

1917.
NEW ZEALAND.

DEPARTMENT OF INTERNAL AFFAIRS

(ANNUAL REPORT OF THE) FOR THE YEAR ENDED 31st MARCH, 1917.

Laid on the Table of the House of Representatives by Leave.

SIR,—

Department of Internal Affairs, Wellington, 2nd July, 1917.

I have the honour to submit herewith the annual report of the Department for the year ending 31st March, 1917.

I have, &c.,

J. HISLOR, Under-Secretary.

The Hon. G. W. Russell, Minister of Internal Affairs, Wellington.

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REPORT.

I.—THE WORK OF THE YEAR.

1. WORK ARISING OUT OF THE WAR.

THE continuance of the war has added further work to that on which the Department was engaged at the end of the year 1915-16.

The Military Service Act, 1916.—The most important legislation creating additional war work is the Military Service Act, 1916, the administration of which, so far as it concerns this Department, necessitated the establishing of an entirely new branch of the Government Statistician's Office. Reference to this will be found in Mr. Fraser's report in the Appendix hereto. With regard to the Head Office, the Act has thrown on it the burden of the staff work of this new branch, the direct administration of section 42 relative to Reservists changing their names, a considerable amount of correspondence with the Defence Department and the Government Statistician (in particular, answering inquiries as to whether persons drawn in ballots have been granted permits to leave the Dominion), and with the general public, more particularly with visitors to the Dominion who desire information as to their position under the Act. The administration of the Act has also thrown an additional burden on the Registrar-General.

Permits and Passports.—This work has been directly affected by the passing of the Military Service Act, which has necessitated very careful consideration being given to all applications by men of military age to leave New Zealand. So far as the First Division is concerned, permission to leave the Dominion is declined in the case of those capable of undertaking military service. In respect to those certified to by the Military Medical Boards as unfit for military service a permit may be issued subject to an adequate guarantee being forthcoming for the applicant's return to New Zealand within a specified period, which is, generally speaking, two months.

The permit restrictions in regard to men in the Second Division are such that, while each case is dealt with on its merits, they are not now permitted to leave the Dominion permanently unless under very exceptional circumstances, or it is clearly proved that they are altogether unfit for active or home service, while permits for temporary absence are granted only on bonds being furnished to guarantee the holders' return within a limited period. Similar guarantees are required for men over military age in cases where they are capable of rendering service in a civil capacity should that ultimately be required.

Returned soldiers discharged after service abroad are exempt from further service, and permits to leave the Dominion are granted to them as a matter of course.

On the 21st August, 1916, amended and additional War Regulations in regard to the inspection on arrival of oversea vessels were made. This has thrown increased responsibility not only upon this Department, but also upon the Customs Department.

Towards the end of last year it became necessary to evolve some means of ascertaining the intentions with regard to residence of new arrivals, in order that men of military age coming here permanently might not evade their responsibilities and that visitors to the Dominion might be allowed to come and go freely. The necessity was a real one in both cases, and in the latter it was of almost as much importance to the Government Statistician as to the visitors that they should not be enrolled. Already considerable trouble has been caused through the wrongful enrolment of such persons. The War Regulations of the 26th February, 1917, and the scheme for their administration have satisfactorily solved both problems.

In February last the Imperial Government directed that the issue of passports to women proposing to travel by steamers passing through the danger zone was to cease. Subsequently this was slightly varied in favour of women whose presence in England at the present juncture is one of pressing necessity. The restrictions, which virtually amount to a prohibition of women travelling to England, are still in force.

Shipment of Gift Goods and Transmission of Moneys.—The generosity of the New Zealand people is undiminished. During the year gift goods to the value of £158,465 were shipped through the Department. The contributions to relief funds in England amounted to £337,928, the principal items being—Belgian relief, £66,635 (exclusive of Government subsidy); British Red Cross, £62,203; New Zealand Comforts Fund (formerly New Zealand Red Cross), £51,661; other purposes, £157,427. The New Zealand contribution to the Belgian Relief Fund is per head of the population greater than that of any other country in the world.

War Funds Act, 1915.—The report of the Officer in Charge, printed in the Appendix hereto, shows that during the year excellent progress has been made towards the fulfilment of the objects of this Act. The provision in the War Legislation Amendment Act of last session requiring the Minister's approval of a war fund before permits to collect contributions therefor may be issued has proved of considerable value.

Amendments of the regulations under the Act with a view to reducing the number of returns rendered by societies (both administering and collecting) is under consideration.

Pointed attention has been drawn to various abuses of the practice of attracting the public to entertainments and other gatherings on the plea that a percentage of the proceeds will be given to various patriotic funds. It is absolutely necessary that the Department should have power to prevent any such gatherings being held without the Minister's consent, and regulations are now being drafted to give the Department the necessary power.

A further means of drawing money from the public that may easily be abused, and which from its increasing use by various bodies needs regulating, is the practice of appealing for contributions to some specific object that has not in itself any connection with the war, on the ground that it is to be dedicated as a memorial to fallen soldiers. The Act as it stands gives no power of control by the Minister over these appeals. This has been noted for attention when an amendment of the Act is being considered.

War Contributions Validation Act, 1914 (No. 2).—Seven funds and the conditions of control and expenditure thereof were approved during the past year.

Gaming Amendment Act, 1915.—Many permits have been issued under this Act, and in a great majority of cases the stringent requirements of the Department have been complied with. It has been found desirable as a general rule to limit the area in which tickets may be sold to the provincial district in which the raffle originates. Since May, 1916, when holders of licenses were first required to furnish returns of receipts and disbursements, 303 licenses have been issued. The net receipts from the raffles total £31,919.

Sub-Departments.—The effect of the war on these branches of the Department is shown in the attached reports from the officers in charge. It is interesting to note that marriages, which showed an increase of 894 during 1915–16, have decreased to below the 1913 figures.

New Zealand Gazette.—Eighty-one *Gazettes* Extraordinary, containing exclusively matter dealing with the war, have been published during the year.

2. THE ORDINARY WORK OF THE HEAD OFFICE.

The ordinary work of the Department has considerably increased during the past year in all directions.

(1.) *Local Government.*

The remark in last year's report that the war had had comparatively little effect on local-government matters, except, of course, that legislation was practically at a standstill, is equally true of the year 1916–17.

Boroughs and Town Districts.—The growth of Auckland City proceeds apace, the Epsom Road District having been absorbed during the year. It is only a matter of time when Eden County will automatically pass out of existence, and the whole of the area within its boundaries will form part of various boroughs and ultimately of the city.

Again there has been no alteration of Wellington City boundaries, but the growth of the metropolitan spirit in the capital is evidenced by the proposal on foot to secure legislative authority for the City Council to undertake the installation of water and drainage at Day's Bay.

There has been marked activity at Christchurch, four petitions having been presented for inclusion in the city of various areas of Heathcote County. An interesting feature of these proposals was the fact that in one instance local opposition took the extreme step of petitioning for constitution of a new borough as a preferable alternative to absorption by the city. The recommendations of the Commissions appointed pursuant to section 14 of the Municipal Corporations Amendment Act, 1913, were given effect to, the result being that the whole of Opawa and St. Martin's Ridings and a portion of Avonside Riding are now part of the city. The fourth petition, that in respect of an area of Bromley Riding, and the petition for constitution of the new borough, were disallowed.

One small alteration of Dunedin City boundaries was made, and the city was declared to be an undivided borough.

Though no new boroughs were constituted during the year, four petitions were received. One (Bromley) was declined; the other three, Featherston, Shannon, and Whakatane, were still under consideration at the end of the year.

After very full inquiry, which clearly showed the handicap and costliness to both of their separate existence, the Boroughs of Frankton and Hamilton were united.

The boundaries of Gore, Bluff, Te Aroha, and Green Island boroughs were altered, and proposed alterations of Ashburton, Marton, Richmond, and Onehunga were under consideration when the year closed. One new town district—Otorohanga—was constituted, and petitions for constitution of town districts at Matamata, Patutahi, and Te Karaka were received, and are under consideration. Upper Hutt Town District was enlarged by the addition of an area of Hutt County. A petition for alteration of boundaries of Waverley Town District was not acceded to.

Counties.—The increased activity of 1915–16 in the movement for readjustment of county boundaries was maintained during 1916–17, the boundaries of Dannevirke, Woodville, Waikohu (twice), Wairoa (three times), and Cook Counties being altered. Except in the case of Dannevirke and Woodville, these alterations were based on agreements between the County Councils concerned.

Finality has not yet been reached in the matter of the petitions presented for alteration of Hokianga and Hobson (petition of Hobson County Council), Hokianga, Hobson, Bay of Islands, and Whangarei Counties (petition of Whangarei County Council). The Commission's reports were strongly in favour of the proposed alterations, but a decision cannot be arrived at pending settlement of protests that the petitions were not signed by the requisite number of ratepayers.

Road Districts.—Five road districts went out of existence during the year by merger in their respective counties, and one (Epsom) by inclusion in the City of Auckland.

Under section 27 of the Reserves and other Lands Disposal and Public Bodies Empowering Act, 1916, two road districts were constituted in West Taupo County, and petitions are being prepared in respect of three other areas in that county. There being no form of local government in that county, a heavy burden was thrown on this Department in the way of advising the settlers concerned and facilitating their task of obtaining the necessary signatures of occu-

piers, it being necessary to prepare special forms of petition showing from information supplied by the Valuer-General the holdings of the occupiers in each proposed district.

Land Drainage and River Districts.—Four drainage districts were constituted, and the boundaries of three were altered during the year. Several petitions are still under consideration.

Two river districts were constituted and the boundaries of one were altered; one district was abolished.

One petition for constitution of a district was referred back to the petitioners in order that an additional area might be included.

An important and necessary addition to the Hawke's Bay Rivers District, involving the inclusion of the Hastings Borough and a portion of Napier, was under consideration. The Commission appointed under section 6 of the River Boards Amendment Act, 1913, strongly recommended the proposal, but owing to advice that no alteration of this district can be made without legislation no further action was taken. For the same reason consideration was not given to a subsequent petition for exclusion of a certain area.

Lake Coleridge Water-power Act, 1915.—Several applications by the Heathcote County Council under this Act for powers of Borough Councils with respect to lighting and the supply of electricity were granted, and another is under consideration. The Act needs amending in the direction of allowing the powers to be conferred on local bodies purchasing their supplies not directly from the Public Works Department, but from the Christchurch City Council.

Cost of Living Act, 1915.—It is to be regretted that, despite a circular to all Borough Councils drawing their attention to its provisions, only one application has been received under section 13 of the Act, and that one (by the Wanganui Borough Council) was, ironically enough, for regulations authorizing the manufacture and sale of bricks. Even this application has apparently been dropped.

(2.) *Inland Fisheries.*

As will be seen from the annual report of the Conservator of Fish and Game printed in the Appendix hereto, the Rotorua and Taupo fisheries have been developed in conformity with the settled policy. The total output of marketable fish for the period 1st November, 1916, to 31st March, 1917, was 42,995 fish, weighing 35 tons, as against 51,601 fish, weighing 43 tons, for the corresponding period 1915-16. This decrease was almost solely due to weather conditions and the difficulty of securing suitable labour for the depot at Tokaanu. At Rotorua, while the total number of fish caught was 1,212 less than last season, the total weight was 4 tons more. This in itself is evidence that the Department's efforts have already resulted in a marked improvement in the condition of the fish in that lake.

During the hot weather experienced last summer the Taupo fish, which has to be sent forward by coach from Tokaanu to Waiouru, occasionally arrived in Wellington unfit for human consumption, and had to be destroyed. The new road from Tokaanu to Waimarino, which it is hoped will be open to traffic this coming summer, will enable the fish to be carried to the railway much more quickly, and will prevent any recurrence of this undesirable state of affairs.

Early in the season the question of erecting a cool chamber at Rotorua was given consideration. Plans were submitted by the Public Works Department, but it was decided to take no action at present.

Study of Worm Parasite.—The experimental ponds at Rotorua are being maintained. The examination of the trout from these ponds, which has been carried out systematically by the Director, Veterinary Division, Department of Agriculture, has now established the fact that the parasite is caused by the shags. An interesting report by Dr. Reakes on the result of the investigations is appended to this report.

Shags.—The work of destroying shags around the lakes of the thermal region is being vigorously carried on. The Department pays 2s. 6d. for each bird destroyed, the total number accounted for during the year being 1,432.

Trout-hatchery.—The Conservator's report discloses a satisfactory season, though on account of the shortage of labour the output of fry and ova was not as large as in the previous year.

Canterbury Rivers.—Pursuant to your direction reports on the possibility of obtaining supplies of marketable trout from the Canterbury rivers were obtained. It is much to be regretted that all the evidence points to the fact that if these rivers are worked with nets it will mean their ultimate depletion.

(3.) *Animals Protection Act.*

Though 1916 was a close season under the Animals Protection Act, game was so abundant as to lead to all but seven acclimatization societies applying for exemption.

Sanctuaries.—Six new sanctuaries were declared.

Damage by Deer.—As the result of further investigation of reported damage, protection was removed from fallow deer in the Rongahere (Otago) District. Protection was also removed from deer on certain islands in Tasman Bay, Nelson Acclimatization District.

Deterioration of Deer Herds.—Special shooting seasons to allow of systematic culling operations were declared in Otago and Waitaki Districts.

Huias.—Further reports of the existence of huias are being investigated.

The Tuatara.—The lightkeepers at Stephen, The Brothers, and Cuvier Islands, by constant shooting of hawks and cats, have arrested the decrease of the tuatara. It is interesting to note that the hawks on Stephen Island do not remain on the island all the year round, but leave with the approach of winter and return some time in early summer.

General.—One district (North Canterbury) was redefined, and the rules of the Ashburton, North Canterbury, and Otago Societies were deposited.

(4.) *Fire Brigades Act.*

Fire Districts.—No new districts were constituted during the year. One district (Ohakune) was abolished.

Inspection of Fire Brigades.—The Inspector of Fire Brigades continued his work without interruption during the year. His report up to the end of the Fire Boards' year, 30th June, is contained in a separate parliamentary paper (H.—6A).

Fire Brigades Conference.—The resolutions passed at this Conference deal with several matters of importance. They are at present under consideration.

(5.) *Motor Regulation Act.*

Ten County Councils adopted Part II of the Act during the year.

Letters and numerals as identification-marks were allotted to 12 registering authorities.

(6.) *Weights and Measures Act.*

During the year just ended good progress has been made in improving the administration of this Act, particularly with regard to the inspection of weighbridges.

The better class of scales now coming into general use shows that public and commercial opinion is being aroused to the importance of correct weight being given in all sales of goods. It is safe to say that both buyers and sellers lose many thousands of pounds in the course of a year through imperfect scales, weights, and measures.

As indicated in my report last year, the Act requires amendment in various directions before it will be possible to place the inspection of weights and measures on a really satisfactory basis.

(7.) *Board of Science and Art.*

The Board of Science and Art held its second annual meeting on the 1st February, 1917. In the report of the Director of the Dominion Museum a summary will be found of the Board's work during the year.

(8.) *Censorship of Films.*

Pursuant to the Cinematograph Film Censorship Act, 1916, a Censor of Films was appointed on the 16th September, 1916. From that date to the 31st March, 1917, separate films of a total length of 2,107,310 ft. were examined. Approval was refused in seventeen cases. In 114 cases approval was granted only after excisions had been made to the satisfaction of the Censor. One appeal was made against the Censor's decision. The appeal was dismissed.

Inspection and other fees amounted to £733 9s. 11d., which more than covered the expenditure during the period.

Various requests have been made for an amendment of the Act to provide for the censorship of posters advertising films, and in accordance with your direction legislation will be drafted to deal with the matter.

(9.) *Hector Observatory.*

Much useful work has been done at the Observatory during the year. In accordance with your desire Dr. Adams delivered lectures in other towns in the Dominion. As the result of a lecture in Wanganni the local astronomical society has offered the Government the use of the society's equatorial telescope, which is the largest in New Zealand. It is expected that much valuable work will be undertaken as the result of this offer. Dr. Adams's report is printed in the schedule hereto.

(10.) *Old Soldiers' Graves.*

It is now some four years since the Department was given the care of the graves of soldiers who fought and died during the various wars.

In the interval a large amount of work has been done in the renovation of these graves throughout the Auckland and Taranaki Provinces under the supervision of Miss Statham, Inspector of Old Soldiers' Graves. The rate of progress after the passage of so many years since the Maori wars is slow, because of the difficulty in locating graves in the various cemeteries; but already exceedingly good work has been done. In a number of cases cemeteries which were nothing but wildernesses when the Department undertook the work are now in good order. This change has been a source of comfort to the relatives, and has been appreciated by those who desire to honour the memory of the men who were called upon to make the great sacrifice in the early years of our national existence.

The practice followed by the Department, when the graves are located and the names obtained, is to endeavour to trace the relatives and request their concurrence in the proposed renovation of the graves. If the relatives are in a position to meet the cost they are asked to do so, and in many instances are only too glad to pay for the work. Where the relatives cannot be found, or are in poor circumstances, the Department meets the cost.

In cases where there were no headstones suitable monuments have been erected in the various cemeteries, with the names, ranks, and regiments of the men inscribed thereon. Where, as occasionally happens, it is not possible to ascertain the names, a special inscription commemorating the deeds of these nameless heroes is cut on the monument.

As an example of this I may quote the inscription (one of three) on the most notable monument unveiled by the Minister during the past year, that at Tuakau, on the site of the Alexandra Redoubt:—

TO THE MEMORY OF THOSE MEMBERS
OF HER MAJESTY'S FORCES WHO FELL IN ACTION IN THIS DISTRICT DURING THE YEARS 1863-64,
AND WHOSE NAMES CANNOT BE TRACED.

There's none of these so lonely and poor of old
But, dying, has made us rarer gifts than gold.—*Rupert Brooke.*

The Department has in addition had added to this work the care of historical graves. One of the latest renovated is that of Governor Hobson, in Symonds Street Cemetery, Auckland.

The Department also undertakes the care of the graves of British sailors as well as those of our Allies who have died while in New Zealand.

(11.) *Graves of Soldiers dying in New Zealand during the Present War.*

The question of caring for graves of members of the New Zealand Expeditionary Force dying in the present war is receiving very careful attention.

The first important step taken was to define the sphere of action of the Departments interested, the decision arrived at being that the Defence Department should be responsible for all graves beyond New Zealand, and that the Department of Internal Affairs should undertake the care of graves in the Dominion.

So far as this Department is concerned, therefore, the men whose graves are to be attended to are those who die while in hospital or in camp, or on their return to New Zealand after active service abroad, and while they are still members of the Expeditionary Force—*i.e.*, before their discharge.

After careful consideration the following line of action has been adopted:—

- (1.) The Registrar-General will give full particulars of the men with whose graves the Department will deal.
- (2.) A standard type of grave is being decided on, simplicity and artistic design to be the main features. The Government Architect has submitted designs, and several sample gravestones are being made for inspection before any particular design is adopted.
- (3.) The actual work will be commenced at Wellington, Featherston, and Auckland, where, of course, most of the soldiers who have died in New Zealand are buried.
- (4.) The next-of-kin will be informed in each case of what the Government is doing.

The following circular has been sent to all Borough and County Councils and Town Boards, certain Road Boards, and all Boards of Cemetery Trustees appointed by the Governor-General:—

“I have the honour to inform you that the question of funeral and burial expenses of members of the Expeditionary Force who die prior to their discharge from such Force has recently been under consideration. In connection therewith I have to ask whether your Board would, from a patriotic point of view, be prepared to supply burial-plots for such soldiers free of cost, and, if so, on what conditions, if any, and also if the Board would later permit the erection by the Government of suitable headstones or memorials.”

With one exception the replies already to hand indicate the willingness of those controlling cemeteries to supply burial-plots free of cost, and to permit the Government to erect suitable headstones or memorials.

3. THE WORK OF THE SUB-DEPARTMENTS DURING THE YEAR.

As already pointed out, the war work of the sub-departments has shown a marked increase. In the performance of their ordinary peace-time functions they have been worked efficiently, with a special view to economy.

Census and Statistics Office.—Altogether apart from that created by the Military Service Act and the taking of the census, the work of this office has increased in volume, importance, and intricacy.

Registrar-General's Office.—With a revenue of £13,684 from fees of various kinds, against an expenditure of £9,175, this office would justify its existence on revenue grounds alone. Its value to the Public Service apart from the general public may be gauged from the number of searches made by the central office for various Government Departments—15,662. In addition, 8,000 children's allowance searches were made for the Defence Department.

Attention is particularly drawn to the difficulties under which the office labours in the registration of Maori births, deaths, and marriages. Steps have, however, been taken by which it is hoped an improvement will be secured.

Dominion Laboratory.—The Laboratory has now been fifty years in existence, and it is interesting to note that during the whole of that period the position of scientific head has been held by but two men—the late Mr. William Skey, F.C.S., from 1866 to his death in 1899, and the present Dominion Analyst, Mr. J. S. Maclaurin, D.Sc., F.C.S., who succeeded Mr. Skey. Conducting its activity in fields altogether apart from those in which almost all the other Government Departments have their being, it is not altogether surprising that the great economic importance and usefulness to the Dominion of the Laboratory are not fully realized.

During the year the work of the Laboratory has shown an all-round increase, the war in particular placing a heavier burden on the Dominion Analyst and his staff.

Dominion Museum.—In his report the Director presents a closely reasoned plea for the national importance of carrying on the work of the Museum even during the most critical stages of the war. With this I agree, and so far as possible its needs both in the way of equipment and staff have been attended to.

It is satisfactory to note that a very encouraging response has been made to the Minister's appeal to the people of the Dominion for materials for a National Historical Collection.

Reports.—The annual reports of the heads of sub-departments are printed in the Appendix along with those of the Officer in Charge of the War Funds Office and the Conservator of Fish and Game.

II.—STAFF.

Again I have great pleasure in acknowledging the cheerful willingness of all my officers under very trying circumstances. The heads of sub-departments have as usual shown the true spirit of co-operation in their relations with me as head of the Department. Their knowledge and ability have been of the greatest assistance. The staffs of the Head Office and branches have been considerably changed by reason of voluntary enlistments of officers and the operation of the ballot, the latter particularly affecting the Head Office.

III.—ASSISTANCE RENDERED BY OTHER DEPARTMENTS.

The special assistance rendered by several other Departments demands special acknowledgment. Without the generous co-operation of the Customs Department the War Regulations of the 21st August, 1916, and 26th February, 1917, could not have been satisfactorily administered.

Increased calls have been made on the Police Department, and the valuable services rendered by the Post and Telegraph Department resulted in the distribution and collection of census papers much more economically and efficiently than at any previous census.

J. HISLOP, Under-Secretary.

APPENDIX.

I. REPORT OF GOVERNMENT STATISTICIAN.

Census and Statistics Office, Wellington, 21st June, 1917.

THE statistical work has continued to increase by leaps and bounds, and has imposed a severe strain on the few senior officers on the permanent staff. Additional work was thrown on the office during the year in the taking of the quinquennial census, and in the enrolment and balloting of Reservists under the Military Service Act passed last session. To cope with the consequent enormous increase in the work a very large number of temporary clerks had to be engaged, and the office accommodation extended more than once. The total number on the staff is 68 males and 172 females, of whom only 36, including 5 females and 16 cadets, are permanent officers of the Public Service. The staff is housed in three separate buildings, viz.: those engaged on the census compilation and on statistics in the Public Trust Building, Lambton Quay, and Routh's Building, Featherston Street; and those engaged on military service registration work in Nathan's Building, Featherston Street.

The whole staff, both permanent and temporary, has loyally responded to the great demands made upon the office, and has worked willingly and well under very trying conditions. The utilization of such large numbers of inexperienced women clerks for this work has on the whole proved satisfactory, and they have undoubtedly justified their employment.

MILITARY SERVICE ACT.

On the passing of the Military Service Act the necessary organization for the enrolment of the Reserve was immediately taken in hand. The various forms for use of Reservists were prepared, printed, and distributed to every post-office throughout the Dominion. A very extensive publicity campaign was organized so as to bring the requirements of the Act conspicuously before the male residents of the Dominion; advertisements were inserted in practically every newspaper, while explanatory articles were published in the news columns at short intervals.

I am glad to take this opportunity of acknowledging the very great assistance and valuable services rendered by the Press of the Dominion in making the various provisions of the Act clear to all concerned. To the work done in this connection by the Press is due in no small measure the successful initiation of the scheme.

In addition to the Press notices large posters setting out concisely the obligations of Reservists and employers were displayed at every post-office, police-station, and railway-station, at wharves, &c., in shipping-offices, shops, factories, and other public places; while small placards (a facsimile of the large poster) were exhibited in all tram-cars, railway-carriages, coastal boats, &c., and in the larger centres were delivered by the postal carriers into every household.

The enrolment of the First and Second Divisions of the Reserve was proclaimed on the 1st and 2nd September, 1916, and during the month of September enrolment cards, notifications of change of address, and applications for certificates of enrolment poured into the office in enormous quantities daily. Some indication of the work involved in handling these will be gained from the fact that during three weeks of the month it took twenty-one clerks to do nothing more than open the mail, which averaged ten large sacks per day, while the account for postages for the month amounted to over £2,500.

The preparation of the Register of the Reserve necessitated the examination and classification of over three hundred thousand schedules obtained under the National Registration Act, as well as dealing with new enrolments, the recording of over eighty thousand notifications of change of address, and the classification of Reservists into twenty-one recruiting districts. However, notwithstanding the enormous amount of work involved, the first ballot of the First Division of the Reserve was taken on the 16th November—exactly two months after the closing of the enrolment period.

It has to be acknowledged that mistakes were made, many of them due to circumstances beyond the control of the staff; but considering the magnitude of the task, the fact that the work was entirely new, that no similar system existed previously from which precedents for guidance could be obtained, that all methods and procedure had to be devised and evolved for the purpose, that the staff consisted largely of inexperienced clerks, and recognizing the element of human error inseparable from such large undertakings, I submit that the number of mistakes resulting was remarkably few.

The ballot processes adopted were new and, so far as I know, entirely original. Experience has proved them in principle to be sound and efficient, but with the view of increasing the speed of operation several minor improvements have been introduced since the first ballot, with satisfactory results. The time occupied by the actual drawing of 4,140 names at the first ballot was eighteen hours, while the drawing of 8,545 names at the eighth ballot occupied only twelve hours and a half. The listing, checking, proof-reading, &c., of the names drawn preparatory to the issue of the *Gazette* calling the men up for active service have also been greatly expedited.

The unanimity with which the whole Press of the Dominion and the various representatives who have from time to time seen the system in operation have acknowledged the absolute fairness and impartiality of the ballot has been most gratifying. The Mayor of Wellington (J. P.

Luke, Esq., (C.M.G.) and a representative from the Trades and Labour Council, Wellington, have been present at each ballot as scrutineers for the general public, as well as some Press representatives. I wish here to acknowledge the office's appreciation of Mr. Luke's constant and continuous attendance as scrutineer; he has attended at very considerable inconvenience to himself during the whole drawing at every ballot.

For the protection of Reservists it was decided to issue "certificates of enrolment" to all men included in the Register, and this proved a colossal task in itself. In order to ensure that the certificates should reach the men to whom they really referred a personal delivery through the post-offices of the Dominion was arranged for, and so that some proof of the holder's identity could be available at any subsequent inspection each Reservist is required to sign his name in the margin of the certificate in the presence of the postal officer making the delivery.

Over two hundred thousand applications for these certificates were sent in, each applicant indicating at which post-office out of the three thousand odd in the Dominion it would be most convenient for him to receive his certificate. A preliminary post-card acknowledgment of these applications was issued immediately on receipt, and the mere addressing of these post-cards required a staff of approximately two hundred postal officers working three hours each evening during three weeks in September. Subsequently the applications had to be sorted into the respective post-offices, and those for each post-office placed in alphabetical order.

While the applications were being sorted a large staff of typists was engaged typing the certificates from the enrolment cards. As soon as these were completed the applications and the certificates had to be brought together and the latter scheduled and issued to the various post-offices where they were required, a separate advice being at the same time sent to the Reservist that the certificate was awaiting delivery.

The preparation and issue of these certificates, which had to be carried out concurrently with the work of enrolment, balloting, &c., has taken much longer than was anticipated, but the work has now been completed. A large number of certificates is still unclaimed at the various post-offices throughout the Dominion as well as at this office. The difficulty of the work was very greatly increased by the number of cases in which discrepancies were found between the names on the application and on the enrolment card of the same man.

In connection with this work I wish to place on record my appreciation of the kindness of Mr. W. S. La Trobe and Mr. Bolton, of the Wellington Technical School, in having a large part of the scheduling to Postmasters performed by the typewriting class attached to the school. The work, which was done *gratuitously*, was well and accurately carried out, and very greatly helped to relieve the congestion at a particularly busy time, when the whole typing staff, accommodation, &c., were otherwise taxed to the utmost.

The office has been very greatly assisted in carrying out the work imposed on it under the Act by officers of the Postal and Police Departments throughout the country, who have had a very large amount of extra work thrown upon them in regard to enrolments and inquiries of all kinds. Without the assistance thus obtained it would be quite impossible for the office, except at enormously increased cost, to have carried out the work. Every one of these officers has most readily and zealously helped whenever required, and I am very greatly indebted to them.

I also wish to thank officers of the Customs and Marine Departments for assistance in bringing the requirements of the Act under the notice of and obtaining enrolments from new arrivals and men discharged in New Zealand from foreign ships.

To the Government Printer and his staff, likewise, my sincerest thanks and appreciation are due for the care and expedition with which immense and invariably very urgent orders for printing have been filled from time to time in connection with the National Registration and Military Service Acts.

QUINQUENNIAL CENSUS.

The Census and Statistics Act provides for a census to be taken every fifth year counting from 1911. In the ordinary course of events the census of 1916 would have been taken early in the year, but on account of the dislocation of the population occasioned by the war it was deemed advisable to postpone it. Cabinet subsequently instructed that it be taken in the middle of October, and this was done accordingly.

It was foreseen that with the higher cost of living, the shortage of suitable men, the unsettled state of the weather, and the bad condition of the roads, the collection, if carried out on the same system as at previous censuses, would result in increased expenditure all round. I accordingly made certain proposals with a view partly to keeping expenditure within bounds and partly to improving the accuracy and completeness of the census. The principal of these was the utilization of the machinery of the Postal Department for the distribution and collection of the census schedules. The adoption of this and other proposals has resulted in a saving to the Government in the cost of the collection work (as distinct from compilation) of approximately £5,000 compared with the census of 1911. Moreover, each of the past few censuses has cost approximately 20 per cent. more than the previous one, and considering the abnormal conditions existing last year it is certain that had the old methods been followed at last census a similar increase in cost would have been experienced.

Almost without exception officers of the Post and Telegraph Department engaged on census work gave of their best, and worked energetically and willingly to make a thorough success of it. In other ways, too, the new system has justified itself: the returns have been received in better order than at any previous census, the number of incomplete schedules being practically nil; the work has been carried out entirely without friction between the collecting officers and the public; and last, but not least, many officers of the Postal Department have had an experience and acquired a knowledge which will be of considerable use to themselves and the service.

Another innovation on this occasion was the enumeration of the small Maori population in the South Island on the same schedules and by the same sub-enumerators as the Europeans,

instead of a separate census being taken by the Native Department as on former occasions, and as is still considered necessary in the North Island, where the Natives are much more numerous.

The usual five-yearly collection of manufacturing statistics and statistics of fisheries was also carried out during the year, and the returns are now in process of tabulation. The question of the annual collection of these statistics is one which should be taken up immediately conditions return to normal.

AGRICULTURAL AND PASTORAL STATISTICS.

The first collection of agricultural and pastoral statistics under the new system referred to at length in my report of last year was successfully undertaken for the season 1915-16, and the main collection for this season is now nearing completion. The monthly returns of threshings of wheat and oats are invaluable, as giving the earliest possible information and furnishing a reliable basis from month to month on which to estimate in advance the approximate total yield. A census of stocks of wheat, flour, and oats was taken for the 30th November.

In connection with the tabulation of the sheep returns, which was taken over by this office from the Agricultural Department last year, an objection to the old form was that after completion of the statistical work the returns had to be sent back to the District Offices of the Agricultural Department for utilization in connection with the registration of brands. An improved form of return has now been adopted, giving in separate detachable portions the full information required for both purposes, and allowing of the portion dealing with brands being detached by the district officers and the statistical portion being sent to Wellington and retained here for future reference if required.

The new form is in a handier shape and size for sorting purposes, and makes for greater speed in tabulation work. This year the first parcel of returns came to hand on the 24th May, and the proof of the first interim return for presentation to Parliament was received from the Printer and sent to the Secretary of Agriculture to-day (21st June). The principal advantage of the new system is, however, that it permits of the registration work being proceeded with immediately the returns are received from the farmers, instead of a delay of several weeks being necessary as under the old system.

INDUSTRIAL AND ECONOMIC INQUIRIES.

Little fresh ground has been broken in this branch, mainly on account of the lack of a properly qualified officer to conduct the branch, combined with the abnormal amount of necessary and urgent work in other directions requiring the attention of myself and my senior officers. Comprehensive regulations have been gazetted authorizing the collection of the data required for the computation of cost-of-living index numbers and the keeping of a continuous record of prices, and a start has been made with certain branches of wholesale prices. The collection of data in regard to rent has been placed on a better footing, which is calculated to allow of the rent movement being more accurately measured.

GENERAL STATISTICAL WORK.

The general statistical work has been kept going, and improvements and additions have been instituted where found advisable. The statistical publications have not been issued as early this year as in former years, owing to the necessity of employing every available member of the staff on the military service work in its incipient stages while temporary clerks were being trained. In order to conserve stocks of paper the 1916 issue of the Year-book has been considerably reduced in size, though not in comprehensiveness. The smaller size of the book and the summarizing of considerable detail matter appearing in former issues should also add to its value as a book of handy reference.

The Monthly Abstract continues to attract an increasing circulation, and it is evident that this little publication is filling a long-felt want in important sections of the community. From now on the Abstract will contain the cost-of-living tables and monthly statements of prices compiled in this office, and formerly published in the *Journal of the Department of Labour*, which has ceased publication.

During the year metropolitan areas were created at the four chief centres, and suburban areas at nine of the more important secondary centres, for purposes of population and vital statistics. Maps of the respective areas have recently been gazetted for general information.

An objection to the old system of publishing statistics for the municipal areas only was that these were constantly being extended or otherwise altered, and no proper comparison could be made between one period and another, and no satisfactory record kept of the social condition and progress of the community. The creation of fairly extensive areas fixed for a long period will remove these disabilities.

NEW WORK.

For some years past this office has compiled statistics relating to diseases, ages, &c., of patients treated in public hospitals, and the office has now taken over from the Health and Hospitals Department the compilation (for the annual report of the Department) of the financial statistics relating to Hospital Boards and the institutions under their control. A commencement is being made with the returns supplied by Boards for the financial year 1916-17, for which year a uniform system of commercial accounting has been introduced for the first time.

In consequence of existing war conditions a number of new inquiries and reports have been called for during the year, and the periodical collection of returns of stocks of coal, tin-plates, iron and steel bars, &c., has had to be undertaken.

MALCOLM FRASER,
Government Statistician.

The Under-Secretary, Department of Internal Affairs, Wellington.

II. REPORT OF REGISTRAR-GENERAL.

Registrar-General's Office, Wellington, 15th May, 1917.

I give hereunder a statement of the business transacted by this Department during the last five years. This shows an increase except with regard to marriages, which during the last year have fallen much below the average:—

Year.	Births.	Deaths.	Marriage Notices received and Certificates issued.	Marriages solemnized.
1912	27,508	9,214	9,504	9,189
1913	27,935	10,119	9,132	8,846
1914	28,338	10,148	9,589	9,326
1915	27,865	9,965	10,483	10,064
1916	28,509	10,596	8,450	8,213
				(approximate)

I also give a statement showing the number of marriages of Natives solemnized during the last five years under section 191 (1) (b) of the Native Land Act, 1909, and the number of Maori registrations effected under the regulations relating to the registration of births and deaths of Maoris which came into force on the 1st March, 1913:—

Year.	Maori Births.	Maori Deaths.	Maori Marriages.
1912 .. .. .	..	..	240
1913	586 (10 months)	412 (10 months)	220
1914	857	723	219
1915	968	786	190
1916	1,020	761	172
			(approximate)

I wish to lay stress upon the fact that this Department has no check on marriages solemnized under the Native Land Act as it has on those solemnized under the Marriage Act. It is therefore impossible to guarantee that the numbers of Maori marriages shown in the above table are complete.

In securing the registration of births and deaths of Maoris there have been many difficulties to contend with, as from the inception of the requirement for registration many Natives have shown reluctance to comply with the law. Nevertheless every effort is being made to secure records of all Maori births and deaths that occur in New Zealand.

In addition to the business referred to above the registration of medical practitioners, dentists, and officiating ministers is undertaken by the Department, and a considerable amount of searching is done free of charge for the Pensions, National Provident Fund, Labour, Police, Education, and Defence Departments. The number of searches for the last twelve months made by the Head Office alone, under various headings, is as follows: Pensions Department, 4,246; National Provident Fund, 3,573; Labour Department, 1,537; Education Department, 1,306; Defence Department, 5,000; other searches (for public, &c.), 2,025. Certificates issued, 5,063. Total searches made, 22,750.

The war has added a considerable amount of work to this office in the way of searches for births and marriages for war-pension purposes, and also for claiming separation and children's allowances from the Defence Department. The number of children's allowance searches made for the last-named Department from April, 1916, to date amounts to close on eight thousand, and the number of searches for war-pension purposes is assuming very large proportions, comprising nearly half of the searches now undertaken for the Pensions Department.

In addition to this work the Department has undertaken the compilation of a Register of Deaths of members of the New Zealand Expeditionary Forces and others which occurred while out of New Zealand on service in some capacity in connection with the present war.

The revenue of the Department, though steady for several years, shows a decided advance for 1915-16, and a severe drop for 1916-17, due entirely to fluctuations in the marriages as shown above.

The total revenue of the Department for the last five financial years was as follows:—

1912-13.	1913-14.	1914-15.	1915-16.	1916-17.
£14,240	£14,355	£14,163	£16,865	£13,684

With regard to expenditure, it is impossible to show this item for the Registration Department alone, as it was not until the last financial year that the expenditure of the Registration Branch was kept separate from that of the Statistical Branch. The expenditure for the year ended 31st March, 1917, was £9,175.

W. W. Cook, Registrar-General.

The Under-Secretary, Department of Internal Affairs, Wellington.

III. REPORT OF DOMINION ANALYST AND CHIEF INSPECTOR OF EXPLOSIVES.

Dominion Laboratory, Wellington, June, 1917.

HISTORICAL.

With the publication of the present report the Laboratory completes the fiftieth year of its existence. It was established as a branch of the Geological Survey towards the end of 1866, to meet the need for chemical investigation of the many mineral and other substances that were being discovered in New Zealand. A small laboratory was equipped at the rear of the present Museum, and Mr. William Skey, F.C.S., placed in charge. During the thirty-three years that he occupied the position many problems of economic importance to the country, dealing with mining, agriculture, and industry generally, received his consideration. His original papers, published, some in the *Chemical News* and the *Journal of the Chemical Society*, but principally in the *Transactions of the New Zealand Institute* and in Laboratory and other Government reports, cover a wide field of pure and applied science, and constitute a valuable contribution to scientific literature. On his death in 1899 he was succeeded by J. S. Maclaurin, D.Sc., F.C.S.

A new laboratory was built in Sydney Street and opened in 1905.

The passing of the Food and Drugs Act in 1908, and the general recognition by many branches of the Public Service of the advantages of analytical control of stores and supplies, have substantially increased the work and widened the scope and character of the analyses performed.

The administration of the Explosives Act was taken over in 1909.

The Laboratory now undertakes the analytical and consulting chemical work required by all Government Departments except that of Agriculture, controls the importation and sale of explosives throughout the Dominion, and carries out research on New Zealand products and industries as far as its limited staff permits.

STAFF.

One of the Inspectors of Explosives enlisted during the year, and is now abroad with the Expeditionary Force. He is the fourth member of the staff whose services have been accepted since the outbreak of the war. Three other members are shortly to go into camp for training.

WORK.

The war has been directly responsible for a considerable increase in some branches of the work.

The water-supplies of the various military camps have been examined at intervals during the year. The camp foods tested were on the whole satisfactory. Cordials from four of the transports were analysed, and samples of drugs supplied under contract showed no serious departure from the B.P. standard.

The composition of condensed milk from four different shipments was checked for the Military Supplies Purchase Office.

In regard to the other work, analyses have been made to determine the value of 131 consignments of scheelite, representing 268 tons, purchased on behalf of the Imperial Government; also one or two minor investigations have been conducted for the Minister of Munitions.

CUSTOMS.

The Customs Department submitted about the usual number of miscellaneous samples for classification for tariff purposes. Numerous hop-beers, manufactured under Customs license, were also examined.

POLICE.

The work for the Police Department has been heavier than usual. Three hundred and sixty-four samples of liquor, fifty-five samples of medicines, and a great variety of sweets were examined during the year. There were nine cases of suspected poisoning, in one of which morphine was found, in another methylated spirit, and in a third traces of arsenic.

MINES DEPARTMENT.

The Geological Survey forwarded ninety samples, including twenty-six rocks for complete analysis, forty limestones, fourteen coals, and a few phosphatic nodules.

Prospectors' samples for gold and silver disclosed little of value except those from the Waipori district, and in one case only from Takaka.

The presence of molybdenite was determined in a sample of quartz from Upper Takaka, constituting a new locality for this mineral. Tantalum was found, for the first time in New Zealand, in sluicing concentrates from Addison's, Westport.

PUBLIC HEALTH.

The list of foods and foodstuffs examined for the Department of Public Health includes butter, baking-powder, cordials, cream, cream of tartar, coffee, cheese, eggs and egg-yolk, flavouring-essence, flour, honey, jam, margarine, malt flour, milk, pepper, potted meats, sweets, tea, whisky, vinegar. Some of the jams contained excess of apple-pulp. Preservative was found in a cordial and in cream, but most of the samples complied with the regulations.

MILK-SUPPLY.

Samples received during the year cover the most important towns in the Wellington, Taranaki, Hawke's Bay, Gisborne, and Nelson districts. In all 1,108 samples were taken under the Sale of Food and Drugs Act.

Wellington City.—The appointment of a milk inspector by the City Council resulted in 847 samples being taken, as against 338 for last year. Of the 847, twenty-eight were adulterated with water, one to the extent of 21.8 per cent., the average addition being 9 per cent.; fifty-six proved deficient in fat, the worst sample representing 23 per cent. of skimming, the average 8.8 per

cent.; three contained preservative, contrary to regulation; forty-four were decidedly stale; sixty-two contained excessive amounts of dirt. In all 198 samples, or over 23 per cent., failed to comply with the regulations.

The activity of the Inspectors did much to check watering and skimming towards the end of the year. The proportion of stale and dirty milks, however, showed no diminution. Some causes of such unsound condition of milk are lack of cleanliness on the farms, insufficient cooling, carelessness in handling, and undue delay in distribution. They are all remediable.

Other Districts.—The following table summarizes the results from the other districts:—

Locality.	Samples received.	Seriously adulterated.		Slightly below Standard.
		Skimmed.	Watered.	
Hutt Valley	10	1	2	..
Palmerston North	16	..	1	3
Marton	7	..	..	..
Wanganui	21	1	1	3
Waverley	1	..	..	..
Patea	5	..	..	..
Hawera	13	..	3	..
Eltham	6	..	..	1
Stratford	8	..	..	..
New Plymouth	42	..	1	1
Whangamomona	1	..	..	..
Hunterville	1	1	1	..
Taihape	8	1	..	..
Featherston	9	..	1	..
Greytown	6	1	..	..
Carterton	8	..	..	..
Masterton	13	..	1	..
Dannevirke	1	..	..	..
Hastings	3	..	..	..
Farndon	5	..	4	..
Napier	10	..	2	2
Wairoa	4	1	..	..
Gisborne	20	..	2	..
Blenheim	15	1	..	..
Nelson	28	..	..	5
Totals	261	7	19	15

POST OFFICE.

The samples analysed for the Postal Department comprise beeswax, bichromate of potash, copper sulphate, cable-sheath, damaged wire, disinfectants, paraffin, and quicksilver.

OTHER DEPARTMENTS.

A few miscellaneous samples were received from the Railways and Marine Departments.

The total work done for each Department is shown in the following table:—

Summary of Analyses.

Agricultural	33
Customs	239
Defence Forces	120
Explosives Branch... .. .	45
Internal Affairs	10
Justice (Police)	478
Mental Hospitals	8
Military Supplies	56
Imperial Supplies Purchase—Scheelite shipments	131
Mines—	
Geological Survey	93
Head Office	52
Inspectors	66
Prospectors	224
Post Office	39
Public Health—	
Auckland District	10
Christchurch District	51
Dunedin District	15
Wellington District	1,318
Public Works	87
Railways	30
Other Departments	13
Total Government Departments	3,118
Miscellaneous samples	76
Total samples analysed	3,194

RESEARCH.

An investigation in the recovery of kauri-gum from swamp peat has yielded highly promising results.

Some work has been done on the recovery of mercury from its ores.

Owing to shortage of staff and abnormal conditions caused by the war an interesting research on the inflammability of New Zealand coaldusts, begun some years ago, was temporarily discontinued.

REPORT ON THE ADMINISTRATION OF THE EXPLOSIVE AND DANGEROUS GOODS ACT, 1908, FROM THE 30TH JUNE, 1916, TO THE 30TH JUNE, 1917.

Legislation.—There has been no fresh legislation during the period.

Authorization of New Explosives.—The following new explosives were authorized for importation into, and for manufacture, storage, and sale in, New Zealand during the year: Atlas Miner's Friend No. 1; Atlas Miner's Friend No. 7; Monogram Gelignite, 42 per cent.

Manufacture.—The undermentioned factories were licensed for the manufacture of explosives:—

- (1.) Sabulite (N.Z.) Limited, at Waikumete, for the manufacture of sabulite.
- (2.) H. F. Bickerton, at Wainoni Park, Christchurch, for the manufacture of fireworks.
- (3.) Colonial Ammunition Company, at Mount Eden, Auckland, for the manufacture of small-arms ammunition.

Importation.—The following explosives were imported during the year:—

	lb.
Gelignite	726,500
Gelatine dynamite	2,000
Quarry monobel	34,000
Viking powder	70,000
Blasting-powder (grain)	107,000
" (pellets)	137,500
" (sporting)	600
	1,077,600
Detonators	2,057,000
Fireworks (packages)	1,760

Storage.—Licenses for fifty-seven private magazines were issued during the year for quantities of explosives ranging from 2,000 lb. to 20 tons; forty-eight licenses were issued in respect to magazines storing from 300 lb. to 200 lb.; and thirty-nine licenses were issued for storage up to 300 lb.

Government magazines remain the same as last year—viz., three, at Wellington, Greymouth, and Dunedin. The new magazines at Dunedin are now completed, and that at Greymouth well under way.

Packing and Conveyance.—A consignment of gelignite was imported into New Zealand without the inner packages or cartons being paraffin-sealed. The consignees were notified that this must be remedied in all future shipments of gelatinous explosives containing sodium nitrate.

The number of licenses to carry explosives issued during the year was 339, being an increase of seventy-six for the year.

Condemned Explosives.—The following explosives have been condemned during the year: 9th February—158 lb. gelignite and 36 lb. carbonite at Okahukura, condemned on account of exudation of nitro-glycerine (destroyed by burning). 2nd and 3rd May—393 cases of blasting-powder at Wellington, condemned on account of absorption of moisture (destroyed by sinking in deep water outside harbour limits).

Licensed Premises.—672 licenses were issued during the year in respect of premises licensed to sell explosives and to keep explosives for sale in quantities not exceeding 100 lb. This is an increase of thirty-seven on the number issued during the preceding year.

Accidents.—No accident by fire or explosion occurred during the year in the manufacture, storage, or transport of explosives.

Legal Proceedings.—As in previous years, various irregularities came under the notice of the Department during the year in connection with the importation, storage, sale, and conveyance of explosives. In each of these cases a warning was deemed to be sufficient.

Inspection and Testing.—Inspections have been made during the year of public magazines, licensed factories, licensed magazines, licensed premises, and conveyances. Explosives in public and licensed magazines liable to become dangerous by deterioration have been examined as to their condition, and the destruction of condemned explosives has been carried out under the supervision of Inspectors. About one hundred and twenty samples of commercial explosives and one hundred samples of cordite for the Defence authorities have been tested for stability by the heat and other tests.

General.—Owing to shortage of staff due to the war inspection and other branches of the work have had to be considerably curtailed.

J. S. MACLAURIN,

Dominion Analyst and Chief Inspector of Explosives.

The Under-Secretary, Department of Internal Affairs, Wellington.

IV. REPORT OF THE DIRECTOR, DOMINION MUSEUM.

Dominion Museum, Wellington, 18th June, 1917.

THE MUSEUM AND THE WAR.

IN view of the urgent need for national efficiency in the use of man-power, a non-productive department such as a museum should either be closed down or should justify its existence and its staffing. I have thought it my duty to give this question serious consideration since the commencement of the war, and would have preferred personally to relinquish my present position for war work in England had the maintenance of the present activities of the Dominion Museum not seemed of national importance. The question of actual military service does not arise, as there is no male member of the staff of military age who is eligible.

Museums in the first place are storehouses for the rare and the beautiful, and for the history of man. In a war to conserve the highest forms of civilization the tangible fruits of this and lower forms of civilization must not be scrapped. Museums must be maintained as storehouses, even if they are not open to the public, and this means caretakers and night-watchmen. Parts of the collections would deteriorate without periodic overhaul, and this involves additional staff.

Museums in the second place are, or should be, an integral part of modern systems of education, and through their public galleries serve a portion of the public not otherwise provided for. It cannot be claimed that the Dominion Museum, with its totally inadequate building, is a very efficient educational factor at present, but it meets an increasing demand owing to the number of visitors the military camps attract to Wellington, and the keeping of the doors open retains on the staff only one man beyond those necessary for the maintenance already mentioned.

Museums in the third place serve as a bureau of information and reference for scientific and other matters. The activities of the Dominion Museum in this respect are yearly expanding. Not only are the inquiries about natural-history objects from the public becoming more numerous, but the information of the staff is being increasingly consulted by Government Departments. A large proportion of the Director's time has been taken up during the last year with the co-ordination of the scientific publications of the Government and the problem of the organization of scientific and industrial research, the preservation of the native avifauna and of Maori pictographs, and other similar questions of national importance.

In the fourth place museums exist for carrying on research, and, while most kinds of research must be dispensed with at the present time, research into the ethnography of the primitive Maori race is one that must from the nature of things be pursued now, war or no war, or much scientifically important information will be lost for ever. The whole time of one officer is spent in this work.

In the fifth place the Dominion Museum includes also the nucleus of the Dominion Scientific Art and Historical Library, and the library of the New Zealand Institute. Absolutely the first fundamental in any scheme for the co-ordination of scientific and industrial research for New Zealand is the provision of an efficient scientific library in the Dominion, and the present nucleus must be properly cared for, and the incoming volumes acknowledged, recorded and bound, and placed on the shelves. This work, together with the working of the International Exchange Service, although shared between several officers, takes up time nearly equivalent to the whole time of one officer.

Finally, every function of the Museum must be intensified after the war if the lessons of the importance of scientific methods which the war has taught are to be kept before the people. The Dominion Museum should be in a position, as soon as a suitable building is provided, to fill that building with suitable popular educational exhibits and complete students' reference collection of all the natural products of New Zealand. The formation of these collections requires much work on the specimens besides their actual acquisition. One war of the future will be a war of man against insects, and it is important to know allies from enemies. The formation of a reference collection of New Zealand insects, which occupies the whole time of one officer, is the only branch of natural-history work which the present staffing permits to be kept reasonably active.

In view of post-war requirements, with a full appreciation of the urgent need for national efficiency in man-power, combined with a cognizance of the man-power that is going to waste in other doubtfully important directions which need not be named, I have no hesitation in closing this review of the Museum's activities and staffing by declaring that the staff should not at present be diminished in the name of national efficiency, but could be increased with great advantage.

BOARD OF SCIENCE AND ART.

The second annual meeting of the Board was held at the Dominion Museum on the 1st February, 1917, under the presidency of the Hon. Mr. Russell (Minister of Internal Affairs). The matters dealt with more particularly affecting the Museum were as follows:—

Regarding the proposed new building, the beginning of which was deferred by Cabinet, it was resolved "that this Board begs to call the attention of the Government to the continued danger to the valuable national collections in the Dominion Museum owing to their being housed in the present inadequate and inflammable building, and to repeat the Board's recommendations of the 29th January, 1916—viz., that Cabinet be recommended to commence without delay the erection on the present Museum site of a fire-proof building to house such collections."

Relative to suggestions forwarded by Mr. H. Skinner, that in order to combat the inevitably separatist tendencies of local historical collections in the Dominions the British museums should co-operate in assembling and distributing to the overseas museums collections illustrating the history of civilization in the British area since the earliest times, it was resolved "that the Board endorses Mr. Skinner's proposals, and suggests that steps be taken to obtain for permanent exhibition in the Museum a series of objects illustrating the origin and development of British civilization."

A letter was received from the Trustees of the British Museum advising that a first set of duplicate specimens obtained by the British Antarctic Expedition would be forwarded to the Government for distribution to the museums of the Dominion. The Hon. Minister was asked to convey the thanks of the Board to the Trustees.

A Museum regulation was approved affirming that the making of private collections by any officer of the Museum or National Gallery, or the sale by any such officer of any specimens to the Museum or Art Gallery, without the consent of the Minister, is prohibited.

The reports of the committees on collections and on the National Historical Collection (referred to below) were adopted.

STAFF.

In December, 1916, Mr. H. Hamilton, Museum assistant, volunteered for and obtained a commission in the British Naval Motor-boat Patrol, and was granted the usual leave of absence. His position has been temporarily filled by Mr. W. J. Phillipps, who commenced duty on the 18th May, 1917.

Mrs. W. Turton has acted since the 26th June, 1916, as temporary clerical assistant in connection with the National Historical Collection.

As in previous years Mr. Elsdon Best has devoted his whole time to ethnological research on the Maori, and Miss Castle has been wholly occupied with the care of the insect collections, which are now in a much better condition for reference. A considerable portion of Mr. Hamilton's time before his departure was taken up with supervising the rearrangement of the New Zealand Lepidoptera and Coleoptera. The remaining Museum work has been shared between Mr. Hamilton, Mr. J. McDonald, and myself.

Opportunities for continuing my work on the classification of the Tertiary Brachiopoda have been smaller than in past years owing to the increase of work in other directions. During the year the following papers were published in scientific journals: "Stage Names applicable to the Divisions of the Tertiary in New Zealand"; "The Flint-beds associated with the Amuri Limestone of Marlborough"; "Additions to the Knowledge of the Recent and Tertiary Brachiopoda of New Zealand and Australia"; "The Classification of the Terebratellidae."

Mr. E. Phillips Turner, Inspector of Scenic Reserves, Lands Department, and myself were appointed a committee by our respective Departments to advise on matters of bird-protection, and drew up a comprehensive report dealing with the whole avifauna to serve as a basis for future action.

MOLLUSCA.

The services of Miss E. Mestayer were secured for part of February and March, 1917, to work on the New Zealand Mollusca. The collections are being divided into (1) the type collection, (2) the exhibition collection, and (3) a reference collection for handling in study and determination of new specimens. It is intended to withdraw from the exhibition collection not only all type specimens in accordance with modern museum practice, but also all shells which are too small to be properly seen without handling, and to place the latter in the reference collection. The Tertiary fossil Mollusca will be placed alongside the Recent specimens in each case, in order to show the close relationship existing between the fossils and the Recent specimens. Miss Mestayer has brought together and carefully marked and labelled all the type specimens that could be recognized as such, and in addition named a number of hitherto undetermined specimens. It is hoped during the coming year to relabel the exhibition collection in accordance with the most recent nomenclature, and to build up the representative collection. For this purpose it is desirable to obtain Miss Mestayer's services for a further period.

NATIONAL HISTORICAL COLLECTION.

During the year the scheme for a general appeal for materials for a National Historical Collection was perfected, and the names and addresses of some fifteen hundred descendants or relatives of early settlers were searched out. In February the appeal was issued in the form of a letter from the Hon. Minister of Internal Affairs addressed directly to these relatives, and of a circular explaining the object of the appeal addressed to a much wider circle, including the chairmen of all local bodies throughout the Dominion, Mayors, and newspaper editors.

Since that date the matter has been kept alive by Press activity and by direct correspondence as well as by a constant search for and identification of persons and officials likely to possess information. The answers to the appeal prove the existence of a widespread feeling that a National Historical Collection is both needed and desired. Already a very encouraging response has been made, and a fair amount of material, mostly of books and printed papers, has been donated. Several valuable manuscripts have been located, and in some cases have been promised to the collection.

A collection such as is desired cannot be formed all at once, and requires continued watching and effort. Probably the best results will not be obtained until the existing material can be displayed in a suitable building; but the matter should be kept before the public constantly, and the flow of gifts kept up by suitable publicity.

A collection illustrating the history of New Zealand's part in the present war is a natural outgrowth of the National Historical Collection, and will receive increased attention during the coming year.

ACQUISITIONS.

Besides the insects and mollusca mentioned above there have been few zoological acquisitions of importance, the most interesting being two rare fish. A large series of Tertiary fossils and rocks have been collected by myself from North Otago and South Canterbury, which will afford material for representative collections and for exchange.

The ethnographical collections have shown a satisfactory growth. Several large collections have been offered by auction in Wellington during the year, at which it has been possible to

purchase at very reasonable prices a large number of Pacific Island objects, and a few desirable Maori weapons, ornaments, and garments. A good series of Australian aboriginal weapons was also purchased, and the Museum now possesses fairly representative collections illustrating the ethnography of Australia, New Guinea, and the chief groups of the Pacific Islands, excluding New Caledonia. The most interesting Maori object obtained during the year was a ko or agricultural implement with a solid foot-rest, dug up in a Waikato swamp, and obtained by exchange. Another important exchange resulted in the acquisition of a number of tracings of South African rock-paintings and Australian rock-carvings. Donations of interest include six oil paintings of Maoris, presented by A. Turnbull, Esq., and a number of Maori, Japanese, Indian, and other weapons presented by Mrs. Tegner. The collection of prehistoric skulls has been increased by the purchase of a cast of the Mousterian skull and mandible. Of special interest to the juvenile visitors is a sledge used by the recent Shackleton expedition, which was purchased at an auction.

During the year a number of important volumes have been presented, which form a valuable acquisition to the Museum library. Chief among these are the volumes on the rare Scottish tartans and "The Black Book of Taymouth," from Mr. Hugh Handyside, of Scotland; "The New-Zealanders" (Angus), from the General Manager of the Department of Tourist and Health Resorts; and ninety volumes of *The Yachting World* and *The Yachtsman*, from A. H. Turnbull, Esq., of Wellington.

OFFICERS' REPORTS.

Mr. J. McDonald reports as follows:—

Museum Galleries.—The most important part of the work of the year was the registration and arranging of the numerous plans, drawings, and photographs in the collection acquired from Mr. W. Gordon, of New Plymouth. The southern end of the Museum gallery was cleared to give space for the screens and revolving frames used for displaying the exhibits. The contents of the cases containing sundry exhibits of stone implements in this section were rearranged in cases extending round the western side of the gallery. During the year an overhaul has been made of all the cases on the ground floor, and each thoroughly cleaned. The Maori garments and other exhibits in the large glass case on this floor were removed and examined, rearranged, and relabelled. A number of pieces of carving which still appeared to be affected by the wood-boring beetle were subjected to further and more prolonged treatment in solution and repainted. The two large Maori canoes in the Museum yard have also been repaired and repainted. Sundry collections acquired from private owners and sale-rooms have enabled us to fill gaps in the Polynesian collections and Maori War exhibits. The forty framed drawings and sketches of the Chevalier collection have been transferred to the New Zealand Academy of Fine Arts Gallery in Whitmore Street, and are now on exhibition there with the National Art Collections. Their place in the Museum has been filled by the water-colour drawings and sketches of the Robley Collection.

Illustrations and Photographic Section.—The major portion of the illustrations required for Museum Bulletin No. 6 have been completed, and are now in the hands of the process-engraving department at the Government Printing Office. It is hoped to have the remaining portion of the illustrations completed in the early part of the ensuing year. In the photographic section prints have been made of all but a few of the unindexed negatives, and these have been mounted and numbered. A shortage in supplies of photographic papers has prevented the completion of the prints.

Library.—During the year thirteen cases of books and other publications were received from the International Exchange Service at Washington, U.S.A., and the contents, numbering 1,630 packages, distributed to recipients throughout the Dominion. Books and other publications received for the Library of the New Zealand Institute and the Museum have been recorded as they came to hand.

Mr. Elsdon Best reports as follows:—

The ethnographical work completed during the past year is represented by three monographs as follows: (1) "Games and Pastimes of the Maori" (300 foolscap sheets); (2) "Polynesian Voyages" (74 sheets manuscript); (3) "Maori Agriculture" (270 foolscap sheets). No. 1 forms No. 8 of the Dominion Museum Bulletins, while No. 2 may either be added to the former as a supplementary chapter or published in a separate form. No. 3 above is marked as Bulletin No. 9.

It may be explained that No. 2 contains a considerable amount of curious and interesting information on the subject of voyages and migrations of Polynesians and Maoris, a considerable amount of which was published in the *Transactions of the New Zealand Institute* for 1915.

It has been our aim in this ethnographical work to deal first with such subjects as have received the least attention from other writers on the Maori; hence the omission so far in our series of any monograph on Maori dwellinghouses and on Native clothing and modes of weaving. In regard to these two subjects we are fortunate in the possession of the excellent work done by Archdeacon H. Williams and Major Buck. At the same time these two subjects are not being neglected, and we have about 250 foolscap sheets of notes under those headings.

Bulletin No. 5, on "Maori Storehouses and Kindred Structures," has lately been published; while Mr. J. McDonald, of this Department, is now preparing illustrations for No. 6 on Pa Maori or Native fortifications.

No field-work has been done during the past year, but interesting contributions of material have been received from sundry correspondents, notably from Mr. T. W. Downes, of Whanganui, Mr. T. V. Knapp, of Nelson, Hakaraiia Pahewa, of Te Kaha, and Karaka Tarawhiti, of Huntly.

In view of the fact that further light has been thrown on certain primitive myths conserved by the Maori folk by collections made in many quarters, and that we have a considerable amount of unpublished material of that nature on hand, it is proposed that a monograph dealing with such mythopoetic concepts be compiled. In furtherance of this design a certain amount of translation from the original has already been done. Conceptions of this nature are of much interest to European anthropologists.

The following papers have also been prepared during the past year :—

- (1.) "Tane and Tiki, their True Position in Maori Myth." (Unpublished.)
- (2.) "Shell Middens of the Wellington District." (Unpublished.)
- (3.) "Polynesian Navigators." For the American Geographical Society of New York.
- (4.) "How the Maori came to New Zealand." For the *New Zealand School Journal*.
- (5.) "The Maori Concept of the Spirit-World." For the *Journal of the Polynesian Society*.
- (6.) "The Discovery and Settlement of Wellington by the Maori." For the *Government Insurance Recorder*.
- (7.) "Notes on a Peculiar Game resembling Draughts." *Man*, January, 1917.

Miss A. Castle reports on the entomological collections as follows :—

Lepidoptera.—In the summer of 1915–16 over two hundred specimens of butterflies and moths were collected by the Director and Mr. Hamilton in Marlborough, one hundred and forty by Mr. J. McDonald at Silverstream, and about eighty by Mr. H. W. Simmonds from places between Auckland and Wellington and from Nelson. The work of mounting these was completed in May, when the work of revising the Macro-Lepidoptera sections in accordance with a scheme devised by Mr. H. Hamilton was begun. During this work considerable assistance in verifying and identifying doubtful specimens was given by Messrs. G. V. Hudson and A. Philpott. Exchanges have been arranged with collectors in South Africa and California, whereby the foreign collections have been enlarged. The accommodation of the ever-increasing entomological collections is becoming a difficult problem, as the only room on the sunny side of the Museum that can be spared is already overcrowded.

Owing to the many inquiries to see the collections of exotic butterflies at times inconvenient to the work then in hand, it was decided to appoint certain hours at which visitors could see them—viz., 2 to 4 p.m. on Wednesdays, and 10–12 a.m. on Saturdays—an arrangement which has proved entirely satisfactory. School-children in classes usually visit the Museum during the summer months, when at all times the collections have been shown.

Coleoptera.—The work of remounting and uniting the beetles previously scattered in three separate collections was commenced by Mr. H. Hamilton, and was uncompleted when he left on active service. Very considerable additions were made by vigorous collecting around Wellington, and at Marlborough, Stephen Island, and other places.

Diptera.—Considerable additions were made by the collections of the Director and Mr. Hamilton from Marlborough, and of Mr. H. W. Simmonds and Mr. D. Miller from various localities. The specimens previously scattered through various collections have been brought together, and the doubtful species determined by Mr. D. Miller.

Hymenoptera.—Considerable additions to the collections were made, especially in donations from Mr. H. W. Simmonds, and the scattered collections were brought together. Mr. D. Miller again assisted in the naming of species.

Orthoptera.—Owing to requests from France for material of the cave-dwelling Orthoptera a vigorous policy of collecting wetas was pursued by the Director and Mr. Hamilton, resulting in large accessions from South Canterbury, Marlborough, Stephen Island, Karori, and the Wairarapa. Mr. D. Carson presented a series from a cave near Eketahuna.

The thanks of the Department are especially due to Messrs. Hudson, Philpott, Miller, and Simmonds for ever-ready assistance in naming species, and to Mr. Simmonds for large numbers of rare specimens in all groups.

J. ALLAN THOMSON, Director.

The Under-Secretary, Department of Internal Affairs, Wellington.

V. REPORT OF OFFICER IN CHARGE WAR FUNDS OFFICE.

Wellington, 31st May, 1917.

At the beginning of the year the number of societies controlling war funds which had supplied the particulars required under section 9 of the Act was 300. During the year an additional 207 societies have been placed on record, and sixty-five have completed the effort for which they were formed or have ceased operations, leaving 442 active societies coming within the operation of the War Funds Act. This number includes societies which, in addition to general patriotic work, are principally engaged in providing comforts for soldiers, but does not include the smaller branches and sub-committees of Red Cross and Lady Liverpool organizations, of which there are many hundreds. The Red Cross, Lady Liverpool Societies, and the Auckland Women's Patriotic League (of which there are 100 branches) account to this office through their central organizations, and the sub-committees and branches, by special arrangement, send half-yearly statements in lieu of monthly returns.

The War Legislation Act, 1916, provided that before any society controlling war funds could solicit contributions such funds had to be approved by the Minister. This was rendered necessary by the apparent laxity shown by many societies in their methods of working. 391 societies have now been approved under this amending Act. Approval has been temporarily withheld in respect of twenty-six societies on account of the incomplete and irregular nature of their returns, and the issue of further permits to solicit contributions has been suspended until they comply with the law. They are mostly small organizations which have apparently ceased to take an active part in patriotic work.

Incorporation under the War Funds Act has been granted to twenty-four Patriotic Associations. These bodies controlled funds at the 31st March, 1917, amounting to £1,178,291.

The trustees of the Maori Soldiers' Fund Council have also been incorporated. This Council, whose headquarters are at Gisborne, represents the East Coast Natives, and is empowered by section 13 of the Native Land Amendment and Native Land Claims Adjustment Act, 1916, to

exercise important functions in regard to land and stock in addition to the powers conferred on trustees incorporated under the War Funds Act itself.

The reluctance to satisfy the requirements of the Act which was so pronounced, and to which I called attention in last year's report, no longer exists except as regards the twenty-six societies above referred to. Those who previously objected to the supervision imposed by legislation have since realized that the protection afforded to genuine patriotic effort and the elimination of loosely conducted organizations have more than compensated them for the slight extra labour entailed by the preparation of the simple returns and statements required by the regulations. The regulations made under the Act were gazetted in May, 1916, and circulated in June. They set out very fully the obligations and duties of Patriotic Societies, and prescribe the forms to be used and the periodical returns required in connection with the administration of the Act.

As the outcome of numerous inquiries upon matters connected with the administration of the Act, small handbooks were issued in June and October last containing information for the guidance of those controlling patriotic funds. These have proved very useful, and have saved a large amount of correspondence.

The experience of the nine months during which the regulations have been in force shows that only a few minor alterations or amendments thereto will be called for. A large amount of secretarial work and accounting is voluntarily performed by the officers of the various Patriotic Societies, and this is now being done in such a satisfactory manner that the question of eliminating the monthly returns now in use and slightly remodelling the quarterly returns may be considered. In my various official visits it has been impressed upon me that some such step would be highly appreciated by those called upon to make returns, and I do not anticipate that any difficulty would arise if quarterly statements were substituted throughout.

All the returns upon receipt at this office are examined and compared with those for previous periods, and the particulars of transactions recorded in the office registers. Where any discrepancy is apparent or further information is required in regard to any particular item or items the officer of the society concerned is immediately written to for an explanation. Where it appears from the manner of filling in the return that the officer concerned does not have a complete understanding of what is required, clear and explicit instructions as to the filling-in of the returns are forwarded to him or her. In many instances the return is corrected by the office, and a copy of the corrected return is forwarded to the treasurer as a specimen for future guidance. Every assistance is given to those who may be in doubt, and many letters have been received acknowledging the help tendered.

I have great pleasure in testifying to the work of the numerous women secretaries and treasurers. Their returns and statements are rarely overdue, and, as a rule, are carefully and neatly written up.

I would here call attention to a practice of Patriotic Societies which causes considerable confusion, and tends to unduly inflate the various patriotic funds in many parts of the Dominion—that is, the custom of passing funds from society to society and accounting for the same amount collected over and over again. For instance, a sum of £4,000 was raised in one district for Navy relief: this, instead of being remitted by the committee who were authorized to collect it, was paid into the funds of a Provincial Association. The Provincial Association includes this £4,000 in the amount collected by them for general purposes, and shows a similar amount as disbursed for Navy Relief Fund. Were the individual transactions not carefully scrutinized by the office this £4,000 might easily be distorted to £8,000. In another case, where a children's effort to raise funds for Belgian relief required a lift, some moneys already held for Belgian relief by a certain committee were paid as a subscription to the children's fund, and shown in their accounts as an amount originally collected by them. I could quote many examples of such transactions, but the above will suffice to show the confusion that may be caused in statistical returns by such practices.

The various societies have now been asked to furnish a special return covering their transactions from the date of establishment to the 31st March, 1917. In this return the income of each society is dissected into amounts originally received and those indirectly received, and similarly the outgo is also given in such detail as to disclose any transfers to other societies such as those above referred to. It was with some reluctance that the labour of the preparation of this return was imposed upon societies, but without the details asked for therein it was impossible to arrive at sufficiently accurate data upon which to build up a clear statement of the amounts contributed for patriotic and relief purposes. In many cases the figures supplied in this return show considerable differences from those compiled in this office from the usual monthly and quarterly statements. These differences can generally be traced back to the earlier periodical statements, and evidently arose from misconception as to what should be stated therein. Now that a clearer understanding of official requirements has been arrived at, and a careful scrutiny of returns has been instituted, it is not at all likely that the necessity for such a demand upon secretaries and treasurers of societies will again arise. These returns are now coming to hand, and I wish to express my appreciation of the manner in which the demand for this information has been received. When the whole of the returns are to hand I hope to be able to set out the development and present position of the patriotic funds throughout the Dominion, and by a slight alteration to the suggested quarterly return this information should be kept up to date without difficulty.

NEW ZEALAND PATRIOTIC SOCIETIES' ADVISORY BOARD.

Early in the financial year an Advisory Board consisting of thirteen members was elected by the leading Patriotic Societies throughout the Dominion.

The Advisory Board has no official connection with the War Funds Office, its functions being principally to advise the societies represented on matters of mutual interest. The services of members and officers are given voluntarily, a small levy being made on the various funds for general expenses. Undoubtedly the work undertaken by the Board has shown the necessity for the existence of such a body. The meetings are held monthly in Wellington.

NATIONAL WAR FUNDS COUNCIL.

The Council meets in Wellington from time to time for the transaction of business.

Since its establishment it has received from patriotic funds for administration the sum of £12,885 12s. 9d. Of this amount £2,339 5s. 8d. was raised for expenditure upon convalescent hospitals in New Zealand, and the whole of that amount has been expended for the object named. Other funds transferred to the Council consist of £3,813 9s. 5d. held hitherto by the Government as trustees for the New Zealand War Relief Fund, £4,078 11s. 6d. from the Westland Patriotic Fund, and £2,640 13s. 2d. from the Buller Patriotic Fund. In addition to these amounts hand-some donations have been received from various sources, notably £10,000 contributed by the Bank of New Zealand, £2,087 9s. 4d. from the Union Steamship Company, £2,000 from Hugh Handyside, Esq., late of Hawke's Bay, and £1,000 from the New Zealand Shipping Company. The total receipts from all sources amount to £28,246 19s. 8d. Grants have been made from the Council's funds towards various patriotic objects. The funds now in the hands of the Council, with interest accrued on investments, amount to £25,763 2s. 8d. During the year the Westland and Buller Patriotic Societies have come under the Council under the provisions of the War Funds Act. On doing so they handed over the funds in hand, the Council from that date accepting the entire responsibility for soldiers and their dependants in those districts. The local executives previously existing have been appointed local Advisory Committees, and funds are regularly forwarded monthly to them for distribution. I am pleased to state that the executives continue to collect funds, which are regularly forwarded to the Council. The scheme is working well, and shows that the machinery of the War Funds Act, when tried by experience, is well devised and meets the needs of returned soldiers and their dependants.

J. W. KINNIBURGH,
Officer in Charge.

The Under-Secretary, Department of Internal Affairs, Wellington.

VI. REPORT OF GOVERNMENT ASTRONOMER.

Hector Observatory, 20th June, 1917.

STAFF.

ON the 2nd October, 1916, Cadet Norman Shrimpton was transferred to the Observatory from the Lands and Survey Department. As soon as he reached military age in December, 1916, Cadet Shrimpton volunteered for active military service, and on the 5th February, 1917, he reported for military duty.

On the 26th February, 1917, Relieving Cadet John Wilbur Nissen reported for duty at the Observatory.

TIME-SIGNALS.

The methods by which time-signals are supplied in New Zealand are as follows:—

At Wellington time-signals are given by electric lights erected at the Observatory at 20 h., 21 h., and 22 h., G.M.T. These signals are given as frequently as possible, whenever satisfactory observations have been obtained. A daily time-signal is supplied to the Telegraph Department for the purpose of checking all the clocks of the Telegraph and Railway Departments in the Dominion. An hourly signal is supplied to the Wellington Harbour Board's tide-gauge from the standard mean-time clock, and hourly signals are supplied to watchmakers in Wellington at a charge for maintenance of £2 per annum. Many time-signals are also given by telephone to the navigating officers of warships, transports, and mercantile marine. A galvanometer in the Public Telegraph-office, Featherston Street, is deflected every hour by the standard mean-time clock.

At Auckland time-signals are given by electric lights at 21 h., G.M.T. The signal-lights were erected by the Auckland Harbour Board. On Tuesdays and Fridays the signal-lights are extinguished by direct signal from the standard clock by means of the telegraph-lines, provided satisfactory observations have been obtained.

At Lyttelton time-signals are given by the time-ball at 16 h., G.M.T. The time-ball is the property of the Lyttelton Harbour Board. On Tuesdays and Fridays, provided satisfactory observations have been obtained, the time-ball is dropped by direct signal from the standard clock by means of the telegraph-lines.

For other parts of New Zealand signals are sent from the standard clock to galvanometers, usually twice a week.

EQUIPMENT.

Clocks and Chronometers.—The signal-clocks are somewhat inferior timepieces, with wooden pendulums, and have never kept good time. They have many contacts fitted on them for switching on the signal-lights and for sending out the time-signals. The extra duties put on the clocks have further interfered with their rates; consequently it has been necessary to take steps to improve their performance, and a method of synchronizing them has been in operation for a number of months with excellent results. The method used has proved to be very reliable, and has been found to keep the signal-clocks accurately in step with the standard mean-time clock for months at a time. This method of synchronization is capable of ready extension to clocks in the City of Wellington, and as many clocks as are required can be kept in time with the standard mean-time clock.

Astronomical mean-time clock No. 1896, made by Dent, London: This clock is the property of the Lyttelton Harbour Board, and is on loan to the Observatory. The pendulum of the clock is a zinc and steel one, and appears to be overcompensated for temperature; hence a fairly close regulation of temperature is necessary if the clock is to keep a good rate. The clock is of about the same order of accuracy as the other Dent clocks. It affords a good check on the other clocks, and is a useful addition to the equipment.

Marine chronometer No. 140 (two-day), made by D. McGregor and Co., Glasgow: This chronometer was purchased; it is used as a check on the clocks. On two occasions when earthquakes stopped the standard clock the chronometer was of use until observations for time were obtained and the standard clock correctly started again.

Automatic Switch on Chronograph.—An automatic switch has been put on the barrel chronograph. As this instrument, driven by an electric motor, can be run at fast speeds, an automatic switch was necessary to protect the mechanism. The barrel is 50 cm. in circumference, and can be run at one revolution per minute, one revolution in ten seconds, or one revolution in one second.

Edison Storage Cells.—A much-needed addition to the storage battery was made by the purchase of twenty-five Edison storage cells, type B 4, 80 ampere hours capacity.

Charging Plant for Storage Battery.—An order has been placed for a mercury arc rectifier charging plant.

Wireless.—An aerial has been erected at the Observatory for the receipt of wireless time-signals. It consists of two wires, each 230 ft. long and 4 ft. 6 in. apart, and about 50 ft. above the ground. A trial was made with satisfactory results with receiving-apparatus borrowed from the Telegraph Department.

Meridian Marks.—These are erected of temporary materials, and the south one has already shown signs of moving. Designs for more permanent marks in reinforced concrete have been prepared, and the marks should be erected as soon as possible.

King Equatorial Telescope.—This 5 in. telescope, by Grubb, of Dublin, was presented to the Wellington Philosophical Society for the use of the Astronomical Section by Miss King as a memorial to her late brother, Mr. Thomas King. The telescope is temporarily stored in the cellar until the Astronomical Section can arrange to erect a building for it.

Cooke Equatorial Telescope.—This 5 in. telescope has been available to the public on fine Tuesday evenings, when members of the Astronomical Section have freely given their services in allowing the public to make use of it.

Transit Instrument.—The micrometer-screw of the transit micrometer has shown irregularities in action due to wear. It will be necessary to replace the micrometer-screw in the near future.

Standard Mercurial Barometer.—The leather bag holding the mercury broke. After repairs were made Mr. P. W. Burbidge, Lecturer on Physics at the Victoria University College, filled the barometer again. Thanks are due to Mr. Burbidge for his assistance in this delicate operation.

WIRELESS TIME-SIGNALS.

The establishment of a wireless time service in New Zealand has been strongly urged on many occasions, but beyond the erection of an aerial at the Observatory nothing further has been done in this important matter. The need for such a service has been recognized by most other British possessions, and many wireless time services have been established within the last two years. New Zealand occupies a unique position in the Pacific Ocean for the establishment of a regular wireless time service, so it is hoped that steps may now be taken to complete the installation at the Observatory. The cost would not be great, provided arrangements can be made with the Telegraph Department for the use of the existing wireless stations in sending the signals.

Occasional time-signals have been received at the Observatory with apparatus loaned by the Telegraph Department. On the 19th May, 1916, the Melbourne time-signals were received by the operator at the Awarua Radio-station, and were transmitted by hand signals over the land line and cable to the Observatory, where they were recorded on the barrel chronograph, which was run at a speed of one revolution in ten seconds, so that one second was 5 cm. on the record. Twenty-four signals were recorded. The difference between the clocks at the Melbourne and Hector Observatories was $-0.38 \text{ s.} \pm 0.045 \text{ s.}$ This difference includes the personal equation of the operator at the Awarua Radio-station and any lag on the circuit between the Observatories. Again, on the 1st June, 1916, time-signals were received from Melbourne under similar conditions. The difference between the clocks was $+0.12 \text{ s.} \pm 0.029 \text{ s.}$

For preliminary experimental determinations these results are satisfactory. Naturally, however, greater precision should be obtained if the signals are received direct at the Observatory, and this should now be possible with the aerial at the Observatory as soon as suitable receiving-apparatus is installed. These signals were received at a very inconvenient hour—1.30 a.m.—which corresponds to midnight at Melbourne. They afford a valuable check on the clocks when bad weather prevents observations being obtained, so that steps should be taken to arrange for their regular receipt.

Wireless Time-signals sent to Tahiti.—A request was received from the Governor of Tahiti that facilities be given for the transmission of wireless time-signals from Awanui to Papeete to enable the longitude of that place to be determined. Mr. H. F. Johnston, an officer of the Department of Research in Terrestrial Magnetism of the Carnegie Institution of Washington, was then at Tahiti, and he offered to receive the signals and to take observations for local time. Accordingly with the co-operation of the Telegraph Department steps were taken to comply with this request, and on Friday, the 30th June, 1916, signals were sent by the standard clock over the land lines to the Awanui Radio-station, thence by wireless to Tahiti. A relay was used at Awanui to work the sending-key, so that the whole process was automatic. Signals of one second duration were sent. Each signal began at 0 s. and ended at 1 s. of each minute of Greenwich mean time. Eight signals were sent, the first one at 21 h. 55 m. 0 s. and the last one at 22 h. 2 m. 0 s., G.M.T. Mr. Johnston reported from Papeete, 2nd July, 1916: "We received the eight signals of time very clearly. All came exactly at the same time except the third, which seemed to be about $\frac{1}{10}$ second ahead of the other seven. I determined local mean time with a theodolite, the probable error being about ± 0.5 second of time. From the signals I can give as a preliminary result the longitude of Point Venus as $149^{\circ} 30' 01''$ west. The longitude usually quoted is $149^{\circ} 29' 15''$ west, and thus there is a correction of only about three seconds of time to the westward."

The third signal referred to by Mr. Johnston left the Observatory on time, as is shown by the record on the chronograph. Any irregularity, therefore, must be due to causes outside the Observatory. The probable error of the time determination at the Observatory was about $\pm 0.05 \text{ s.}$ This is, so far as I am aware, the first time the longitude of Tahiti has been determined by wireless.

GENERAL.

Longitudes of Pacific Islands.—The importance of this work was urged in last year's report, and as the determination of the longitude of Tahiti has been successfully carried out it is recommended that steps be taken to determine the longitudes of the islands of New Zealand.

Seismograph.—The Milne seismograph has been attended to regularly. The pier on which the seismograph is mounted has water round it after every rain. The Public Works Department have had the matter in hand, and it is hoped that the water can be prevented from getting to the pier.

Long-period Variable Stars.—Professor Edward C. Pickering, Director of the Harvard College Observatory, Cambridge, Mass., U.S.A., forwarded a large number of photographs, 8 in. by 10 in. in size, of regions surrounding southern long-period variable stars, with the magnitudes of comparison stars marked thereon. He asked the co-operation of astronomers in New Zealand to make systematic observations of these variables. Some of the photographs have been supplied to astronomers, and others are available, on application, to those who will undertake to make the observations. The importance of continuous observations of variable stars of long period has frequently been urged, and, as these objects are specially suitable for observation by amateurs provided only with small telescopes, it is hoped that some systematic observations will be undertaken in New Zealand.

Lectures on Astronomy.—During the year the following lectures and addresses have been delivered by me on astronomy: "Notes on Californian Observatories" (illustrated by lantern-slides); "Notes on the Eclipse of the Sun on July 30," with photographs; "Wireless Time-signals"; "Southern Long-period Variable Stars"; "The Hartness Turret Telescope" (illustrated by lantern-slides); and one by Mr. C. J. Westland, F.R.A.S., on "Methods of Calculating Moonrise."

In conformity with the policy of the Hon. G. W. Russell, Minister in Charge of the Observatory, that lectures on astronomy should be delivered in other towns in New Zealand, I delivered two lectures on "American Observatories" before the Wanganui Astronomical Society and the Manawatu Philosophical Society. As a result of the lecture in Wanganui the Astronomical Society there has offered me the use of the society's equatorial telescope. This 9½ in. telescope, by Cooke and Sons, York, England, is the largest telescope in New Zealand. It is well mounted, and has a good driving-clock. It is expected that much valuable work will be undertaken as a result of this offer.

Admiralty Chronometers.—A number of Admiralty chronometers and a chronometer watch are deposited at the Observatory.

Precision Clock.—An order for a modern precision clock was placed with the maker before the war, but on the outbreak of war it had to be cancelled. Consequently arrangements for increased efficiency in the time service have to be deferred until such time as precision clocks can be obtained.

Accommodation for Observers.—Unlike other Observatories there is no provision for residences at the Observatory. The provision of residences for the Observers at the Observatory would increase the efficiency with the present equipment very considerably, and would make the whole of the night available for observations, receipt of wireless time-signals, &c., instead of only a portion of the night as at present.

Office Accommodation.—The office accommodation is very limited, and more room is urgently required for office and library. Many valuable gifts of astronomical publications, star-catalogues, star-charts, &c., have been received, but limitations of space have restricted their use. Accommodation will also be required for the mercury arc rectifier.

It is recommended that a library-room should be added to the Observatory, where those interested may be able to consult the astronomical publications. With the provision of a suitable library many gifts of astronomical publications from New Zealand friends may be reasonably expected.

Eclipse of Sun.—An annular eclipse of the sun was observed on the 30th July, 1916, when, with the assistance of members of the Astronomical Section of the Wellington Philosophical Society, a number of photographs were obtained and visual observations made.

Occultation of Saturn.—An occultation of the planet Saturn by the moon took place on the evening of the 4th March, 1917. The predictions of this occultation were supplied to a number of astronomers at different places. At Wellington the occultation was observed in cloudy weather. Members of the Astronomical Section took part in the observations. The times of disappearance and reappearance were recorded on the chronograph, and agreed very closely with the predictions made.

Publications presented to the Library.—Many valuable publications have been presented to the library, and for them grateful thanks are tendered to the donors. The French Government presented all the astrographic charts and catalogues of the Paris, Toulouse, Bordeaux, and Algiers Observatories; while the Mexican Observatory of Tacubaya presented its portion of these charts and catalogues. Most of the large Observatories present their publications to the library; consequently the library is beginning to be a representative one, and is useful for astronomers in New Zealand.

New Zealand Standard Time.—New Zealand standard time is for the meridian 172° 30' east of Greenwich, and is 11 h. 30 m. in advance of Greenwich time. As it appeared that many advantages would be gained by making New Zealand standard time exactly twelve hours in advance of Greenwich mean time, the subject was discussed at the Wellington Philosophical Society, and a resolution from the society was forwarded to the Government urging the desirability of the alteration. The Government was unable, however, to take any action at present in this matter.

Historical Records.—In conformity with the policy of preserving historical records it is suggested that the observing-stations used by astronomers, when special parties visited New Zealand to observe the transits of Venus, are worthy of preservation. Much valuable observing was done at these stations, including observations for latitude and longitude.

Considerable interest has been taken in this Observatory by astronomers in the Northern Hemisphere, as it is recognized that New Zealand offers from its position special facilities for

observations of the southern sky. For many purposes an Observatory as far south as possible is desirable; here the Dominion can offer a selection of sites at least as far south as 45°, which is farther south than any other British Observatory. Definite proposals have recently been received from President R. C. Maclaurin, President of the Massachusetts Institute of Technology, covering a programme from Professor Edward C. Pickering, Director of the Harvard College Observatory, for the systematic photographing of the stars of the entire Southern Hemisphere, so that their positions may be accurately determined.

Astronomical Tables.—The Astronomical Tables for 1917 were calculated and distributed before the end of 1916.

New Zealand Time-service Arrangements.—Notice No. 4, relating to the time-signal at Lyttelton by time-ball; Notice No. 5, relating to the position of the Observatory and general time-service arrangements; and Notice No. 6, relating to the time-signal at Auckland by electric lights, were published in the *Gazette* and distributed.

Azimuth and Level of the Transit Instruments.—Observations during the year show considerable variations in the azimuth and level of the transit instrument. The variations appear to be periodic, but further observations are necessary before this point can be decided.

Rates of Clocks.—The observed rates of the clocks for this year again provide evidence for the necessity of better timepieces. Experience has proved that the clocks can rarely be depended on for more than two days to give the time with the accuracy required for rating purposes.

Position of Observatory.—The adopted position of the transit instrument at the Hector Observatory is longitude 11 h. 39 m. 4·27 s. east of Greenwich, latitude 41° 17' 3·8" south, and height 418 ft. above 1909 mean sea-level.

C. E. ADAMS,
Government Astronomer.

The Under-Secretary, Department of Internal Affairs, Wellington.

VII. REPORT OF THE CONSERVATOR OF FISH AND GAME.

Rotorua, 30th April, 1917.

I HAVE the honour to submit my annual report of the work that has been carried out during the past year in connection with the fresh-water fisheries in the Rotorua and Taupo districts for the period ending 31st March.

During the past year the same policy has been carried out in dealing with the trout: the poor and ill-conditioned fish have been taken during the close season—July to October—and the marketing of fish was carried on from November to March.

In July a start was made to take the ill-conditioned fish from the Taupo Lake and rivers, but on account of the continual floods in the rivers during the period a somewhat less number were taken than last season.

The same operations were started in the Rotorua Lake and rivers, but on account of the fish showing a marked improvement in their condition only the very poor ones were taken, and others that were suitable for marketing purposes were again liberated.

The following numbers of fish were destroyed during the period from July to October: Taupo Lake—5,161 fish, weighing 6 tons 18 cwt. 0 qr. 27 lb.; Rotorua Lake—4,051 fish, weighing 3 tons 12 cwt. 1 qr. 10 lb.; total, 9,213 fish, weighing 10 tons 10 cwt. 2 qr. 9 lb.

MARKETING.

Rotorua.—The marketing of cured and fresh trout started on the 1st November. As previously arranged another launch and staff, consisting of two men, were stationed at Rotoiti for the purpose of netting that lake, and large supplies have been received at the depot from there.

The supply of trout has also been kept up from Lake Rotorua, and a wonderful improvement has been made in the fish through the Department's policy, and the general opinion is that the fish have greatly improved in condition. The parasite is found to be gradually getting less in the fish. A large supply of fish has been sent for sale to the Auckland City Market; up to the present they have received some 11½ tons. Consignments have been sent daily to the Railway Department for use on the dining-cars. 3,302 parcels of fish were sold to visitors and others. Most of these had to be packed ready for forwarding. 271 parcels were consigned by rail to various people, and fourteen local boardinghouses have received daily supplies.

Tokaanu Depot.—The number of fish forwarded from Tokaanu Depot does not come up to last year's output, partly on account of the difficulty in getting suitable men to do the work, and the difficulty in getting the fish carted to the railway-station; but as the new Waimarino Road may be open for traffic by next season this difficulty, it is anticipated, will be overcome.

Fresh and Smoked Trout sold during the Period 1st November to 31st March: Actual Number of Fish, and Weight of Fish sold cleaned.

				Number.	Weight.				Value.		
					Tons.	cwt.	qr.	lb.	£	s.	d.
Rotorua	..	..	..	34,252	24	19	0	19	999	1	11
Taupo	..	..	..	8,743	10	4	2	8	443	3	6
Totals	..	..	..	42,995	35	3	2	27	1,442	5	5

Ill-conditioned Fish taken from Fish netted for Market.

	Number.	Weight.			
		Tons.	cwt.	qr.	lb.
Rotorua (average 2 lb. each)	5,074	4	10	2	12
Taupo (average 3 lb. each)	2,943	3	18	3	9
Totals	8,017	8	9	1	21

TROUT-HATCHERY.

The season opened in July, when the first rainbow-trout ova was collected. Although the output of trout ova and fry is not as great as last season, on account of shortage of suitable help, sufficient ova and fry was collected to supply the demand. Ova was supplied to various local societies at practically cost price, and a free distribution was made for the purpose of stocking the North of Auckland rivers. A number of rainbow fry were liberated within the waters of the Rotorua Acclimatization District, also Tongariro National Park rivers, and a season's supply to the Auckland Acclimatization Society.

The following was the result of the season's liberations: Rainbow-trout ova, 435,000; rainbow-trout fry, 217,700.

SHAGS.

During the year 1,432 shags have been accounted for at a cost of £179.

F. MOORHOUSE,
Conservator of Fish and Game.

The Under-Secretary, Department of Internal Affairs, Wellington.

VIII. REPORT BY DR. REAKES ON THE WORM PARASITE IN TROUT.

Wellington, 3rd July, 1917.

I AM now in a position to advise as to the result of the experiments in connection with trout at Rotorua affected by internal parasites, concerning which I wrote you on the 14th December, 1915.

Experiment No. 1.—Eight trout were placed in a pond in which previously a number of small fish had been kept, two shags being placed in a cage above the pond and fed upon worm-infested trout. These shags had been kept in this cage for some months previously, and the small fish had also been in the pond beneath them for the same length of time. In making the examination at the conclusion of this experiment only four trout were found, the balance having either escaped or been surreptitiously caught and removed or else had died. A careful examination of these four trout proved that three out of four were affected by the same parasites as are found in the infested trout in the lake, their identity being proved by microscopical examination.

Experiment No. 2.—In this case two newly caught shags were placed in a cage above the pond and fed upon worm-infested trout. This pond had been previously utilized for an experiment initiated with a view to determining if possible whether trout became infested with the parasite as a result of feeding upon small fish (toi-toi) from the lake, it being thought by some observers that the toi-toi first became affected, and that the trout contracted the disease by feeding upon them. A number of trout had been placed in this pond, and were fed daily upon toi-toi caught in the lake; the result was absolutely negative, and this was not surprising, seeing that at frequent intervals a number of the toi-toi were examined and in no case were any found to be affected with the parasite. At the conclusion of this experiment twelve of the trout were killed and examined, every one being found absolutely free from parasites. Eight of the remaining trout were taken out of this pond and utilized for experiment No. 1 above, the remainder, about twelve in number, being left, and the two shags mentioned above placed in a cage over it. The trout were fed principally upon bread, and no food likely to be in any way contaminated by the trout-parasite was given them. At the conclusion of this experiment at the end of May of the present year all the trout remaining in the pond, nine in number, were killed and examined. Every one was affected, though in the case of one individual only one parasite was found. In all the others, however, from two to five worms were present. These in every case were located about the region of the stomach. The identity of the worm found in these trout with those found in the affected lake trout was proved by careful microscopical examination.

The shags were also destroyed, and were found to be badly affected with the shag-parasite, which is held to be the same as that found in the trout, the fish being the intermediate host, while the shag is the ultimate host. The result of this experiment, following on the long careful investigation carried out by Mr. Kerrigan, M.R.C.V.S., at Rotorua, in which he demonstrated microscopically the identity of the trout-parasite with that of the shag-parasite, is interesting and valuable. It will be remembered that corroborative evidence of the infection of aquatic birds from affected trout was gained by earlier experiments in which ducks specially reared under conditions calculated to preclude the possibility of outside parasitic affection were fed upon worm-infested trout and contracted parasitic affection identical with that shown by the shag, though in the case of the ducks, which evidently were not altogether suitable hosts, the parasites died after a time.

These experiments were carried out under the supervision of Mr. W. T. Collins, M.R.C.V.S., Government Veterinarian, Hamilton, in conjunction with your officers.

C. J. REAKES, D.V.Sc., M.R.C.V.S.

The Under-Secretary, Department of Internal Affairs, Wellington.

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