1909.

NEW ZEALAND.

FIRE BRIGADES OF THE DOMINION

(REPORT ON, BY INSPECTOR OF FIRE BRIGADES) FOR THE PERIOD ENDED 30TH JUNE, 1909.

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

SIR,— Office of the Inspector of Fire Brigades, Wellington, 1st July, 1909.

Herewith I have the honour to lay before you a general report relating to the working of the Fire Brigades Act, also including various matters in connection therewith.

"The Fire Brigades Act, 1906," was passed on the 8th October, 1906, and this Act was repealed and re-enacted, with amendments, by "The Fire Brigades Act, 1907," passed on the 25th November, 1907. I was appointed Inspector of Fire Brigades under the latter Act as from the 15th June, 1908, and this report covers the period from the passing of "The Fire Brigades Act, 1906" (8th October, 1906), until the 30th June, 1909, being the first general report made by me.

Following the coming into force of the Act of 1907, twenty-one Fire Boards were established as in the following districts—viz.: Wellington, Auckland, Christchurch, Dunedin, Whangarei, Gisborne, New Plymouth, Hawera, Feilding, Dannevirke, Palmerston North, Masterton, Petone, Waimate, Alexandra, Oamaru, Maori Hill, Lawrence, Milton, Greymouth, and Hokitika.

In terms of a resolution, as provided for by clause 7, section 1 (this clause has been amended in the Act for 1908, and now requires a vote of the ratepayers to be taken on the question), passed at a meeting of the Wellington City Council held on the 13th February, 1908, application was made to the Governor to declare that the City of Wellington should cease to be a fire district, and the Order in Council was issued accordingly. Similarly, on the 29th February, on the application of the Alexandra Borough Council, an Order in Council was issued declaring Alexandra no longer a fire district. The same course was taken by the Waimate Borough Council, and that borough also ceased to be a fire district. At present neither of these two last-mentioned boroughs are eligible as a fire district, Alexandra having a population of one thousand and Waimate eighteen hundred, in place of the minimum of two thousand required by the Act of 1908.

On the 11th August, 1908, a poll of the ratepayers of Hastings was taken, and by a vote of the majority polled it was decided to apply to the Governor in Council to declare the Borough of Hastings a fire district. The declaration was issued accordingly. Thus there are at present nineteen districts working under the Fire Brigades Act of 1908.

In both Wellington and Napier efforts have been made to have a poll of the ratepayers taken on this question, but in both cases by a majority vote of the local councillors they refused to allow the matter to be submitted to the ratepayers for their decision.

During the past year I have officially inspected each brigade twice, as follows:—

Auckland: July, 1908, and May, 1909. Reports attached, dated 7th August, 1908, and 9th June, 1909.

Christchurch: September, 1908, and June, 1909. Reports attached, dated 19th November, 1908, and 30th June, 1909.

Dunedin: September, 1908, and March, 1909. Report attached, dated 30th June, 1909.

Dannevirke: June, 1908, and December, 1908. Report attached, dated 31st December, 1908.
Feilding: June, 1908, and February, 1909. Reports attached, dated 17th August, 1908, and 30th June, 1909.
Gisborne: August, 1908, and February, 1909. Reports attached, dated 8th October, 1908, and 22nd February, 1909.
Greymouth: September, 1908, and April, 1909. Report attached, dated 14th June, 1909.
Hawera: July, 1908, and January, 1909. Reports attached, dated 7th October, 1908, and 30th June, 1909.
Hokitika: September, 1908, and April, 1909. Report attached, dated 17th May, 1909.
Lawrence: September, 1908, and March, 1909. Reports attached, dated 21st December, 1908, and 30th June, 1909.
Masterton: July, 1908, and January, 1909. Reports attached, dated 15th July, 1908, and 19th February, 1909.
Maori Hill: September, 1908, and March, 1909. Report attached, dated 30th June, 1909.
Milton: September, 1908, and March, 1909. Report attached, dated 30th June, 1909.
New Plymouth: July, 1908, and January, 1909. Reports attached, dated 24th August, 1908, and 19th February, 1909.
Oamaru: September, 1908, and February, 1909. Report attached, dated 3rd March, 1909.
Palmerston North: June, 1908, and February, 1909. Reports attached, dated 20th August, 1908, and 30th June, 1909.
Petone: July, 1908, and June, 1909. Reports attached, dated 20th October, 1908, and 30th June, 1909.
Whangarei: July, 1908, and May, 1909. Report attached, dated 8th June, 1909.
Hastings: As this district does not come finally under control of its Fire Board until the 1st July, no official inspection of the brigade has yet been made, but I have twice visited the town for the purpose of giving advice in connection with fire-brigade matters.

In addition to inspecting brigades under the control of Fire Boards during 1908, the then Minister of Internal Affairs (the Hon. Dr. Findlay) received applications from brigade authorities in Levin, Fairlie, and Taihape, asking that the Inspector might be allowed to visit their respective towns for the purpose of advising them upon fire-brigade matters, and the Minister having given his permission, the visits were carried out accordingly. Also a large number of reports have been made and advice given relating to fire-protection, fire-extinction, and matters in connection therewith throughout the Dominion.

Included in the attached reports are copies of those sent to such of the Fire Boards as made application for them. They contain, in detail, my criticism upon the *personnel* and working of the respective brigades; the suitability of their station equipment and plant; local water system, pressure, and reticulation; suggestions as to future better organization and working of their brigades; the sites and erection of new stations; procuring of new appliances and equipment, &c. Generally after an inspection I gave an address with practical instruction embracing the various subjects in which I considered they were deficient in knowledge, mostly on technical or such matters that it was not necessary to embody in my reports to the Board.

In the course of my inspections it was apparent that almost without exception the officers and men comprising the various brigades are smart, of good physique, take an active interest in their work, and are eager for information. Where I have found it necessary to do so my criticisms have been taken in the best spirit, and any instruction given has been received with gratifying attention, and in a number of cases the hope was expressed that more frequent visits of inspection would be made. Generally I found that, although a lot of attention has been paid to the ordinary routine drill work—and a large number of the brigades are very smart at this—there is a considerable want of knowledge in the practical and theoretical work of fire-extinction and other branches of fire-brigade work. One of the most important subjects—that of life saving and preservation—has been almost entirely neglected.

The present equipment of the majority of the brigades leaves much to be desired, particularly so in the costly matter of station sites and buildings, and all require new plant, &c., in a more or less degree. In a number of cases consideration of these matters had been held over pending the formation of fire districts; and these having now been formed, some of the Boards have decided to put the work in hand immediately, with the consequence that their estimates of expenditure, when compared with the cost of maintaining their brigades in previous years, appear to be unduly high, thus leaving themselves open to the charge of extravagance, and very likely bringing the Act into discredit in the eyes of the ratepayers. In my opinion, with the exception of a few instances, the proposed expenditure is not only warranted but absolutely required; and the necessity for this large increase has been brought about mainly owing to the local authorities in the past not having recognised the importance of efficient protection from large loss in case of fire, and in dealing with the subject—especially when asked by their brigade to be supplied with new equipment, &c.—as in some measure a necessary nuisance, to be dismissed in the most economical manner, or to be held over for consideration in the dim future.

From a fireman's point of view there is a most serious defect in the water reticulation in the majority of those towns throughout the Dominion that have adopted the high-pressure water system, and that is the generally small diameter of the pipe-mains laid down. In reference to 3 in. mains, I have for years advocated that where there is any intention of using them for fire purposes no pipes less than 4 in. in diameter should be employed. Not only is the use of pipes smaller than that diameter a mistake in utility, but it is also false economy, particularly in our quickly growing New Zealand towns.

American authorities advise that in town reticulations, even in suburban or residential areas, no pipes less than 6 in. in diameter should be employed. Mr. John Freeman, the well-known engineer and recognised American authority, in his treatise on this subject, writes, "Four-inch pipes should never be used for a hydrant main unless it be to protect scattered detached dwellings in situations similar to a country village, or where the closest economy of first cost must be practised in order to get any general waterworks pipe system at all, and in these cases it should be clearly understood that, starting with, say, 75 lb. pressure, a line of 4 in. pipes one-half mile long, as soon as it becomes old and roughened by rust, can only deliver water enough for a single 100-gallon fire stream ¾ in. in diameter."

The number of moving-picture entertainments being given in this country is steadily on the increase, and, although here in New Zealand we have been remarkably free from accidents in that connection, hardly a week passes that one or more fires or panics more or less serious—as a rule, caused by the films catching fire—is not reported in the Home or foreign papers. Should a panic take place in some of the theatres and halls where these shows are given here—owing to faulty construction, inadequate exits, and other causes—very serious results must be expected. This does not apply so much to most of the larger towns, where attention has already been given and precautions taken in these matters; but I would suggest that some general regulations should be made as to the manner of use and precautions to be taken to minimise this danger as much as possible.

As an amendment to the Fire Brigades Act of 1908, a clause was added giving Fire Boards power to borrow money by means of issuing debentures; but upon several Boards trying to obtain a loan by this method, they found it impossible to do so, owing to no power to give legal security for the loan having been included in the said amendment. The money being urgently required for capital expenditure, these Boards have found it necessary to include a proportion thereof in the estimates of maintenance for the current year. By adopting this method the cost of maintaining their respective brigades will be very largely increased for the next few years, and, in view of the heavy burden this will prove to the contributory bodies, I would respectfully submit that an amendment to the Act, giving the necessary legal security, should be made during the coming session.

Another subject for amendment to the Act that I suggest should receive immediate attention is the following: There is a certain amount of insurance business carried on in the Dominion by British or foreign companies who have no representatives in New Zealand, and who thus escape any levy for fire-brigade maintenance. If the insured under these circumstances were made by law the agent or representative of the insurer (*vide* Fire Brigades Act, clause 2, heading "Insurance Company"), they would then be placed on the same footing as a company with its recognised office in New Zealand, and be compelled to pay their just proportion according to the amount of business done.

There are also other minor amendments required to the Act for its better administration.

Though not directly in connection with the Fire Brigades Act, I would most respectfully bring under your notice the matter of the great and quite disproportionate fire waste obtaining throughout New Zealand. That this waste is out of all proportion to that prevailing in other countries is forcibly evidenced by the following extract from an editorial published in the *Australasian Banking and Insurance Record* for July, 1908: "A comparison of the annual fire waste of various countries would afford an interesting little study for students of economics, but unfortunately it is difficult to procure reliable statistical information on the subject in very many cases. In the United States, where very elaborate returns are compiled by the Government, the total property loss by fire last year was stated at $200,000,000, or say £40,000,000 sterling, but the insurance losses were little more than half that sum, being £20,500,000. This gives an insurance loss of a little over 5s. per head of the population, while in the older European countries it has been estimated that the annual loss by fire does not exceed 1s. 6d. per head. The losses in New Zealand for the past five years, as reported by the insurance companies, work out at something like 7s. per head per annum, and that figure has already been exceeded for the first half of this year, a result for which the Christchurch conflagration is largely responsible. A country where, on a *per capita* basis, the insurance loss of the United States is so easily exceeded may pretty nearly claim to hold the world's record for the highest proportion of annual fire waste."

The insurance loss per head in New Zealand, quoted above, is considerably underestimated when averaged for the five years ending December, 1908, for, taking the population (Pacific islands excluded) over that period as averaging 950,000, and the insurance loss closely approximating £417,480 per annum, the loss works out at nearly 8s. 9½d. *per capita;* but to arrive at the actual fire waste there must be added the value of property destroyed that was not covered by insurance. By reference to the above extract it will be seen that the fire waste in the United States is estimated at £40,000,000 sterling, or 95 per cent. over and in addition to the insurance loss of £20,500,000. Judging from observation, and such figures as I have been able to gather, the percentage of uninsured loss over that insured is not nearly so high in this country, and may be accounted for as follows: Firstly, a more general insurance of property throughout the Dominion; secondly, higher cover over property in ratio to its value. Therefore, if 33⅓ per cent. be added to the insurance loss, the resulting amount should be pretty close to the fire waste under this heading, and that will give an average loss in New Zealand of £556,640 per annum for the last five years, or slightly over 11s. 8½d. per head, so that property to the value during that period of over £2,750,000 sterling has vanished in smoke. But even this huge sum does not cover our actual fire waste, for the expenses entailed by wear-and-tear of fire plant and appliances, fuel used for conveying the appliances to and extinguishing fires, &c., amounts to a fair sum per annum, and these and other contingent charges should be included to arrive at a true estimate. The comparison stands as follows:

New Zealand—Insurance loss, £417,480, or 8s. 9½d. *per capita;* fire waste, £556,640, or 11s. 8½d. *per capita.* United States—Insurance loss, £20,500,000, or 5s. *per capita;* fire waste, £40,000,000, or 10s. *per capita.*

In an article published in *Everybody's Magazine* for January, 1909, Mr. S. H. Adams, dealing with the subject of the great fire waste in the United States, makes the following comparisons: "The *per capita* loss by flames in Italy is 12 cents [6d.] yearly; in Germany 49 cents [2s.]; in thirty of the largest European cities, 61 cents [2s. 7d.]; and in 250 American cities the *per capita* destruction averages $3 10 cents." Of course, the purchasing-power of money is greater in Europe than it is in either America or New Zealand, and therefore the actual ratio of loss is not so great as it would appear from the figures quoted, but nevertheless the difference is so enormous as to be very startling. In an editorial note at the head of the article just quoted, *inter alia,* the editor writes: "We knew that our national fire bill was startling, but the facts and figures that Mr. Adams presents here shocked us. Remember, we cannot, as a nation, waste our substance and prosper." The application to New Zealand is obvious.

Various reasons may be given to account for the excessive fire waste, and also for the greater number of fires per head occurring in the Dominion, and in comparison with other countries two or three will be briefly mentioned for the purpose of showing that the prevailing state of things can be remedied.

Earthquakes.—Non-preventible, of course, but the fire danger arising from this source can be minimised by proper building-construction.

Faulty Building Construction.—This is a widely spread evil. Fires have taken place in our midst that should have been looked upon as valuable lessons, but very little good has resulted in that direction. A large block of buildings recently erected in one of our cities in place of those destroyed by fire is, as a conflagration risk, very little, if any, better than it was before—owing to unprotected windows in narrow rights-of-way, vulnerable roofs, &c. A striking illustration of false economy in these respects was shown during the progress of the fire that took place on Lambton Quay in October, 1906. Had the side-windows and roof of the then newly erected Bank of New South Wales been protected—and this could have been done for a comparatively small increase in the cost of erection—this fine building would most undoubtedly not have been destroyed.

Of late years there has been a large amount of land-speculation, with its natural outcome of the erection of buildings of a cheap and flimsy character. Especially is this so in the case of the smaller class of dwellinghouses, where the insides are lined with green timber that, after drying, leaves spaces between the boards up to a couple of inches wide; this timber is covered with scrim and paper that in a short time becomes dry as tinder, only requiring a spark to set it on fire, with the result that before any brigade can arrive on the scene the place is practically destroyed; indeed, so rapidly do the flames spread in buildings of this description that it is no uncommon occurrence in the daytime for the occupants to have barely time to escape, and were it not for the wise policy of the Government in having passed the Act compelling the provision of adequate means of escape in all buildings used for residential purposes, there would be a long list of those persons burnt to death. There are very many other faults under this heading, but the foregoing will serve as an indication.

Insurance in Relation to Fire Loss.—Another of the reasons for the large number of fires, and consequent excessive loss, obtaining in New Zealand is overinsurance on property. I have upon various occasions during past years made certain remarks in reference to this matter, stating that "Overinsurance may not be the cause of any large percentage of fires due to direct incendiarism, but it certainly induces to a carelessness that is the cause of fires." In using the word "overinsurance," I mean not only where the amount of insurance is actually higher than the value of the property, but also such cases in which the cover is at or very nearly at par with the value thereof. An insurance manager in this city had a letter published in one of our local papers a few weeks ago in which he states, "No one will surely believe that any large percentage of the fires which take place are accidental. My firm conviction is that 90 per cent. of the fires in New Zealand are either wilfully caused or are the result of carelessness which amounts to criminal negligence." I submit that the inference to be drawn from the above is that nearly 90 per cent. of the fires are caused for the purpose of obtaining the insurance, for it is not to be supposed that any one—save in some few cases such as those caused by a fire-raising monomaniac, for instance—would wilfully cause or be criminally negligent to the extent of causing a fire unless there was something solid to be gained thereby. In my opinion, the statement that 90 per cent. of the fires take place from the causes mentioned is an exaggeration; but that a large number of fires do take place as a result of carelessness, wilful or otherwise, is an indisputable fact. It is only in accordance with human nature that most persons would be less careful when fully covered, or perhaps a little more than just covered, by insurance than those who stand to lose all or a portion of the value of their property in the event of a fire taking place on their premises.

The fire waste in New Zealand is so excessive in proportion to its population, and the consequent drain upon the wealth of its community so serious, that I would strongly recommend, as a means to reduce in some measure at any rate the prevailing loss, that local governing bodies as a whole should promptly take into earnest consideration the framing for general adoption of building and other by-laws—suited, of course, to local conditions—having for their object the prevention of fire, also the more efficient equipment of fire brigades under their control. To the insurance companies I would recommend the more thorough inspection of risks before accepting proposals. In the past this work has been carried out in a very perfunctory manner; cases have been reported to me in which no inspection has ever been made. I would also recommend the observance of a stricter supervision over agency or subagency business. Only recently a deputation waited on the Premier of Victoria asking that fire-insurance agents should be licensed. A similar request was made to the English Chancellor of the Exchequer some little time ago, and, in commenting on this

subject, the editor of the *Australasian Banking and Insurance Record*, in its June issue, writes: "It may, of course, be freely admitted that the enormous development of the agency system of insurance companies has been attended with certain evils and abuses. . . The issues involved are by no means new." In my annual report to the Wellington City Council as far back as 1901–2 I found it necessary to mention this matter.

Finally, it is necessary that the general public should be educated to realise the great waste that is going on, and that the remedy to a large extent lies in their own hands. To again quote Dr. Bayles: "The elementary economic truths that insurance creates no wealth to replace that destroyed, and that as a system it penalises prudence to make good the consequences of imprudence, carelessness, and crime, should not be difficult of comprehension, but if comprehended it would perhaps be easier than it now appears to be effectually to discourage preventable fires."

In view of recent legislation, and as showing the spread of recognition of the principle that insurance companies should contribute towards the upkeep of fire brigades, &c., the following is of interest: At the annual meeting of the Association of British Professional Fire Brigade Officers, held in Birmingham in June, 1908, the following resolution was carried unanimously: "That, in the opinion of this association, insurance companies should be compelled to contribute towards the cost of the expenses incurred by municipalities in providing and maintaining efficient fire brigades. . . And, in view of the fact that a select committee of the House of Commons has already reported recommending such compulsory powers, all interested local governing bodies throughout the country be requested to take united action and urge the Government to promote legislation to give effect to the report of the committee as early as possible."

During the Municipal Congress held at Newcastle, Natal, the last week in March (1908), a proposal that legislation be promoted to secure contributions from fire-insurance companies carrying on business within any borough or town towards the upkeep of fire brigades was adopted without opposition.

Again, in a recent issue of a leading English journal devoted to fire matters, in reference to Government inspection of fire brigades in New Zealand, is the following: "In our opinion, and we believe our readers will support us, the Old Country would do well to copy the example of her youngest colony."

Appended are tables showing the annual cost for maintenance and the number of calls attended by each brigade, also the fire loss in each fire district.

I have, &c.,
THOMAS T. HUGO,
Inspector of Fire Brigades.

The Hon. the Minister of Internal Affairs, Wellington.

COST OF FIRE BRIGADES.

	Year ending 30th June, 1909.	Year ending 30th June, 1910.
	£ s. d.	£ s. d.
Auckland	8,500 0 0	7,276 0 0
Christchurch	7,550 0 0	7,547 0 0
Dannevirke	600 2 0	590 5 3
Dunedin	4,200 0 0	6,000 0 0
Feilding	385 0 0	460 0 0
Gisborne	362 0 0	524 8 5
Greymouth	676 0 0	685 10 0
Hastings	Nil	708 10 0
Hawera	280 0 0	450 0 0
Hokitika	621 0 0	645 0 0
Lawrence	200 0 0	100 0 0
Masterton	1,153 5 8	1,334 14 0
Maori Hill	339 0 0	381 0 0
Milton	210 0 0	300 0 0
New Plymouth	460 0 0	472 0 0
Oamaru	400 0 0	538 8 0
Palmerston North	896 9 0	1,436 13 0
Petone	582 5 11	915 4 11
Whangarei	400 0 0	366 0 0
Totals	27,815 2 7	30,730 13 7

The above figures do not represent the actual sums expended; they are taken from the estimates of proposed expenditure for the respective years, and are therefore approximate only.

SUMMARY OF FIRE CALLS.

District.	Fires.	Chimney Fires.	Rubbish Fires, &c.	False Alarms.	Out of District.	Total.
Auckland	68	19	7	50	6	150
Christchurch	76	8	2	21	1	108
Dannevirke	5	1	3	2	..	11
Dunedin	54	9	9	20	2	94
Feilding	7	..	..	..	1	8
Gisborne	13	..	..	1	..	14
Greymouth	2	1	..	..	..	3
Hawera	3	..	..	..	..	3
Hokitika	5	..	..	..	..	5
Lawrence	3	..	..	..	..	3
Masterton	17	..	..	..	..	17
Maori Hill	1	..	..	..	..	1
Milton	1	..	..	..	..	1
New Plymouth	8	..	1	..	1	10
Oamaru	25	1	2	1	..	29
Palmerston North	32	5	3	3	..	43
Petone	6	..	..	4	2	12
Whangarei	4	..	..	1	1	6
Totals	330	44	27	103	14	518

SUMMARY OF FIRE LOSS.

District.	Insured.	Uninsured.	Total.
	£	£	£
Auckland	12,157	522	12,679
Christchurch	7,884	5,018	12,902
Dannevirke	570	305	875
Dunedin	5,595	909	6,504
Feilding	1,100	718	1,818
Gisborne	4,577	1,310	5,887
Greymouth	155	125	280
Hawera	233	..	233
Hokitika	915	355	1,270
Lawrence	395	155	550
Masterton	3,972	1,272	5,244
Maori Hill	400	150	550
Milton	200	120	320
New Plymouth	3,200	1,750	4,950
Oamaru	2,900	1,280	4,180
Palmerston North	12,703	4,603	17,306
Petone	869	660	1,529
Whangarei	360	313	673
Totals	58,185	19,565	77,750

AUCKLAND.

SIR,— Office of the Inspector of Fire Brigades, Wellington, 7th August, 1908.

In reply to your letter dated the 23rd ultimo, addressed to the Under-Secretary, Department of Internal Affairs, asking for a copy of the report of the Inspector of Fire Brigades bearing upon his recent inspection of the Auckland Fire Brigade, I have the honour to report in that connection as follows:—

At 2.45 p.m., 21st July, I gave a call at the Central Station for an imaginary fire in Beresford Street. At 2.46.7 p.m., or 1 minute 7 seconds from the time the call was given, water was shown from the first delivery that was got to work from the motor hose and ladder tender. The steam fire-engine was got to work, and with 100 lb. of steam on the pressure-gauge the first water was shown 6 minutes 45 seconds after lighting the fire. Various drills were gone through, such as fire-escape and water-tower, Eastman set, rescue of unconscious persons, practical smoke-jacket drill, &c. The whole of the demonstration was carried out in a workmanlike and efficient manner, with very satisfactory results in all respects. A turn-out demonstration was also given at the Ponsonby Station.

Personnel *of the Brigade.*

The members of the brigade appear to be smart and active, a well drilled and disciplined body of men, and thoroughly acquainted with their various duties.

Stations.

The Central Station, in Pitt Street, is a building well designed and arranged for the purposes of a modern fire-station up to the point that more and better sleeping-accommodation is required for the men, and this should be provided for in the near future.

The Ponsonby Station is utterly inadequate to the requirements of this rapidly growing district. The watch-room has to be utilised as a bedroom. The only bedroom is overcrowded to an unhealthy degree, especially so in view of the proximity of the stables. More accommodation should be provided for the single men, married quarters for the officer in charge, and the horses and horse-vehicle replaced by a motor-machine.

At Beach Road Station more accommodation is also required.

Plant.

The plant and appliances at the Central Station are up to modern ideas, and appear to be sufficient for present requirements.

The wagon at the Ponsonby Station is heavy and cumbersome, not suitable for the fast work of a fire brigade, and should be replaced by a motor-machine.

The hand hose-reel at the Beach Road Station should be replaced by a horse-drawn or motor-driven machine.

Water Reticulation and Pressure.

The volume of water obtainable generally in nearly all parts of the city is fairly good. The reticulation has been greatly improved, and it is the intention, I understand, to proceed with the work in this direction as rapidly as circumstances permit. The pressure on the lower levels—90 lb. normal, with an increase to 130 lb. at three minutes' notice—is a fair working-pressure. On the higher levels a pressure of 10 lb. normal, with an increase to 35 lb., is very poor, and in case of a fire of any magnitude would be of very little service indeed; therefore I would recommend that the motor-machine which I have suggested above should be placed in the Ponsonby Station, and should be of the petrol motor fire-engine and hose-tender type, of, say, 350 gallons capacity, which could be run to all calls. A number of these petrol motor-engines have been in use in both Sydney and Melbourne for some time, and are giving excellent results.

I would respectfully point out that a brigade, to be efficient as such, must keep pace in its improvements as to strength and equipment with the growth of the local district; and if this ratio is not maintained at intervals of some years a large outlay is required to bring the brigade up to date, with a consequent outcry as to the cost of the brigade. The improvements to the Auckland Brigade, particularly with regard to accommodation for the men at the various stations, have certainly not kept pace with the rapid growth of the fire risks in the City of Auckland during the last few years. It should be borne in mind that permanent firemen, necessitated by the exigencies of their employment, are subject to exceptional confinement to their respective stations, and as one of the means to induce a good class of men to remain in the fire service after the time and trouble taken to make them proficient, good and comfortable quarters conduce very greatly to that desirable end.

I have, &c.,

THOMAS T. HUGO,

Inspector of Fire Brigades.

Percy Butler, Esq., Secretary, Auckland Fire Board.

SIR,— Office of Inspector of Fire Brigades, Wellington, 9th June, 1909.

I beg to submit, for the consideration of your Board, a report in connection with my inspection of your brigade on the 21st and 22nd May last.

On the evening of the 21st ultimo, at 8.12 p.m., I gave an alarm from the fire-alarm box situated at the Albion Hotel, corner Hobson Street. The motor arrived at 8.13.52⅘ p.m. (1 minute 52⅘ seconds from the time of call)—a very satisfactory result. The horse-reel and horse-escape also arrived on the scene promptly. Two deliveries were got to work, and the escape elevated very smartly. Other drills and demonstrations were gone through during the evening, and were carried out in an efficient and creditable manner generally.

I noted during my inspection on the 22nd that the horse hose-and-ladder wagon at the Ponsonby Station has been replaced by a motor-car; but I would call your attention to certain recommendations contained in my report addressed to you dated the 7th August, 1908, particularly to that part referring to the replacement at the Beach Road Station of the hand-drawn hose-cart by a horse-drawn or motor-driven machine.

I have, &c.,
THOMAS T. HUGO,
Inspector of Fire Brigades.

Percy Butler, Esq., Secretary, Auckland Fire Board.

CHRISTCHURCH.

SIR,— Office of Inspector of Fire Brigades, Wellington, 19th November, 1908.

In reply to your letter dated the 11th November, 1908, and addressed to the Minister of Internal Affairs, asking for a copy of the Inspector's report made in connection with his inspection of the Christchurch Fire Brigade, herewith I have the honour to forward you a report dealing with matters relating thereto.

At 7.30 p.m. on Thursday, the 3rd September, I gave a call by telephone to the Central Fire-station for an imaginary large fire in the neighbourhood of the Hereford Street Bridge, distant some 45 chains from the Lichfield Street Station, and about 35 chains from the Chester Street Station. The first appliance to reach the indicated spot was the motor chemical from the Central Station, and the first chemical jet was shown from that machine at 7.32.30 p.m., 15 seconds later than the first jet from the Chester Street chemical was shown. Water was shown from the first steam fire-engine at 7.34.25 p.m.; that from the second fire-engine was not timed, owing to some little delay in getting to work. The large escape was fully extended, and a man ready for work on the top of it, at 7.36.55 p.m. The first water was shown from the Railway engine at 7.39.50 p.m. These results were distinctly good; at the same time, they must not be taken (owing to the fact that the officers of the brigade were aware that they would be turned out during the course of the evening) as a result that would actually take place in case of a genuine alarm of fire, but more as an indication of what can and should be done, in case of necessity at any moment day or night, by a well organized, drilled, and properly equipped brigade.

Personnel *of the Brigade.*

The members of the brigade appear to be generally an intelligent body of men, active, and of good physique, but they are in need of more complete instruction and drill in the various branches of fire-brigade work. As your Board is in course of organizing a partially permanent brigade, I would respectfully point out the absolute necessity of introducing from the outset a clearly defined system of drills, duties, leaves, scale of pay, &c. Any subsequent alterations in these matters, except in the way of very decided concessions, invariably leads to dissatisfaction and friction amongst the men. When it is taken into consideration the manner in which permanent members of a fire brigade live—that is, for instance, the close confinement, the discipline that must be maintained, and many other things of necessity different from ordinary every-day life—it must be apparent what care is needed to start on a sound workable basis, and to avoid giving even any seeming cause for complaint.

Stations.

Though the Lichfield Street Station is in a fairly good position in regard to the risks of the town, the site as at present is not large enough for a central station; more accommodation for men, appliances, and drill purposes is required. The Chester Street Station should be done away with. The Lichfield Street site and station should be enlarged, or a larger piece of ground purchased, and a new station of a more modern design erected. The residential portions of the sub-stations also are limited. For very obvious reasons, married men should be placed in charge, and reside in these out-stations.

Plant and Appliances.

When the new motor-car now on order is placed in commission, the city portion of your brigade will be fairly well equipped in the matter of appliances; but motors should be furnished to each of the sub-stations. The advantage of these appliances in many ways must be recognised, and not the least is the matter of concentration in cases of emergency.

A greater number of fire-alarm points are required. Each out-station should have its own circle of fire-alarms, and be connected by a direct wire to the Central Station. Any further installation of street fire-alarms should be of a more modern type.

Water Reticulation, Pressure, and Supply.

The proposed new reticulation as laid out on the plan is well designed, and the adoption of hydrants with 3 in. waterways will prove of very great advantage to the brigade in their work. From a fire point of view the weakness in the new water-supply scheme is the available working-pressure. With the head 240 ft. above datum the static pressure will be 104 lb. Deducting loss due to friction, draw off, &c., the available pressure will be approximately about 90 lb. Though this will prove ample in a number of cases, it is not a sufficient pressure for fire-extinction purposes. In consequence, it will be necessary to run the fire-engines to the majority of city calls, and to obtain a good supply for the engines. As an auxiliary in case of a breakdown in the high-pressure system, I would advise that certain of the tanks should be connected with one another by means of pipes, and also connected with the supply to be obtained from the pumps at the Destructor.

The foregoing is a general outline of the scheme that I consider your Board should adopt for the improvement of the fire-protection service in your city.

I have, &c.,

THOMAS T. HUGO,

Inspector of Fire Brigades.

E. J. Righton, Esq., Secretary, Christchurch Fire Board, Christchurch.

REPORT No. 2. (30th June, 1909.)

I made a second inspection of this brigade and its equipment on the 21st and 22nd June. A false alarm of fire was rung up from the Choral Hall fire-alarm box, a point some 600 yards distant from the Lichfield Street Station, and about the same distance from the Chester Street Station. The call was given at 7.49 p.m. on the 21st. The first response was by the Chester Street chemical engine, which arrived at 7.53.5 (4 minutes 5 seconds from time of call), followed 5 seconds later by the steamer from the same station. The motor from Lichfield Street arrived at 7.53.25 p.m. This response was not as prompt as it should have been. Directions were given for the steamer to be got to work from the river. The pumps were started, and water shown at 7.58 p.m., with the steam-gauge showing only 40 lb. pressure. The engine was stopped, and instructions given not to start again until there was 100 lb. on the gauge; this pressure was obtained at 8.3.20 p.m. This result was not good, seeing that the water is kept warm in the boiler. However, since my previous visit of inspection there have been drastic changes in the *personnel* and working methods of the brigade, and the newly appointed Superintendent has hardly had time as yet to thoroughly drill the men or complete his system of organization; therefore, further criticism will be held over until some later period.

DUNEDIN.

DUNEDIN FIRE BRIGADE.

Inspections of the Dunedin Fire Brigade and its equipment were made on the 14th and 15th September, and again on the 29th March.

A call was given by telephone at 8.1 p.m. on the 14th September for a supposed fire on the premises of the Union Steamship Company in Water Street. The first hose-and-ladder carriage arrived from the Central Station at 8.4.40 p.m., or 3 minutes 40 seconds from time of call; the second carriage arrived at 8.5.10 p.m.; and the large pair-horsed escape shortly after. This response to the call was satisfactory, and made in good time. Whilst getting the appliances to work, proceedings were interrupted by a genuine alarm of fire; but further drill was carried on at the station after the return of the brigade.

At my second visit on the 29th March, 1909, ordinary drill was carried out at the Central Station, where the first pair-horse hose-and-ladder carriage was turned out in 1 minute 5 seconds, and the second carriage in 2 minutes 7 seconds. Considering the disabilities they are under in comparison with a similar brigade in a station of modern design, with its special facilities, these results are very good, and speak well for the smartness and drill of the men.

SOUTH DUNEDIN VOLUNTEER FIRE BRIGADE.

An inspection of this brigade, which is under the control of the Dunedin Fire Board, was made on the evening of the 16th September. An alarm of fire was given at their station, and two deliveries were got to work in very quick time. The members of this brigade—consisting of a captain and fourteen men, of whom the captain and thirteen men were present at the muster—are well disciplined, drilled, and smart in their movements, but they require further equipment, such as hose, hand-pumps, &c.

CAVERSHAM VOLUNTEER FIRE BRIGADE.

Inspection of this brigade, also under the control of the Dunedin Fire Board—consisting of a captain and fourteen men, of whom the captain and thirteen men were present—was held on the evening of the 17th September. An alarm of fire was given, and two deliveries were got to work in fairly good time; but there is room for improvement in the discipline and drill of this brigade. Further equipment is required here also.

Dunedin Fire Brigade.

Personnel *of the Brigade.*

The members of the brigade appear to be a smart body of men, of good physique, well drilled and disciplined; but more permanent men are required, this section of the brigade being decidedly weak in number.

Station.

The present Central Station is quite unsuitable for the smart work required, and for other purposes, such as living accommodation, &c., of a modern fire brigade. The "get away" is risky, and causes loss of time in responding to an alarm of fire. (The Fire Board have since decided to build a new station, and a good site has been secured in Cumberland Street for this purpose.)

Plant and Appliances.

With the late additions—motor, hose, &c.—the equipment is fairly satisfactory, with the exception that a second motor is required for use in the suburbs; this should be of a smaller and very much less expensive type than the one now in use. Also, the present fire-escape is unwieldy, and very slow in its working; alterations should be made in it, or a lighter and more suitable appliance purchased.

Water Pressure and Reticulation.

The provisions for water-storage and the static pressure available for fire purposes are excellent; but the reticulation is faulty, and leaves very much to be desired, due in the first place to the small diameter of the pipes laid down, and in the second place to the great amount of corrosion apparently taking place. Whilst in Dunedin I was shown a piece of a 3 in. pipe that had just been taken up in which not more than 1 in. of clear waterway remained. Under no circumstances should pipes as small as 3 in. in diameter be employed—that is, if it is to be used for fire-extinction purposes. This from an economic point of view as well as from that of utility.

South Dunedin and Caversham Brigades.

These two brigades should be amalgamated, and made an integral part of the city brigade. In any case, if the best results are to be obtained, they should and must be under the absolute control of the Superintendent; otherwise, divided or partially recognised authority must produce poor results. The second motor should be stationed in this district; also a fire-alarm system, and I would suggest one of a more modern type than that at present in use in the city should be installed, with direct communication between the sub-station and the Central Station.

DANNEVIRKE.

Sir,— Office of Inspector of Fire Brigades, Wellington, 31st December, 1908.

In reply to your request of the 11th instant, addressed to the Under-Secretary, Department of Internal Affairs, asking for a copy of Inspector Hugo's report on the Dannevirke Fire Brigade, herewith I have the honour to forward you a report dealing with matters in that connection.

My first inspection was made on the 26th June last, and during its course it was apparent that the members of the brigade were in considerable need of more drill, and instruction in the various matters connected with fire-brigade work. I inspected your brigade again on Friday, the 15th instant. At 9.22 p.m., by my instructions, a false alarm was given by ringing the fire-bell. The first fireman put in an appearance 23 seconds after he was told that there was a supposed fire on a vacant section at a spot about 180 yards distant from the station, and was instructed to get a delivery to work there. Water-pressure, as shown on the station gauge, 84 lb. The first water was shown at 9.27.30 p.m., or 5½ minutes from the first toll of the bell. This was not a good result; but that was mostly due to the first man, without fully understanding the exact locality of the supposed fire, running off with the reel, and only reaching the place after going in a roundabout direction. At 9.33 p.m., or 11 minutes after the alarm was given, the brigade was mustered. The Superintendent and fourteen men were in attendance, or fifteen out of a full complement of twenty-three. Considering that the bell was not rung as well as it might have been, and the rain and bad weather at the time, this muster was good. A mistake was made in getting to work, in that the first delivery was not taken from the nearest hydrant, and again a second delivery to work from the first standpipe, instead of sinking a second standpipe at the hydrant nearest to the scene of the supposed fire.

Personnel *of the Brigade.*

The members of the brigade appear to be a smart active body of men, but they require more instruction and drill. In particular, it should be impressed upon them to take the work in a more deliberate manner, the before-mentioned mistakes being apparently due as much to overanxiety to get to work smartly as to any other cause.

Station, &c.

The present station is not well placed in relation to the risks of the town in view of its future trend; neither has it accommodation for firemen to sleep on the premises. Therefore, the building of the new station on the Allardyce Street site recently purchased by your Board should be proceeded with. The bell should be removed to the new site without delay, as, owing to its present position on the western extremity of the town, with the majority of the members of the brigade more towards its centre, they would be unlikely to hear the alarm should a strong easterly wind be blowing at the time. A few words of direction to strangers to turn on the "full water-power" when giving an alarm should be printed in the immediate vicinity of the bell. The outstation should be connected with the new station by direct wire and telephone.

Plant and Appliances.

These are sufficient for present requirements, with the exception that coupling-ladders should be provided, so that they can be taken to a fire at the first call by or with the hose-reel, and a couple of hand-pumps are required.

Water Reticulation and Pressure.

The major portion of the reticulation of the town is fair, but extensions of the mains are required, and no pipes under 4 in. in diameter should be put in. The position of every hydrant should be clearly marked by a conspicuous indicator. The pressure—an average of 80 lb., with a possible increase to 90 lb.—is not looked upon as good for fire-extinction purposes; but, seeing that there are no buildings over two stories in height and of comparatively small cubical area, good results should be obtained with that pressure if care is exercised by the officers of the brigade when getting a number of deliveries to work that the various fire-mains are not opened up over their capacity to supply efficient fire-streams.

I have, &c.,
THOMAS T. HUGO,
Inspector of Fire Brigades.

W. Dobson, Esq., Secretary, Dannevirke Fire Board, Dannevirke.

FEILDING.

SIR,— Office of the Inspector of Fire Brigades, Wellington, 17th August, 1908.

In reply to your letter dated the 4th ultimo, addressed to the Hon. the Minister of Internal Affairs, asking for a report from the Inspector of Fire Brigades embodying his views on the state of your brigade and plant, and his recommendations in regard to the future working of your brigade, I have the honour to forward you the following report:—

At the inspection drill of your brigade, held on the evening of Tuesday, the 20th June last, the muster of members of the brigade—fourteen out of twenty-two on the roll—was very disappointing, particularly as the reasons given for non-attendance were, in some cases, not of a very satisfactory nature. The wet drill under conduct of the Deputy Superintendent was carried out in a workmanlike manner. Water was shown from the first delivery in good time, but there was a delay in getting the second delivery to work, due to the shank of the standpipe being too short.

Personnel *of the Brigade.*

Of the members of the brigade that attended the muster, the officers present appear to be capable and intelligent, and the men active, willing, of a good stamp and build; but, as I pointed out at the time, there appears to be a want of enthusiasm, and this was made more apparent by the absence of so large a percentage of the strength of the brigade. Any organized body of men take their tone from the officers in command, and, should any lack of interest be manifested by that officer, it very soon works a like effect upon the men. This is a very serious matter for your town, in view of the way in which it is growing, and the number of new and comparatively large buildings being erected. The chief officer of a fire brigade who has the success of his brigade at heart, volunteer or permanent, and who will take the trouble to study, outside the mere routine work, the very varied subjects bearing on fire extinction, prevention, and life-preservation, can make it most interesting to his men, and very quickly instil into them an enthusiasm for the work, and this work should be carried out on the lines as suggested in my address to the members of your brigade.

Site for New Station.

Of the sites shown to me during my visit to Feilding I consider the Hobson Street one the most suitable.

Plant.

Several of the standpipes require the shanks lengthening, and they should be made of uniform length. Fire-ladders are required; three 10 ft. lengths of coupling-ladders would be most serviceable. Two C pattern "London Fire Brigade" hand-pumps, fitted with stirrups, should be obtained; also some larger bore branch-nozzles are required.

Water Pressure and Reticulation.

The average water-pressure of 130 lb. is an excellent one for fire-extinction purposes; but hitherto the best results have not been obtained from this splendid pressure, owing to the nozzles used being of too small a bore. The reticulation, owing to the large quantity of 3 in. piping laid down, leaves much to be desired; no mains under 4 in. in diameter should ever be laid for fire purposes. The fact of having two different patterns of hydrants—screw and ball—is also bad, as it necessitates the brigade always carrying with them the two corresponding patterns of standpipes; then, again, the hydrants, though ample in number, are laid at very irregular depths. Altogether, the high-pressure system of your town, with the exception of the pressure, is not a model one from a fire-brigade point of view, in whose work seconds of time are an object. The less complicated the system, and the simpler and more uniform the equipment, the better the results obtained.

When you are ready to consider the question of your new station I shall be pleased, should you so desire, to go into the matter of design and cost with you, and will at any time give you all information as to purchase of new equipment.

I have, &c.,
THOMAS T. HUGO,
Inspector of Fire Brigades.

Fred Pirani, Esq., Chairman, Feilding Fire Board.

REPORT No. 2. (30th June, 1909.)

I made a second inspection of this brigade on the 4th and 5th February last. A false alarm of fire was given by ringing the fire-bell at the station at 9.15 p.m. on the 4th. Instructions were given to get to work at a point on Kimbolton Road some 300 yards distant. Water was shown at 9.18.19 p.m., or 3 minutes 19 seconds from time of call, a satisfactory result, but as certain members of the brigade were aware of my presence in the town, and were prepared, it cannot be regarded as the outcome of a surprise alarm. When mustered at 9.25 p.m., or 10 minutes from time of first call, the Deputy Superintendent and ten men were present.

The full strength of the brigade is Superintendent, Deputy Superintendent, and seventeen men. At the muster at 8 p.m. on the following night there were present Superintendent, Deputy Superintendent, and twelve men, with five men on leave. This is too large a proportion on leave at any one time, unless provision is made for assistance in cases of emergency.

I consider an improvement has taken place since my previous visit of inspection; the men appear to be smarter in their movements, and to take greater interest in their work and in the instruction given.

Attention has been given to the recommendation contained in my previous report, but no ladders have been provided as yet.

GISBORNE.

SIR,— Office of Inspector of Fire Brigades, Wellington, 8th October, 1908.

In reply to your letter dated the 29th August, addressed to the Minister of Internal Affairs, asking that a report from the Inspector of Fire Brigades on the condition and general efficiency of your brigade might be forwarded, I have the honour to submit a report dealing with the matters in question.

At 7.32 p.m. on Thursday, the 13th August, I gave a call at the fire-station for an imaginary fire at a point in Bright Street some 150 yards distant, directing that two deliveries from hydrants should be got to work, also that steam should be got up on the stationary fire-engine. Water was shown from the first delivery at 7.34.7 p.m., or 2 minutes 7 seconds from the time of call. Water was shown from the second delivery at 7.37.28, or 5 minutes 28 seconds from time of call. The first water was shown in creditable time, but there was some confusion over getting the second lead to work. The engine was started with 75 lb. steam on the gauge at 7.48.52 p.m., or 16 minutes 52 seconds after the order was given to get up steam. Taking circumstances into consideration, this result was fairly good, but in getting the deliveries to work from the steamer mains considerable trouble was experienced, and time lost in finding and clearing the hydrants in Gladstone Road.

Personnel *of the Brigade.*

Of the total strength of the brigade on the roll—twenty-five—there were present at the muster twenty-two. They are a fine active body of men, of good physique, who appear considerably interested in their work, and willing to learn, but they lack instruction, and I strongly recommend that systematic drills should be held, embracing the various subjects as explained by me during the course of my address, but great care must be taken that the drills or classes do not fall into a monotonous routine.

Stations.

The present station-site is a very suitable one in relation to the risks of the town, present and future; but the station building is quite inadequate for its purpose. A new station is required, which should contain accommodation for a caretaker and for men to sleep on the premises. Small hose-reel sheds should be placed in the Kaiti and Whataupoko districts; also, one is required in Gladstone Road, somewhere in the vicinity of Herbert Street.

Plant and Equipment.

Light handy hose carts or reels, with a hydrant and supply of hose, should be placed in the hose-reel sheds mentioned above, with one of the 25 ft. ladders at present in the main station at each place. A set of strong light 10 ft. coupling-ladders are required at the main station, also a couple of hand-pumps fitted with stirrups. I understand that arrangements have been made to supply a horse immediately upon an alarm of fire, and that should be sufficient for present requirements in that direction.

Water Reticulation, Pressure, and Supply.

The reticulation of your town is an excellent one, well designed and carried out, and the proposed extensions are in keeping with the original design. The average pressure—90 lb., rising to 130 lb. when required—is very good. Hitherto the best results have not been obtained, owing to the nozzles used having been on the small side. The stationary fire-engine, with its reticulation and hydrants, should be maintained in good working-order ready for immediate use in case of any sudden failure of the high-pressure system. The hydrant-indicators require attention. Each hydrant should be systematically and clearly marked. The fire service on board the dredge "John Townley" would prove a valuable auxiliary in case of a large fire in the neighbourhood of the water-front.

I have, &c.,

THOMAS T. HUGO,
Inspector of Fire Brigades.

F. Cumming, Esq., Secretary, Gisborne Fire Board, Gisborne.

SIR,— Office of Inspector of Fire Brigades, Wellington, 22nd February, 1909.

I have the honour to forward, for the information of your Board, a report in connection with my recent visit of inspection, and dealing with the general efficiency of your brigade.

At 7.25 p.m. on Thursday, the 11th instant, I rang the fire-bell in Gladstone Road, and directed the brigade to get to work with one delivery at a spot in Grey Street about 300 yards distant from the station. Water was shown full on at 7.29.24 p.m. The brigade was mustered at 7.35 p.m., when it was found that the Superintendent, Deputy Superintendent, and sixteen firemen were in attendance. At the inspection on the following night, at 8 p.m., the Superintendent, Deputy, and nineteen men answered the roll-call; two were absent on duty, and one on leave: twenty-four in all accounted for. The time from the first toll of the bell, at 7.25 p.m., until water was shown—4 minutes 24 seconds—was satisfactory, and the work was carried out smartly.

The plant turned out was in accordance with the order given.

The muster of the brigade—viz., two officers and sixteen firemen—at 7.35 p.m., or 10 minutes from the time of first call, was very satisfactory, particularly so seeing the bell is so badly cracked that it can only be heard within a very small radius, and proves that the members of the brigade take an active interest in the work. The attendance on the following night was also very satisfactory.

Upon inspection, I find the plant and appliances are maintained in good order.

Referring to the recommendations contained in my report dated the 8th October, 1908, I find that up to the present no horse has been available for the purpose of taking the plant to a fire, although I understood that arrangements were then being made for the supply of one when required, and I would strongly recommend that this should be done without further delay; also, the hand-pumps and coupling-ladders should be obtained.

I would again call your attention to the necessity of placing small hose-reel sheds, equipped with hose carts or reel, ladders, &c., in the Kaiti and Whataupoko districts; also, the plug-indicators require attention.

I have, &c.,

THOMAS T. HUGO,
Inspector of Fire Brigades.

F. Cumming, Esq., Secretary, Gisborne Fire Board, Gisborne.

GREYMOUTH.

SIR,— Office of Inspector of Fire Brigades, Wellington, 14th June, 1909.

In reply to your letter dated the 7th instant, addressed to the Hon. the Minister of Internal Affairs, and asking for copies of Inspector Hugo's reports on the Greymouth Fire Brigade, I have the honour to forward you a report in connection therewith.

On Monday evening, the 19th April, at 7.8 p.m., at the Boundary Street Fire-station, I gave an alarm for a supposed fire located at the corner of Mawhera Quay and Tainui Street. The hose-reel, ladder-carriage, and steamer arrived at the spot very promptly. The first water was shown from a hydrant off the high-pressure main at 7.11.20 p.m., 3 minutes 20 seconds from time of call. This result was very satisfactory. The first delivery was got to work from the fire-engine at 7.21.14 p.m., 13 minutes 14 seconds from time of call. This was a fairly good result. The subsequent drills and demonstrations were carried out smartly and methodically, and there appears to be distinct improvement in the working of the brigade when compared with my previous visit of inspection in September, 1908.

Personnel *of the Brigade.*

There was a full attendance of members at the inspection muster—viz., Superintendent, Deputy Superintendent, and eighteen men. They are a smart body of men, of good physique, who evidently take an active interest in their work. The numerical strength is not too high, and should not be allowed to fall below the number at present on the roll.

Stations.

The Boundary Street Station is well situated in respect to the risks of the town, but extensive improvements are required to the building, and sleeping-accommodation for three or four men should be provided, so as to insure a prompt response in the event of an alarm of fire. The hose-reel stations are advantageously situated as conditions are at present.

Plant and Appliances.

The plant and appliances are sufficient for present requirements, with the exception that some new coupling-ladders or light fire-escape and a couple of hand-pumps should be obtained. Seeing your town covers a fairly large area—some 2,000 acres—some other method than that at present in vogue of having to wait until a horse is brought from outside should be adopted; for the present, at any rate, a horse should be stabled at the station every night.

Water Pressure and Reticulation.

The average pressure—115 lb.—is a good one for a town of the description of Greymouth. I would strongly advise that in future no mains under 4 in. in diameter should be laid down. It has been found that pipes under that dimension ultimately become of very little service for fire-extinction purposes. An extension of the mains along Blake Street and Preston Road is urgently required.

General, for Consideration.

Considerable alterations and additions to the station building in Boundary Street would be necessary to put it in such a condition that it could be regarded as a satisfactory fire-station to meet your requirements in the future. Seeing that the building is old and dilapidated, the best and most economical policy would be to build an entirely new station. A fire-alarm system should be installed, and telephonic communication established between the High Street and Central Stations. These improvements cannot be done out of revenue; but by borrowing money for the purpose, the interest could be paid and a sinking fund established without unduly increasing the expenditure in any one year.

I have, &c.,

THOMAS T. HUGO,

Inspector of Fire Brigades.

William Ryan, Esq., Superintendent, Greymouth Fire Board, Greymouth.

HAWERA.

SIR,— Office of Inspector of Fire Brigades, Wellington, 7th October, 1908.

In reply to your letter dated the 3rd ultimo, addressed to the Hon. the Minister of Internal Affairs, also to the letter dated the 23rd ultimo, addressed to Hugh Pollen, Esq., asking for a copy of Inspector Hugo's report, I have the honour to forward you a report bearing upon matters in connection with your brigade.

At 8 p.m. on Tuesday, the 14th July, I gave a call at your fire-station to an imaginary fire at a point about 170 yards distant, directing that two deliveries should be got to work. The first water was shown from the second lead at 8.2.7 p.m., or 2 minutes 7 seconds from the time of call. The water from the first lead was shown at 8.2.37 p.m. There was some delay in getting the first lead to work. The first result was good, but can be improved.

Personnel *of the Brigade.*

The strength of the brigade is twenty-five all told, with twenty-two on the roll. Of that number, only sixteen were present at the muster—an unsatisfactory attendance. Those present were a smart, well set-up body of men, who appeared to take an interest in their work.

Station.

The present fire-station is in a fairly good position, and is adequate for present requirements.

Plant and Equipment.

The hose—800 ft. in stock and 500 ft. on order—is hardly sufficient; not less than 1,500 ft. of good serviceable hose should be kept in stock. The coupling-ladders are out of repair, and should be replaced by lighter and stronger ones. A couple of hand-pumps fitted with stirrups are required.

Water Reticulation and Pressure.

The reticulation is a very fair one, but no more 3 in. mains should be laid down; nothing under 4 in. should ever be laid for fire-extinction purposes. The average pressure—75 lb., with a possible rise to 100 lb. when required—can also be classed as fair in a town of the description of Hawera, containing no buildings over two stories in height; but care should be taken that

the higher pressure is made available immediately upon an alarm of fire taking place; also, the manual engine should be kept in good working-order, and in immediate readiness in case of any failure in the high-pressure water system.

Fire Police.

There was no attendance of Fire Police at the muster. Their plant is in a very dirty and neglected condition, and it appears to me that a reorganization of that body is urgently required.

The members of the brigade who were present at the muster appeared very willing to learn, and eager for information; and I would suggest that systematic drill and instruction classes should be held, and carried out on the lines as explained by me during the course of my address.

I have, &c.,
THOMAS T. HUGO,
Inspector of Fire Brigades.

H. S. Elliott, Esq., Secretary, Hawera Fire Board, Hawera.

REPORT No. 2. (30th June, 1909.)

A second inspection of this brigade was made on the 7th and 8th January last. A false alarm of fire was given by ringing the fire-bell opposite the station at 9.21 p.m. on the 7th. Instructions were given to get to work at a point in Collins Street about 230 yards distant. The hose-reel was "got away" from the station very quickly, but some delay took place in getting to work, and it was 9.26.23 p.m., or 5 minutes 23 seconds later, before water was shown. This time was long, but was due to a misunderstanding, and not to any want of smartness of the members of the brigade, who appear to be both active and willing. At the muster at 9.31 p.m.—10 minutes from time of first call—the Superintendent and ten men were present. At the inspection muster at 8 p.m. on the following evening the Superintendent, Deputy Superintendent, and sixteen men were present.

The station and appliances are maintained in good order. No new ladders have yet been provided, and the shanks of some of the standpipes require lengthening. The fire-bell in the tower opposite the station, when rung, does not ring out clearly as it should do, and cannot be heard any distance. This defect I think is due to the manner in which it is hung, and this matter should be attended to.

There was no attendance of the Fire Police at either muster, and their plant is in the same neglected state as at the time of my previous visit.

HOKITIKA.

SIR,— Office of Inspector of Fire Brigades, Wellington, 17th May, 1909.

In reply to your letter dated the 13th instant, and addressed to the Hon. the Minister of Internal Affairs, asking for a copy of Inspector Hugo's report in connection with his inspection of your brigade on the 15th April last, I have the honour to forward you a report in connection therewith.

At 7.29 p.m. on the 15th April I caused the fire-bell to be rung, and directed the brigade to get to work with three deliveries at Kellar's Hotel. The first water was shown from the manual engine at 7.39.20 p.m.; the second from a hydrant on the high-pressure main at 7.41 p.m.; the third from the steamer at 7.42.50 p.m. With the exception of the delivery from the steamer, the time taken in getting to work was slow; this was due to misunderstanding, which no doubt would not have occurred had there been any fire really showing. Further, there appeared to be some doubt as to whether the high-pressure service was available.

The members of the brigade responded promptly to the alarm, and the plant was taken to the scene of the supposed fire in quick time. At the muster in the station, at 8.6 p.m., there were present the Superintendent and twenty-seven officers and firemen. They appear to be a smart active body of men, and of good physique. I was disappointed that there was not a better attendance at the muster on the following evening, only the Superintendent and seven men being present.

The plant and appliances appear to be kept in good order and condition, and, with the exceptions mentioned below, should be sufficient for present requirements.

Sleeping-accommodation for, say, three men should be provided at the Central Station. This would prove most beneficial to the working of the brigade, particularly when the high-pressure system is in full working-order. They would then be able to get away with a light hose-reel immediately upon any alarm of fire during the night. Hose-reels should be stationed, one at the east end of Gibson's Quay, and one in the north-east neighbourhood of the town. I understand your Board proposes to do this.

The hydrant-beds should be lifted so that the plates should not be below the level of the streets, and indicators be placed so that the position of the plugs are clearly marked. This is very essential for night-work.

I have, &c.,
THOMAS T. HUGO,
Inspector of Fire Brigades.

A. A. Andrews, Esq., Secretary, Hokitika Fire Board, Hokitika.

LAWRENCE.

SIR,— Office of Inspector of Fire Brigades, Wellington, 21st December, 1908.

In reply to your letter dated the 14th instant, addressed to the Hon. the Minister of Internal Affairs, and asking for a copy of Inspector Hugo's report on the Lawrence Fire Brigade, I have the honour to inform you that, owing to certain circumstances, and of which members of your Board are aware, I was unable to make a proper inspection of your brigade, and therefore can furnish no report as to its efficiency. However, I hope in the near future to be able to make such an inspection as will enable me to send you the desired report.

I have, &c.,
THOMAS T. HUGO,
Inspector of Fire Brigades.

J. Rattray, Esq., Secretary, Lawrence Fire Board, Lawrence.

I have made two visits to Lawrence for the purpose of inspecting their brigade—10th September, 1908, and 25th March.

At my first visit, upon my arrival at the fire-station, at 8 p.m. on the 10th September, the Superintendent and eight men were in attendance, but objections were made to getting the plant to work on the score that they were wearing private clothes, and did not have their uniforms with them; therefore I could form no opinion as to their knowledge of practical work. I might state that I had wired the Secretary of the Fire Board the previous day informing him of my proposed visit and its purpose. I gave some instruction on various matters, and subsequently inspected the town, its water-supply, and fire-equipment.

Upon the occasion of my second visit, in March, it was the regular practice night of the brigade, and ordinary routine wet drill was carried out under the direction of the Superintendent.

Lawrence is a town covering an area of 640 acres, but has only eleven hundred inhabitants. The buildings are mostly wood, with the exception of those in the main street, on a lower level. It is a hilly residential district, with the dwellings mostly detached or scattered. The full strength of the brigade consists of a Superintendent, a Deputy, and ten men. There is a high-pressure water system, with a head of 180 ft., but the reticulation is old, and only a partial one, with practically no pressure available on such of the higher levels as the mains are laid. There is one fire-station within a few yards of the main street, but there is little or no protection against fire on the higher levels, or beyond where the water-reticulation is laid.

MAORI HILL.

Maori Hill is a residential hilly district covering an area of 3,700 acres. The houses are mostly confined to the south and east wards, but the greater part of the district is yet unbuilt upon. The inhabited area is well reticulated with water mains, and an excellent pressure is available for fire-extinction.

Two inspections of the brigade have been made—viz., on the 15th September, 1908, and on the 31st March, 1909. At the time of my first inspection, in September, the brigade had only been formed a short time. Their equipment was very insufficient, and their knowledge of fire-brigade work very meagre; but improvements in both respects have since been made.

At my second inspection, on the 31st March last, I gave a false alarm of fire by ringing the bell at the Borough Council Chambers at 7.21 p.m., and the Superintendent and nine men responded to the call in smart time. There was some little delay in getting to work, but there was a decided improvement in comparison with my previous visit.

The brigade has a full strength of twenty-one members, divided into two sections—the Superintendent and twelve men stationed in the south ward, and the Deputy Superintendent, with seven men, at Woodhaugh.

There are two stations—one that has been just lately built, in the south ward, and a hose-reel shed at Woodhaugh. The equipment consists of a hand-reel, with hose standpipes and branches at each station.

Coupling-ladders and hand-pumps are required; also a fire-alarm system, connected up to the large fire-bell, should be installed.

MASTERTON.

SIR,— Office of the Inspector of Fire Brigades, Wellington, 15th July, 1908.

In reply to your letter dated the 7th instant, addressed to the Hon. the Minister of Internal Affairs, in which you ask, on behalf of your Board, for a report from the Inspector of Fire Brigades dealing with certain fire-prevention matters affecting your district, I have the honour to reply to your questions as follows:—

1. *The State of Efficiency of the Masterton Fire Brigade and Fire Police.*

As a body, the *personnel* of your brigade can hardly be improved. They appear to be an active, intelligent body of men, of athletic build and good stamina, who seem to take considerable interest in their work; but they are badly in need of instruction and drill in the primary steps of fire-brigade work, most particularly in the important matter of life saving and preservation, which hitherto has been entirely neglected. The foregoing remarks will apply to the Fire Police also.

2. *The Sufficiency of—A. The Fire-fighting Equipment.*

When the fire-engine has been put in good order, and the 500 ft. of new hose provided for in your estimates has been obtained, you will have a fairly efficient plant, with the exception that a couple of hand-pumps, with stirrups, "London Fire Brigade" pattern, should be obtained.

B. The High-pressure Water-supply.

This is a very weak point in the fire-protection of your district. The average pressure—55 lb.—is too low to be of good service at a fire of any magnitude; therefore the necessity of having the fire-engine put in good order as soon as possible, and reserving it for use for fire purposes only. The reticulation is bad, on account of the large number of 3 in. mains at present laid down; nothing less than 4 in. mains should ever be laid for fire purposes.

3. *The Installation of a System of Electric Fire-alarms.*

Street fire-alarms are a very necessary part of fire-protection equipment; indeed, indispensable for towns of any size. The best and most reliable system at present known is the "Gamewell." Unfortunately it is very costly, but a reliable and economical system is a modification of the "Gamewell" similar to that in use in Wellington for the last seven years, copied from Melbourne, where it has been installed for many years with excellent results. Mr. Kirkby, the original adaptor, but who now has his workshops at 120 Bathurst Street, Sydney, has very considerably improved the system lately, and an estimate of the cost of the installation you may require can be obtained from him. Should your Board decide to proceed with the installation at once, it must be borne in mind that to obtain the benefit of the system it will require the continual presence of some person at the fire-station, so that the general alarm may be given immediately the street-box is operated upon; further, the street-alarm points should be so fixed that they will be in suitable positions in relation to the new station when it is erected.

4. *The Provision of a New Site for a Fire-brigade Station.*

This question was pretty fully discussed between certain members of your Board and myself upon the occasion of my visit to Masterton some few days ago. For the reasons given at that time, both as to position in relation to the risks of your town, particularly if the proposed street is put through, and from an economical point of view, I consider the Essex Street site the most suitable for a central station.

5. *The Question of Providing a Motor in place of Horses.*

This matter also was discussed at the time of my visit to Masterton. Seeing that your estimate for the year is very high, and that it would, if carried out under present conditions—that is, to provide the capital cost of the motor in one year—make your next year's estimate also very high, I would advise that this matter should be left in abeyance for the present, particularly in view of the fact that consideration has been promised of an amendment to the Act giving the Fire Boards power to borrow money, thus enabling certain capital expenditure to be extended over a number of years.

I have, &c.,

THOMAS T. HUGO,

The Secretary of the Masterton Fire Board. Inspector of Fire Brigades.

SIR,— Office of Inspector of Fire Brigades, Wellington, 19th February, 1909.

I have the honour to forward, for the information of your Board, a report in connection with my recent visit of inspection, and dealing with the general efficiency of your brigade.

At 9.5 p.m. on Thursday, the 28th January, I caused the fire-bell at the Central Station to be rung, and directed the brigade to get to work with one delivery at a point in Chapel Street about 330 yards distant from the station. Water was shown full on at 9.10.25 p.m. At 9.15 p.m. the brigade was mustered, when it was found that the Superintendent, Deputy Superintendent, and fifteen firemen were present. The captain and eleven men of the Fire Police Corps were also in attendance. At the inspection on the following evening at 8 p.m. the muster was as follows: Fire Brigade—Superintendent, Deputy, sixteen men, and three on leave; twenty-one accounted for. Fire Police—Captain, fifteen men, two on leave, one sick; nineteen accounted for.

The time from the first toll of the bell at 9.5 p.m. until water was shown—5 minutes 25 seconds—was longer than it should have been, but, as there was some little misunderstanding as to what was actually required, no doubt it will be improved upon next time.

The plant turned out was ample for the supposed purpose. The fire-engine was horsed and turned out very smartly, and arrived on the scene of the supposed fire in quick time.

The muster of the brigade—two officers and fifteen firemen—and Fire Police—two officers and ten men—at 9.15 p.m., or 10 minutes from time of first call, was very satisfactory. The muster on the following evening was also satisfactory.

The attendance at the two musters prove that both Fire Brigade and Fire Police take an active interest in the work, and such drill that they were called upon to perform was carried out smartly, and I am pleased to say that an improvement is manifest since my last visit.

I would again recommend that a couple of hand-pumps should be obtained immediately; also, a set of coupling-ladders are required.

A plan of the reticulation of the town, with the diameters of the various mains plainly marked thereon, should be provided for the information of the officers and men of the brigade. This knowledge is very necessary, enabling fire-brigade officers to decide quickly and correctly how many deliveries may be safely taken from the mains in the vicinity of a fire.

I have, &c.,

THOMAS T. HUGO,

Inspector of Fire Brigades.

R. Brown, Esq., Secretary, Masterton Fire Board, Masterton.

MILTON.

Two inspections of this brigade have been made—9th September and 26th March respectively.

At the first inspection, on the 9th September, at 7.1 p.m., a call was given at the station for a supposed fire at a point some 200 yards distant. Two deliveries were got to work, and the first water was shown at 7.4.25 p.m., or 3 minutes 25 seconds from time of call. At the muster following the Superintendent and eleven men were present, and instruction on various matters was then given.

At 8.27 p.m. on the 26th March a surprise false alarm of fire was given by ringing the fire-bell. The plant was got to work, and water shown at 8.32.17 p.m. The brigade was mustered at 8.37 p.m., 10 minutes from time of first call, and the Superintendent and ten men were reported present. The full strength is Superintendent and eleven men.

The officers and members of this brigade are a smart, willing body of men, well drilled in the use of such equipment as they are provided with; and they deserve credit for the results hitherto obtained from their old-fashioned obsolete plant and other disabilities under which their work is carried out.

Milton is a town covering an area of 265 acres, of a flat nature, and has a population of about fourteen hundred. The buildings are of wood generally, and, with the exception of those in the main street, are mostly of a detached residential character. There is no public water-supply, and in case of fire water for extinction purposes has to be obtained from privately owned wells or tanks. The principal equipment of the brigade consists of two small brake pumps, each placed in a small round tank, with a holding-capacity of about 20 gallons, which are mounted on low trucks with wooden wheels, about 14 in. high. The working-capacity of the pumps is about 25 gallons per minute each. There is also 800 ft. of 2 in. hose and two 18 ft. coupling-ladders. This plant is absolutely inadequate to deal effectively with even an ordinary dwellinghouse well alight. The question of a public water-supply system is, I believe, under consideration by the local authorities. In the meantime, however, the brigade should be equipped with a hand-drawn chemical engine, double cylinder for preference; a couple of hand-pumps, "London Fire Brigade" pattern; and the present manual trucks mounted on more suitable wheels.

NEW PLYMOUTH.

SIR,— Office of the Inspector of Fire Brigades, Wellington, 20th August, 1908.

Referring to your letter dated the 31st July, 1908, addressed to the Hon. the Minister of Internal Affairs, asking that your Board should be furnished in all cases with copies of Inspector Hugo's reports on your Fire Brigade, I have the honour to forward you a report bearing on matters in connection with your brigade, as follows:—

Inspection.

At 8.12 p.m. on the 17th July I gave a call at the Central Station for an imaginary fire at a place about 120 yards distant, directing that two deliveries should be got to work. The first water was shown at 8.15.5 p.m., or 3 minutes 5 seconds from the time of call. The second water was shown at 8.17.35 p.m. These results were not very satisfactory, but I believe there was some little misunderstanding in the station in reference to the call. Some trouble was experienced later at the second standpipe. During the further inspection I found there was considerable room for improvement in matters of drill and instruction.

Personnel *of the Brigade.*

The members of the brigade are a smart, robust body of men, who seem to take great interest in their brigade, both officers and men appearing anxious to improve their knowledge of fire-brigade work, and to profit by any instruction given to them.

Stations.

The Central Station occupies a good position in relation to the risks of the town, but more accommodation should be provided. The sub-stations are well placed in their respective districts.

Plant.

The plant and appliances generally are in good order, and, with some minor exceptions, are sufficient for present requirements. The amount of hose in good working-order at present in stock—3,000 ft.—is ample for the time being. A couple of C pattern "London Fire Brigade" hand-pumps, fitted with stirrups, should be obtained; also, say, two pick-back fire-axes. Nozzles of a larger bore than those at present in use are required.

Water-pressure and Reticulation.

The average water-pressure—120 lb. to the square inch, rising to 140 lb.—is an excellent one for fire-extinction purposes, but, owing to the small-bore nozzles hitherto in use, the best results have not been obtained from it. I believe this fault has already been attended to and rectified. The reticulation is fairly good, and I understand the few 3 in. mains at present laid are being, or are to be, replaced by 4 in. or larger. The hydrants are spaced quite far enough apart, and some more of them should certainly be laid down in the more congested parts of the town, particularly in the neighbourhood of the larger fire risks.

Seeing that both officers and men appear anxious to make themselves more efficient in their work, I would suggest that regular drill and instruction classes should be held embracing the various appropriate subjects, as explained by me during the course of my address to the brigade at the time of my visit to your town. In following out this suggestion, care is required not to fall into a monotonous routine of one set line of drill, thereby causing the men to lose interest. This is a very common fault in fire brigades, but if carried out in the manner indicated above, the subjects upon which firemen ought to be instructed are so various that it is a comparatively easy matter to maintain their interest in the work.

I have, &c.,
THOMAS T. HUGO,
Inspector of Fire Brigades.

C. Howard, Esq., Secretary, New Plymouth Fire Board, New Plymouth.

SIR,— Office of Inspector of Fire Brigades, Wellington, 19th February, 1909.

I have the honour to forward, for the information of your Board, a report in connection with my recent visit of inspection, and dealing with the general efficiency of your brigade.

At 9.27 p.m. on Tuesday, the 5th January, I caused the fire-bell at the Central Station to be rung, and directed the brigade to get to work with two deliveries at a certain position in Vivian Street, about 300 yards distant from the station. The first water was shown full on at 9.30.32 p.m. At 9.37 p.m. the brigade was mustered, and it was found that the Superintendent, Deputy Superintendent, and nineteen men were in attendance. The brigade was again mustered upon their return to the station at 9.45 p.m., when twenty-seven members, including officers, answered the roll-call.

At the inspection muster on the following night at 8 p.m. thirty-one members, including officers, were in attendance.

The time from the first toll of the bell, at 9.27 p.m., until the water was shown—3 minutes 22 seconds—was very creditable. The muster of the brigade—two officers and nineteen men—at 9.37 p.m., or 10 minutes from the time of the first call, was very satisfactory.

The number of members who attended the two following musters was also very satisfactory.

The plant concentrated was ample for the supposed purpose.

Upon inspecting the plant and appliances I find they are maintained in good order and condition.

The required work was carried out in a smart and workmanlike manner.

The brigade were totally unaware of my presence in your town, and the prompt response to the false alarm, combined with the good musters, prove that the members of the brigade take an active interest in the work.

Referring to my previous recommendations, I find that the use of larger-bore nozzles has been adopted, and hand-pumps have been ordered; but there should be a more systematic course of drills established in connection with rescue work, resuscitation of unconscious persons, &c.

A plan of the reticulation of the town, with diameters of the mains and the static pressure at various points shown thereon, should be provided for the information of the officers and men of the brigade. This knowledge is very necessary, enabling fire-brigade officers to decide correctly how many deliveries may be safely or efficiently taken from the mains in the vicinity of the fire.

I have, &c.,
THOMAS T. HUGO,
Inspector of Fire Brigades.

C. Howard, Esq., Secretary, New Plymouth Fire Board, New Plymouth.

OAMARU.

SIR,— Office of Inspector of Fire Brigades, Wellington, 3rd March, 1909.

I have the honour to forward, for the information of your Board, a report in connection with my recent visit of inspection, and dealing with various matters relating to the efficiency of your brigade, plant, appliances, &c.

At 8.15 p.m. on Wednesday, the 24th ultimo, I rang the fire-bell, and directed the Superintendent to get to work with one delivery at a certain point in Tyne Street about 290 yards distant from the station. Water was shown full on at 8.22.31 p.m. At 8.27 p.m. the brigade was mustered, and it was found that the Superintendent, Deputy Superintendent, and seven firemen were in attendance.

At the inspection at 6.10 p.m. on the following evening eleven members of the brigade, including officers, were present out of a total strength of fourteen on the roll; the remaining three were accounted for.

The time from the first toll of the bell until water was shown—7 minutes 31 seconds—was slow and far from satisfactory, and was due to certain mistakes made in getting the delivery to work. These mistakes I pointed out and commented upon when addressing the members of the brigade during the inspection muster, and no doubt an improvement will take place.

The muster at 8.27 p.m., or 12 minutes from time of first call—viz., nine members, including officers—was fairly satisfactory.

The muster for inspection was satisfactory.

Personnel *of the Brigade.*

The members of your brigade appear to be a smart, active body of men, if anything a little overanxious to do their best, but they are in considerable need of drill and instruction in the various matters pertaining to fire-brigade work. The numerical strength of the brigade is on the weak side, and I would recommend that there never be less than sixteen active members on the roll.

Stations.

The new station is in a good position, and, with one minor exception, is very well designed for its purpose, and should meet the needs of your town for a number of years to come. At least three men should sleep on the premises, so that they can get away with the necessary plant at once upon an alarm of fire.

A small reel-shed sufficiently large to house a hose-reel should be erected towards the north end of Thames Street, and a bell and ladders should also be placed there.

Plant and Appliances.

I am afraid the four-wheeled vehicle at present in the station will be found too heavy for one horse to drag up the hills at any speed, and I would suggest a light two-wheeled hose-reel, to carry, say, four men, should be obtained, and the present vehicle sold.

A Pelton water-wheel should be installed for the purpose of ringing the fire-bell when it is moved to its new position. A couple of "London Fire Brigade" hand-pumps, with stirrup attachments, should be purchased immediately, and some larger nozzles are required.

Water Pressure and Reticulation.

The average pressure on the lower levels—105 lb., with little variation—is fairly satisfactory, seeing that, with one or two exceptions, there are no large buildings or block risks in your town at present; but as the higher levels become more thickly populated it will be necessary to formulate some scheme to give a better supply and pressure there. I understand that the 3 in. mains at present down are to be lifted and replaced, as circumstances permit, by larger ones. This should give a much better supply than there is at present on some of the higher levels.

A plan of the reticulation of the town, with diameters of the mains and the static pressure at various points plainly shown thereon, should be provided for the information of the officers and men of the brigade. This knowledge is very essential, enabling those in charge of the brigade to decide how many deliveries may be safely or efficiently taken from any one main in the vicinity of a fire.

All fire-hydrants should be plainly and conspicuously marked by indicators that may be readily distinguishable at night time.

I have, &c.,
THOMAS T. HUGO,
Inspector of Fire Brigades.

E. Piper, Esq., Secretary, Oamaru Fire Board, Oamaru.

PALMERSTON NORTH.

SIR,— Office of the Inspector of Fire Brigades, Wellington, 20th August, 1908.

In reply to your letter dated the 23rd July, addressed to the Hon. the Minister of Internal Affairs, asking for a copy of the report submitted by the Inspector of Fire Brigades, I have the honour to forward you a report in that connection, as follows:—

At 8.5 p.m. on Monday, the 29th June, I gave a call at the Palmerston North Central Station for an imaginary fire in the Square, directing the Superintendent to get two deliveries to work

at the place indicated. It was 8.11.57 p.m., or nearly 7 minutes after, before the first water was shown. I understand that in the first place there was some delay in harnessing the horse; secondly, there was difficulty in making connection between the hose and the standpipe; again, in throwing the ladders the work was done in very slipshod manner, far removed from the smart decisive style of work expected from a well-drilled brigade. Altogether, the "inspection drill" of your brigade was far from satisfactory.

Personnel.

The members of the brigade appear to be an active, robust body of men, who seemed to take an intelligent interest in the address that I delivered to them, and who only require proper instruction and systematic drill to make of them a very efficient brigade; but this efficiency cannot be attained and maintained in any brigade unless the chief officer himself takes an active interest in the work, setting the example to his officers and men. Any laxity on the part of a Superintendent in this respect quickly produces a similar result in the work and discipline of his brigade.

The size of Palmerston North, with its population of over ten thousand persons, and its large and increasing fire risks, necessitates the appointment of a permanent Superintendent to take charge of its brigade, and the man to be appointed to this position should be one fully qualified to instruct the members of the brigade in all branches of modern fire-extinction methods, with a general knowledge of up-to-date fire-prevention; be competent to keep in order and in some degree repair plant and hose; and be able to drive a motor, &c.: such a man can be procured without incurring any increase on the present estimate of annual maintenance, if carried out on the lines I suggested to your Chairman at the time of my visit to your town.

Site for New Station.

The site which has been purchased with the object of erecting a new central station thereon is a very suitable one for the purpose.

Plant.

The stock of hose in good working-order—2,000 ft.—is not enough, and more should be obtained.

A couple of C pattern "London Fire Brigade" hand-pumps, with stirrup attachment, should be purchased.

I would recommend that the horse hose-reel should be replaced by a hose-and-ladder motor-car. A suitable appliance can be obtained at a very reasonable cost by purchasing a chassis of some reliable make, and having the body built in New Zealand to suit local requirements. Should this recommendation be adopted, it must be clearly understood it is imperative that arrangements would have to be made for competent supervision and care, in addition to the driving. Under such conditions only is it possible to obtain successful results; but given these conditions motor fire-cars have proved one of the very best appliances that have been adopted for fire-brigade work of late years. I make this suggestion subject to your Board being able to borrow the amount necessary for the purchase of the motor, so that the capital cost may be spread over a period of some years, and not unduly increase the estimate for any one year.

Water Pressure and Reticulation.

Your average water-pressure is not a good working-pressure, and arrangements should be perfected for concentrating the water as quickly as possible in case of need. The reticulation has been well designed, and the extensions to the system are being carried out in accordance therewith. The hydrants as laid down are well spaced, and ample in number.

I shall be pleased, at any time you may desire it, to give you all information as to cost of plant or appliances, or advice as to the design and erection of stations, &c.

I have, &c.,

THOMAS T. HUGO,
Inspector of Fire Brigades.

William Hunter, Esq., Secretary, Palmerston North Fire Board.

REPORT No. 2. (30th June, 1909.)

I made a second inspection of this brigade on the 2nd and 3rd February last.

A surprise false alarm of fire was given by ringing the fire-bell at the Central Fire-station at 9.24 p.m. on the evening of the 2nd February. The brigade was instructed to get to work at a point in Rangitikei Street about 380 yards distant. Water was shown at 9.28.37 p.m., or 4 minutes 37 seconds from time of first call. The appliances were turned out smartly, but there was some little delay in turning on the water, and, although done much quicker than upon the occasion of my first inspection, this time can still be improved upon. The plant turned out was sufficient for that particular call, with the exception that it would be advisable to carry more hose.

The attendance of the brigade at the subsequent muster, held 10 minutes from the time of first call, was satisfactory. There was reported present—Superintendent, Deputy Superintendent, sixteen men, and two on duty, or twenty accounted for out of a total strength of twenty-five. The attendance of the Fire Police—one officer and five men out of a total of fifteen—was a very poor result.

At the inspection muster at 8 p.m. on the following evening there was reported present: Fire Brigade—Superintendent, Deputy, twelve men, and two on duty. Fire Police—Captain and twelve men.

I consider there has been a very distinct improvement since my previous visit in the method of work, drill, and general tone of the *personnel* of the brigade; but no great advance in efficiency of the whole system can be looked for until the proposed new station is erected, equipped in accordance with modern ideas, and a fire-alarm system installed; also, seeing that the average pressure of water obtained from the gravitation supply is not sufficient to deal effectively with a fire of any magnitude, the provision of pumping-power will sooner or later have to be taken into consideration.

PETONE.

SIR,— Office of Inspector of Fire Brigades, Wellington, 20th October, 1908.

In reply to your letter dated the 30th September last, addressed to the Hon. the Minister of Internal Affairs, asking for a copy of Inspector Hugo's report on the Petone Fire Brigade, plant, and premises, I have the honour to forward you a report dealing with those matters, as follows:—

At 7.2 p.m. on the evening of the 9th July I gave a call at the fire-station for an imaginary fire a short distance away, directing the Superintendent to get his brigade to work. The first water was shown at 7.5.25 p.m., or 3 minutes 25 seconds from the time of call. This was not a satisfactory result.

Personnel *of the Brigade.*

The members of the brigade present at the meeting—eighteen, out of twenty on the roll—appear to be a well-set-up and smart body of men, but they are in considerable need of drill and instruction in the various subjects of fire-brigade work.

Station.

The site of the present station in relation to the risks of the town is a suitable one, but more accommodation is required; and, now that your Board has power under the amended Fire Brigades Act to borrow money for the purpose, the requisite accommodation can be provided without unduly increasing the yearly estimates.

Plant and Equipment.

By purchasing another 600 ft. of hose (as already proposed by you), a couple of fire-brigade hand-pumps, and another length of coupling-ladder, the plant and equipment should be sufficient for the time being.

Water Reticulation and Pressure.

The present reticulation is fair, with the exception that extensions are required, and that there are a large number of 3 in. mains. I would suggest that nothing less than 4 in. should be laid in future, as it has been found that 3 in. mains are not a good service from a fire-protection point of view, and further that it is a false economy to do so. The average pressure—72 lb.—is not a good working one. A test was made of the time taken to procure the additional pressure available in case of fire, and it took 11 minutes 45 seconds to obtain the maximum pressure—at the time, 96 lb. Care should be exercised that the telephones and line between the fire-station and the reservoir are maintained in good order; also that the manual engine is kept in good working-order, and in immediate readiness in case of anything going wrong with the high-pressure water system.

I have, &c.,

THOMAS T. HUGO,
Inspector of Fire Brigades.

Alexander Webster, Esq., Secretary, Petone Fire Board.

REPORT No. 2. (30th June, 1909.)

I made a second inspection of this brigade on the 7th June. A surprise false alarm was given from the Queen Street fire-alarm box at 8.22 p.m. on the date mentioned. Upon the arrival of the brigade they were directed to get a delivery to work, and water was shown at 8.26.29 p.m., or 4 minutes 29 seconds from time of call. Taking into consideration they had to travel about 600 yards, dragging the hose-reel with them, this result must be considered satisfactory. At the muster for inspection the Superintendent, Deputy Superintendent, thirteen men, and two messengers were reported present.

Considerable improvements have been made in the brigade and its equipment since my previous visit of inspection, but a new fire-station, with residential quarters for the Superintendent and sleeping-accommodation for the men, is urgently required.

The question of means of transporting the appliances other than that of dragging them by hand should be taken into consideration. The Town of Petone comprises 952 acres, which is a fairly large area; and under the present circumstances, if the call is for any distance from the station, by the time the men arrive at the fire with their plant they are completely exhausted, as was plainly evident upon their arrival at the Queen Street box in response to the false alarm given, and this just at the time when all their energies are required if they are expected to do smart and efficient work at a fire.

WHANGAREI.

SIR,— Office of Inspector of Fire Brigades, Wellington, 8th June, 1909.

In reply to your letter dated the 29th ultimo, addressed to the Hon. the Minister of Internal Affairs, asking for copies of Inspector Hugo's reports relating to his inspections of your brigade, I have the honour to forward you a report in connection with matters therewith.

At 8.5 p.m. on the 26th May, at the brigade station, I gave a call for a supposed fire at a spot some 130 yards distant, directing the Superintendent to get two deliveries to work. The first water was shown at 8.6.26 p.m., or 1 minute 26 seconds from the time of call. The second water was shown at 8.6.32 p.m., or 6 seconds later. This result was distinctly good. Some further drill was carried out, and at the station various matters relating to fire-work and fire-extinction was gone into.

Personnel *of the Brigade.*

At the muster of the brigade there was present the Superintendent, Deputy Superintendent, and twelve firemen; absent, one on leave and one sick. This accounts for the full strength—viz., sixteen all told. The numerical strength is on the weak side, and three or four volunteer probationers should be enrolled, so that they would be competent to assist in the event of a fire of any magnitude. The present members of the brigade are a smart, active body of men, of good physique, who appear to take considerable interest in their work.

Stations.

The central station is well situated with respect to the risks of the town, and the accommodation is sufficient for present requirements. The two hose-reel sheds are well placed, and should be of great benefit.

Water Pressure and Reticulation.

The average pressure—about 110 lb.—is a very good one for your fire-extinction purposes. The reticulation is fair, but extensions are required, and these, I believe, are being carried out gradually. Certain of the fire-hydrants are without indicators, and this matter should receive immediate attention.

Plant and Equipment.

The plant is maintained in good order, but the supply of working hose (1,600 ft.) is not sufficient, and a further supply should be obtained. Coupling-ladders are required—say, three, 11 ft. 6 in. each; that would be 30 ft. when extended. These two matters should be attended to.

General, and for Consideration.

Seeing that your town covers such a large area (over 2,000 acres), some other method than that at present in vogue for conveying the plant to a fire should be adopted. When men have to run any distance, dragging the plant with them, they can be of very little service for the first few minutes after arriving at the scene of action—just at the time when all their energies are required; therefore, either a horse or motor should be available (reliable second-hand chassis by well-known makers can now be purchased at very reasonable cost); also, a fire-alarm system, connected up so that when the box is operated upon it would ring the large fire-bell at the station, should be installed. I do not suggest that this should be done out of revenue, or that the annual estimates be unduly swelled, but that a sum of money should be borrowed for the purpose. A sufficient amount to carry out these proposals could be borrowed, which, with interest and sinking fund combined, would amount to little more than an annual charge of about £50.

I have, &c.,
THOMAS T. HUGO,
Inspector of Fire Brigades.

C. J. Eccles, Esq., Secretary, Whangarei Fire Board, Whangarei.

Approximate cost of paper.—Preparation, not given; printing (1,500 copies), £12 10s. 6d.

By Authority: JOHN MACKAY, Government Printer, Wellington.—1909.

Price 9d.]