Should it ultimately be decided to sink wells it will be necessary to provide the brigade with more powerful pumping-apparatus than they now have.

"I have, &c.,

"THOS. T. HUGO,

"Inspector of Fire Brigades."

A fire, disastrous when taking place in a small town like Milton, having a population of under 1,400 inhabitants, broke out on the 16th March last in a general store situated in Union Street, involving a loss of £12,300. A second fire broke out on the same premises in the following month, causing a further loss of £2,340.

The amount of water available for fire-extinction purposes is totally inadequate, and I have periodically in my reports called attention to that fact. Further severe losses may be looked for, in any but the smallest of outbreaks, if a better supply is not provided.

During the year just ended five fires have occurred in the district, two more than during the previous year.

The fire loss amounted to £14,891, compared with £475, an increase of £14,416.

The estimated cost of the brigade for the year 1912-13 is £120, as against £140 for 1911-12, a decrease of £20.

## NEW PLYMOUTH.

Two inspections of the New Plymouth Fire Brigade, its stations and equipment, have been held—viz., 30th August, 1911, and 17th and 18th January, 1912.

An inspection of the Fitzroy section of the brigade was made on the 22nd May last. At the request of the Fire Board a special visit was paid on the 21st to 23rd May, for the purpose of drawing up a scheme for the protection of greater New Plymouth.

At the first inspection there were present the Superintendent and twenty-two firemen; these, with four on leave and one sick, accounted for the full strength of the brigade.

A number of test drills were carried out in a satisfactory manner.

The following report covers the second inspection :—

“ SIR,—

“ 27th January, 1912.

“ Following upon my visit to New Plymouth on the 17th and 18th instant for the purpose of inspecting your fire brigade and its equipments, I have the honour to submit the following report for the consideration of your Board.

“ At the inspection muster at 8 p.m. on the 17th there were present the Superintendent and twenty-six officers and firemen; these, with the Deputy Superintendent absent on leave, accounted for twenty-eight out of a total strength of thirty—a satisfactory attendance. A little later the Captain and ten firemen from the Fitzroy district, lately included in the borough, were in attendance.

“ At 8.13 p.m. instructions were given to the town brigade to get to work on the Anglican Parsonage in Robe Street, and at 8.17.25 p.m. three deliveries were at work. This was creditable time, and would have been better but that time was lost in trying to ship the first stand-pipe, that had to be replaced by another. Upon examining the defective stand-pipe later it was found that some time previously the collar had been broken off the shank, and when repairing it prior to brazing the lug-nut had been replaced on the shank upside down. This requires attending to immediately.

“ The Fitzroy section carried out some wet drill, but time was too limited to put them through a thorough inspection, and this will be done at a future period.

“ A number of water-pressure tests were carried out with very satisfactory results, the pressure directly off the main in Powderham Street registering 120 lb.

“ The stations and appliances are maintained in good order.

“ Of the proposed new sites for a Central Fire Station, that on the corner of Liardet and Courtenay Streets is the most suitable, and, having regard to both present risks and future trend, probably the best site in the town for the purpose. The selected site in Devon Street for a station to serve the Fitzroy district is a very suitable one.

“ As arranged at the special meeting of your Board, the whole question of a scheme for the adequate fire-protection of greater New Plymouth will be considered and reported upon when the amalgamation becomes an accomplished fact.

“ I have, &c.,

THOS. T. HUGO,

“ Inspector of Fire Brigades.”

At the inspection of the Fitzroy Brigade there were present the Captain, Lieutenant, and eleven firemen, that with one on leave and one sick accounted for fifteen out of a total strength of sixteen then on the roll.

The members of the brigade are a well-set-up and active body of men, and the wet test drills were carried out smartly and in an efficient manner.

Following is the report in connection with my special visit :—

“ SIR,—

“ 31st May, 1912.

“ I have the honour to submit for the consideration of your Board the following report in confirmation of my recommendations as made at the meeting held in New Plymouth on the 23rd instant.

“ A first portion of the new Central Fire Brigade Station to be erected on the recently acquired site on the corner of Liardet and Courtenay Streets, said portion to consist of one section, two stories in height, to contain on the ground floor an engine-house, say, 32 ft. wide by 40 ft. in depth, having a 14 ft. stud; and on the first floor a recreation-room of the same dimensions as the engine-house, with a 13 ft. stud. A second section, one story high, to contain a watch-room (say, 14 ft. by 14 ft.), store and workroom combined; two or three bedrooms to accommodate six single firemen; bathroom and w.c.s. The whole to be designed and built in such manner that when circumstances require it the remaining portion of the building can be erected as a continuation of the first. Estimated cost, £1,250. The building known as the Eastern Station to be shifted to the new section at Fitzroy. Cost of shifting, renovating, and improving the accommodation estimated at £200. Bell-tower at Eastern Station to be shifted to new Central Station site; cost, £25. Fitzroy bell-tower to be shifted to new site in that district, and a bell-gallows erected in the vicinity of the present position of the Fitzroy tower for fire-alarm purposes; cost, £25.

“ Western Station to remain, but sleeping-accommodation to be provided; say, £50. Reel-shed and bell, Devon Road (vicinity Superintendent's house), to remain.

“ Vogeltown: If found sufficiently sound the reel-shed from Fitzroy to be shifted to this district and equipped with the hose-reel from the Eastern Station; a gallows erected, and bell hung thereon: cost, £35.

“ West Town: A small shed to be built and equipped with a CO<sub>2</sub> chemical engine of 40 gallons capacity; a gallows erected, and bell hung thereon: £120.

"St. Aubyns: When the water system is extended throughout the district a shed should be built and equipped with the hose-cart from Fitzroy, and a bell supplied.

"In the case of each of the suburban districts it will be necessary to enrol men, residents of the respective districts, as auxiliaries to the brigade, otherwise any efficient protection is impossible.

"In the matter of purchasing a motor fire-appliance, as explained fully to your Board, there are three alternatives as to the equipment of the car:—

"(1.) The car to be provided with a telescopic trussed ladder to reach 35 ft. in height when extended, one 10 ft. pole ladder, one 3-gallons hand CO<sub>2</sub> chemical extingisher, accommodation for carrying 1,400 ft. unlined hose, stand-pipes, and all necessary gear; also to be fitted with a CO<sub>2</sub> chemical cylinder having a capacity of 40 gallons and 200 ft. of special hose: approximate cost, £800.

"(2.) Instead of the 40-gallons chemical cylinder, the car to be fitted with a fire-pump having a pumping-capacity of 300 to 400 gallons per minute; approximate cost, £1,050.

"Either of the two foregoing machines would require not less than a 60 B.h.p. engine.

"(3.) Car to be fitted with both chemical cylinder and pump; approximate cost, £1,200. This last machine would require an engine of 75 B.h.p.

"Should your Board decide to carry out the above recommendations it will be necessary to appoint a permanent caretaker to reside in the cottage adjoining the proposed new Central Fire Station, and the man appointed to the position should be one well capable, after instruction, of driving and looking after the motor. Of course, any repairs would have to be done by an experienced motor engineer.

"The question of installing an electric street fire-alarm system could be deferred to some later period

"I have, &c.,

THOS. T. HUGO,

"Inspector of Fire Brigades."

On the occasion of my last visit it was found that some of the street hydrants recently put down were defective in construction: the lower waterway, instead of being 3 in. in diameter, only measuring 2½ in., and the orifice was not cylindrical; also, the washers were not being properly fitted, leaving in fact a waterway only some 2 in. in diameter.

The number of fires that occurred in the district was six, or four less than during the previous year.

The fire loss amounted to £760, as compared with £715, an increase of £45.

The estimated cost of the brigade for the year 1912-13 is £1,058 0s. 3d., as against £559 2s. for 1911-12, an increase of £498 18s. 3d. The increase in the amount of the estimates is largely due to the necessity of providing for the protection of the districts lately included in the borough boundaries.

#### OAMARU.

Two inspections of the Oamaru Fire Brigade and its equipment have been made—viz., 20th September, 1911, and 20th January, 1912.

At the first inspection there were present the Superintendent and ten firemen; these, with five on leave, accounted for the full strength of the brigade—sixteen all told. This inspection had been called for the 19th, but the same afternoon I found it impossible to reach Oamaru that night, and telegraphed postponing inspection until the next evening. Under those circumstances the attendance must be regarded as satisfactory.

Various test drills, wet and dry, were carried out in an efficient manner.

The following report, forwarded to the secretary of the Board, covers the second inspection:—

"SIR,—

"February, 1912.

"Following upon my inspection of the Oamaru Fire Brigade and its equipment held on the 30th January last, I beg to submit the following report for the consideration of your Board.

"At the inspection muster there were present the Superintendent, Deputy Superintendent, and twelve firemen; these, with two absent on leave, accounted for the full strength of the brigade—viz., sixteen all told—a satisfactory attendance.

"The turnout of the hose-reel was effected in twenty-two seconds; and the subsequent work required was carried out smartly and efficiently. The station and appliances are maintained in good order and condition.

"A test was made of the pressure in the water-mains, the gauge registering 111 lb. in Tyne Street, and 101 lb. at the hydrant in Itchens Street a little above the fire-station. The experiments carried out proved that in those mains tested the flow of water was normal—that is, there is no undue corrosion in the pipes. During the course of the experiments it was apparent that some of the nozzles in use were very defective, the jets spreading badly a few feet from the branch, and the brigade should be provided with new nozzles—say, one 1½ in., three 1 in., and one ¾ in., or five in all; also, the branches want straightening and the dents taking out. A water-pressure gauge should be provided, and fixed in a prominent place in the watch-room.

"The authorized strength of the brigade—viz., sixteen all told—is on the weak side, and the number at all times available to work at fires should not be allowed to fall below that strength, and provision should be made, say, by enrolling two or three probationers, who could take the place of any of the regular firemen absent from the town, sick or on leave.

"I have, &c.,

THOS. T. HUGO,

"Inspector of Fire Brigades."

During the year just ended five fires have occurred in the district, as against nine for the previous year, a decrease of four.

The fire loss amounted to £784, compared with £779, a decrease of £15.

The estimated cost of the brigade for 1912-13 is £360, as against £500 for 1911-12, a decrease of £140.

#### PALMERSTON NORTH.

Two inspections of the Palmerston North Fire Brigade, its stations and equipment, have been held—viz., 15th December, 1911, and 14th May, 1912.

At the first inspection there were present the Superintendent, Deputy, and seventeen firemen; these, with three on duty and one on leave, accounted for twenty-three out of a total strength of twenty-five then on the roll—a satisfactory attendance.

The turnout of the brigade and its appliances was accomplished in good time; the various drills, wet and dry, were carried out smartly and in an efficient manner.

The following report, forwarded to the secretary of the Board, covers the second inspection:—

“SIR,—

“20th May, 1912.

“An inspection of the Palmerston North Fire Brigade, its stations and equipment, was made on Tuesday, the 14th instant.

“At the inspection muster there were present the Superintendent, Deputy Superintendent, and seventeen firemen; these, with three on duty and two on leave, accounted for twenty-four out of a total strength of twenty-seven. The stations and appliances are maintained in good order and condition.

“A test of the pressure in the water-mains was made, and 116 lb. was registered from the 4 in. main in Cuba Street, 3 lb. more than the pressure registered on the Central Station gauge.

“For experimental purposes three different deliveries with two 1 in. nozzles and one  $\frac{7}{8}$  in. nozzle were got to work from the same 4 in. main, when there still remained a working pressure of 57 lb. This comparatively small drop in the pressure is due to the excellent method of reticulation as carried out in general in Palmerston North.

“The branches and nozzles are in a bad condition, and three new branches are required, also two 1 in., two  $\frac{7}{8}$  in., and two  $\frac{3}{4}$  in. nozzles.

“I have, &c.,

THOS. T. HUGO,

“Inspector of Fire Brigades.”

During the course of the year improvements have been made to the headworks of the borough gravitation water-supply; and whereas in my annual report for 1910-11 I found it necessary to call attention to there being only an average pressure of 70 lb. in the street mains, there is now a registered pressure of 80 lb. at noon and 110 lb. at midnight—a very satisfactory improvement.

The Board has ordered from England a 60 h.p. combined hose, ladder, and pump motor-car; the ladder capable of being extended to a height of 60 ft., and the pump of the positive rotary type, having a discharging-capacity of 300 to 400 gallons per minute.

The brigade attended twenty-six calls, that included nineteen actual fires, during the year just ended, as against forty-eight calls, including thirty-three fires, during the previous year, a decrease of fourteen fires.

The fire loss amounted to £3,877, as against £9,765, a decrease of £5,888.

The estimated cost of the brigade for the year 1912-13 is £1,724 1s. 4d., compared with £1,699 14s. for 1911-12, an increase of £124 7s. 4d.

#### PETONE.

Three inspections of the Petone Fire Brigade and its equipment have been held—viz., 15th December, 1911, 26th January and 21st June, 1912.

At the first inspection there were present the Superintendent, Deputy Superintendent, and eleven firemen; these, with one on leave and two on sick-leave, accounted for the full strength of the brigade.

Various drills, wet and dry, were carried out, and though the majority was performed in an efficient manner, more instruction and practice is required in certain of the drills, as was pointed out at the time.

At the second inspection a series of tests of the water-pressure and experiments with different lengths of hose and various sized nozzles were carried out.

The following report, forwarded to the secretary of the Board, covers the third inspection:—

“SIR,—

“25th June, 1912.

“I have the honour to inform you that an inspection of the Petone Fire Brigade and its equipment was made on the 21st instant, when there were present the Superintendent, Deputy Superintendent, nine firemen, and two messengers, or thirteen out of a total strength of eighteen on the roll; the remaining five were absent at work.

“The fire-alarm installation was tested and found to be in good working-order.

“A test of the water-pressure was made, and a pressure of 69 lb. was registered in the 4 in. main in Sydney Street, with a similar pressure in the 8 in. main in Jackson Street. This, I

was given to understand, is the maximum pressure now available. With one delivery at work off the main in Jackson Street, having 100 ft. of hose and 1 in. nozzle, a drop to 64 lb. was observed; with a second delivery from a second hydrant there was a drop to 57 lb. The readings taken showed that the gauge at the fire-station was weak to the extent of registering 2 lb. more than the actual pressure.

"The turnout and required work was carried out in an efficient manner.

"The plant and appliances are maintained in good order and condition.

"An inspection of the new Central Station now in course of erection was made, and in that connection it will be borne in mind that the centre section of the building was originally of one story only, and the position of the sliding-pole was fixed accordingly; but as the building of the social hall is now being proceeded with it would be better, for various reasons, as pointed out, if the position of the pole was altered, placing it immediately behind the front centre pillar in the engine-house. The alteration should not entail any extra cost.

"I have, &c.,

THOS. T. HUGO,

"Inspector of Fire Brigades."

At the request of the Fire Board two special visits have been paid to Petone: 21st November, 1911, inspection and report in respect to the most suitable of the competitive plans for a new Central Fire Brigade Station; 12th January, 1912, conference with Board in reference to station plans, water-pressure, &c.

The new Central Fire Station is now being erected in brick, and should be ready for occupation in a couple of months' time.

During the last four years there has been a steady decrease in the water-pressure. In October, 1908, the maximum pressure available was about 96 lb.; in April, 1911, this had dropped to about 80 lb.; and at the present time it stands at only some 69 lb. This is becoming a serious matter, and if the pressure continues decreasing at the same rate, very soon it will be quite inadequate for fire-protection purposes.

The brigade has attended eighteen calls, three more than during the previous year; these included ten actual fires; a decrease of two.

The fire loss amounted to £3,209, as compared with £3,719, a decrease of £510.

The estimated cost of the brigade for 1912-13 is £1,247 7s. 6d., as against £762 6s. 7d. for 1911-12, an increase of £485 0s. 11d. The increased expenditure is due to the purchase of a site and the erection of a new Central Fire Station.

## ROTORUA.

Following upon a poll held in November last, Rotorua has recently been proclaimed a fire district, and the Fire Board was constituted last month.

An inspection of the brigade and its equipments was made on the 28th ultimo, and following is a report in that connection, forwarded to the Chairman of the Board:—

"SIR,—

"1st July, 1912.

"I have the honour to inform you that I held an inspection of the Rotorua Fire Brigade, with its stations and equipment, on the 28th ultimo; also, a series of tests of the water-pressure was carried out, and the following is my report in those connections.

"At the inspection muster there were present the Superintendent, Deputy Superintendent, and twelve firemen; these, with one on leave and one on the sick-list, accounted for the authorized strength of the brigade—viz., sixteen all told. They are to all appearance an active, capable body of men, and of good physique. The various drills required were carried out in a smart and willing manner. Mistakes made were, on the part of the men, due to a misunderstanding of the orders given; but it is evident that more instruction and drill is required by the brigade as a whole.

"The nozzles used are, as demonstrated at the time, all more or less defective. The stock of hose, some 900 ft. in all, is an insufficient quantity, and some of it is apparently not in the best of condition. There is not a sufficient number of stand-pipes, and the shanks of those there are shorter than they should be.

"The present station in Haupapa Street is inadequate for its purpose, and is in bad condition as a building. The small hose-reel shed at Ohinemutu, with its equipment, is in a most neglected condition. There is only a partial reticulation of the gravitation water-supply throughout the borough, which has a population fluctuating from two to three thousand, and comprises an area of 4,140 acres, but some 2,000 acres of that amount consists of reserves. The reticulation, however, covers the more populous portion of the town, the remaining part being mostly of a widely detached residential character. The pressure tests taken in the afternoon were from a hydrant on the 10 in. main opposite the Lake House Hotel, Ohinemutu, registering 47 lb.; 4 in. main opposite the Geyser Hotel, Whakarewarewa, 40 lb.; 6 in. mains corner Fenton and Hinemoa Streets, 55 lb.; 10 in. main corner Fenton and Haupapa Streets, 57 lb. Tests were also made for the purposes of showing the difference in this pressure when the supply required for the bathhouse, &c., was being used and when cut off, also the time required to cut off and make the absorbed pressure available for fire purposes. It was found that this supply absorbed some 8 lb. of pressure from the 10 in. main in Fenton Street, but in the case of a large fire can be made available in a few minutes. The midnight pressure averages, I understand, 8 lb. to 10 lb. higher than the



above. The gauge outside the Tourist Offices in Fenton Street is weak, registering 5 lb. more than the actual pressure. The gauge at the office in the Sanatorium grounds is also weak to the extent of showing 3 lb. Upon my return to Wellington I had my gauge retested at the office of the Inspection of Machinery, and the foregoing set-down errors may be taken as correct.

"It may be taken that the available pressure throughout the twenty-four hours averages from 60 lb. to 68 lb. This in itself cannot be considered an efficient pressure for fire-extinction purposes, but in your case is very much counterbalanced by the unusually large diameter of the pipes throughout the reticulation; and the water-supply for fire purposes, so far as the reticulation is laid down, may be regarded as adequate to the requirements of your town under the present local conditions.

"The fire-hydrants are spaced generally 225 ft. apart—a reasonable provision.

"*Recommendations.*—The authorized strength of the brigade attached to the Central District should be increased to twenty.

"A new Central Station is required, and should be designed to provide, amongst other things, sleeping-accommodation for four men (six would be better), situated on or near the position of the present building: that is a suitable site in relation to the larger risks of the town.

"The conditions in Rotorua are different to those usually prevailing in other towns of a similar size, in that there are a number of boardinghouses of large dimension, both one- and two-storey, that are required for the accommodation of the visitors to the district, including amongst them a considerable proportion of aged and infirm people, who, as a rule, only stay a short time in the various houses and do not become familiar with their surroundings, or insufficiently so as to act with confidence at a time of excitement such as that caused by fire, and these special conditions call strongly for the installation of a street fire-alarm system, or, as an alternative, arrangements made for an all-night service at the telephone exchange. As the majority of the boardinghouses in question are connected with the exchange, such arrangement should meet requirements in this important direction for some time to come, providing there is a fireman on duty at the Central Station every night.

"The hose-reel shed at Ohinemutu, with its equipment, requires putting in good order, and some one residing in the neighbourhood placed in charge also; failing Europeans, arrangements should be made to drill some of the Natives living in the neighbourhood.

"A small hose-reel shed should be built at Whakarewarewa, and equipped with a hose-reel or cart sufficiently large to carry three or four hundred feet of hose, a branch and stand-pipe; also, some one should be placed in charge. Three hand-pumps, one for each station, London Fire Brigade pattern, and fitted with stirrups, are required. 1,000 ft. of new hose should be obtained, also three stand-pipes and an outfit of new nozzles. The firebell at the Central Station should be fitted with automatic ringing-gear.

"I have, &c.,

"THOS. T. HUGO,

"Inspector of Fire Brigades."

#### WHANGAREI.

Two inspections of the Whangarei Fire Brigade and its equipment were held—viz., 1st December, 1911, and 24th April, 1912.

The following reports, forwarded to the secretary of the Fire Board, and dated 9th December, 1911, and 10th May, 1912, respectively, cover both inspections:—

"SIR,—

"9th December, 1911.

"Following upon my inspection of the Whangarei Fire Brigade held on the 1st instant, I beg to forward the following for the consideration of your Board.

"At the muster at 8 p.m. on the date mentioned there were present the Superintendent, Deputy Superintendent, and fifteen officers and firemen; these, with two on sick-leave, accounted for nineteen out of a total strength of twenty on the roll. This was a satisfactory attendance.

"It was apparent whilst the subsequent drill was being carried out that there was room for improvement, particularly in regard to the use of the new telescopic ladder.

"The 1 in. nozzles recently purchased for the use of the brigade are badly defective in construction, causing the jet of water to spray a short distance from the branch, as was demonstrated during the course of the wet drill. This is a serious defect, and they should be replaced by others of a better design.

"During the course of my inspection through the town I noticed, in the case of the new brick building now being erected in Bank Street, that on one of the side walls of the building the studs on the ground floor facing the street for carrying the lining-boards are perpendicular, and to all present appearances there is no provision made for placing stops between the studs at the ceiling level: this means that in case of fire once getting behind the lining-boards there is a clear passage for it to spread between the ceiling and floor of the next story without being observed, and even if observed it is difficult for the brigade to extinguish. If my supposition is correct it is a serious constructional defect, and should be prohibited by the building by-laws. I pointed this out to Superintendent Chissel, who will be able to explain the matter more clearly on the spot.

"I have, &c.,

"THOS. T. HUGO,

"Inspector of Fire Brigades."

"SIR,—

"10th May, 1912.

"An inspection of the Whangarei Fire Brigade and its equipment was held on the 24th April last.

"At the inspection muster there were present the Superintendent, Deputy Superintendent, and fifteen firemen; these, with one on duty and one on leave, accounted for nineteen out of the total strength of twenty—a satisfactory attendance.

"The station and appliances are maintained in good order and condition.

"A test of the water-pressure in the mains was made in Cameron and Bank Streets, where a standing pressure of 113 lb. was registered. Various other tests in connection with the hose and different-sized nozzles were carried out. As demonstrated to the officers and members of the brigade during the course of my inspection, the new branches and nozzles obtained to replace those I had on a previous occasion adversely commented upon are not of a good design and construction, and not such as to give the best results for fire-extinction work.

"Herewith I beg to confirm my recommendations in respect to the most suitable site for a Central Fire Brigade Station, and that for the reasons fully explained to the members of your Board at the meeting held on the 28th ultimo I place in order of suitability as follows: (1) Site on the corner of Bank and Bent Streets, known as McLeod's; (2) site in Hunt Street, known as Tucker's; (3) the remaining sites, with the exception of Harrison's, are much on a par, with perhaps a little in favour of the site in Norfolk Street known as Edward's.

"I have, &c.,

THOS. T. HUGO,

"Inspector of Fire Brigades."

The lease of the present site having expired, and for various reasons not being again available, the Board have purchased another site for the Central Fire-station. It is proposed to remove the building and re-erect it on a new site, at the same time providing some necessary additional accommodation.

During the past year seven fires have occurred in the district, or five more than during the previous year. Of these seven fires no less than five are returned as being due to incendiarism.

The fire loss amounted to £4,255, as compared with £635, an increase of £3,620.

The estimated cost of the brigade for the year 1912-13 is £550, as against £300 for 1911-12, an increase of £250. The increase is for the purpose of purchasing a new Central Station site, &c., as mentioned above.

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