Agricultural Extension in New Zealand

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In New Zealand the Department of Agriculture, under the Minister for Agriculture, is the organisation charged by the Government to develop and carry out agricultural extension services to the farming industries. In addition the usual regulatory measures and the exercise of statutory powers, associated with agriculture, are functions of this Department. Under this heading are those dealing with export controls such as Meat and Dairy Produce Inspection which in Australia is a Commonwealth matter.

Other agricultural institutions such as the Department of Scientific and Industrial Research, the Agricultural Colleges - Massey and Lincoln - carry out small extension activities of a somewhat local and restricted nature. In addition the New Zealand Dairy Board employs some eleven Dairy Consulting Officers located in the main dairy districts. However, by far the main extension services in the Dominion are performed and organized within the framework of the Department of Agriculture.

This Department is highly organised and co-ordinated from the Head Office in Wellington under the Director General of Agriculture and the Directors of the six divisions of the Department, viz., Animal Industry, Dairy, Extension, Horticulture, Animal Research and Marketing. The first four mentioned are those concerned with the main extension functions of the Department.

Within each of these four "extension" divisions there is considerable decentralisation, firstly under four Superintendents (two in each Island). These superintendents in turn control the district staff of their particular division, within the broad region for which they are responsible. A more detailed description of these aspects will be given later.

However, for a detailed understanding of the organisation of these services in the field, some brief comments on the agriculture and certain features of the New Zealand "scene", which have had a bearing on the development and working of these services, would appear to be an essential prerequisite.

LAND AREA & USAGE:

The total area of the Dominion is approximately 66.4 million acres. (This area is roughly equal to that of the agricultural area of South West corner of Western Australia from Geraldton to Esperance). The main form of agriculture is essentially pastoral - grassland farming - the production of wool, meat (sheep, lamb, beef) and dairying, from the pastures with no purchased concentrates and generally little conserved farm fodders.
About 13 million acres are under occupation for agricultural, pastoral, and forestry purposes. Of this area some 18 million are sown-pasture and 13 million are natural grassland.

Field crops only occupy about 1 million acres, half of which are fodder crops for stock. Orchards, vines and market gardens only cover about 35,000 acres.

Sown-pastures have been laid down to grass either after cultivation or by surface sowing following burning of the native vegetation. Pastures on ploughed grassland are in climatically well favoured districts and are intensively managed and heavily fertilised. They produce the bulk of the dairy-produce and meat exports.

Most of the tussock and native grass land is in South Island and is of high altitude with a severe climate - dry summers and cold winters. It is held mainly as leasehold from the State.

**SYSTEMS OF AGRICULTURE:**

The major products - wool, meat, dairy, grains etc. - of any broad region of New Zealand or the system of agriculture has of course been evolved in relation to climate, topography and fertility, either natural or artificially developed with fertilisers. There is a considerable range in degree and type of production, from the very extensive low producing pastoral areas in the South Island to the intensive grassland areas of the Waikato and Taranaki and again to the mixed arable farming districts of the Canterbury Plains. In any classification of this nature there must obviously be considerable overlapping but in New Zealand the main systems of farming may be broadly described as follows:

**Intensive Grassland Farming:**

This is carried out on the flat or rolling down lands where climatic conditions are favourable for pasture growth practically all the year round with a spring surplus for fattening, or conservation as silage or hay for the winter when pasture growth is below requirements. Carrying capacity on the average ranges from three to five breeding ewes per acre or one milking cow to 1½ to 2 acres - although in occasional instances 8 ewes or 1 cow per acre are carried on some properties. In addition some fattening stock - sheep or beef or replacement milking stock - as the case may be, is pastured on these high producing properties.

**Surface-sown Hill Country:**

Farming was originally developed on this country by burning the native vegetation and broadcasting clover and grass seed on the ash. For the first few years no fertiliser was applied and gradually pasture growth and carrying capacity declined, with the encroachment of bracken, gorse, manuka (ti-tree,
Leptospernum scoparium). In recent years, with the advent of mechanisation, improved fertiliser practices, aerial topdressing, cattle stocking etc., considerable reconstruction work has taken place and the carrying capacity of hill farms is rising. The present average carrying capacity is equivalent to about 1 sheep per acre.

**Native Grass & Tussock lands:**

Native grassland farming is largely confined to the mountainous regions of the central southern parts of the South Island where the winters are cold and the rainfall light in the warmer period of the year when the temperatures would be satisfactory for plant growth.

Due to the low rainfall and severe climate little pasture improvement schemes are possible in these areas and stock (merino or half-bred mainly) are carried on the unimproved native grasses and tussocks. Generally a high proportion of wethers are carried with only sufficient breeding ewes to maintain flock numbers. The average carrying capacity is 1 sheep to about 4 acres.

**Arable Farming:**

This type of farming is restricted almost entirely to the South Island, particularly eastern Canterbury and parts of Otago where the soil and climate, including that at the harvesting period, are suitable for grain production.

The principal crops are the cereals wheat, oats and barley, potatoes. Hay crops are grown for market and also very large areas of small seed crops. Generally stock is carried in association with this arable agriculture with fodder crops of rape, lupins, swedes and turnips. However, on some farms no stock is carried at all and the pasture crops are used purely for seed production or for hay for market.

**AGRICULTURAL PRODUCTION:**

It is not the purpose of this report to discuss agricultural production in New Zealand but some examples of the intensity of different types of production are worthy of note as these have a bearing on extension services. Sheep population figures range from 1 sheep to as low as 10 acres on low producing runs in central Otago to 8 breeding ewes per acre plus some cattle on high producing farms in such districts as the Waikato and Southland.

The sheep population of the Dominion is approximately 35 million - at 30th April when the bulk of the export slaughters are complete - of which some 24 million are breeding ewes. The average lambing percentage is almost 100. Some 12 million lambs and 3 million sheep are killed for export.
The total dairy stock population is almost 3 million of which 2 million are milking cows. The total beef stock is slightly over 2 million head.

CLIMATE:

The high agricultural productivity of New Zealand is due to a large extent to the extremely favourable climate. The main rainfall division is east-west. The high relief and the north-south aspect of mountainous region accentuates the rainfall on the west coast and gives rise to areas of relatively low rainfall on the east. However, the habitable areas, where agriculture is possible, mainly benefit from an adequate rainfall of roughly from 25-75 ins. per annum. The main exception is in central Otago where the rainfall is only from 10-15 ins. and semi-arid tussock conditions prevail and only a sparse pastoral wool agriculture (merinos and half breeds) is possible.

In general the rainfall is fairly evenly spread throughout the year, for instance in Christchurch with an average rainfall of 26 inches the monthly falls range from about 1\frac{1}{2} to 2\frac{1}{2} inches. With the exception of Central Otago there is no district which has a rainfall of less than 1\frac{1}{2} inches in any one month.

Winter temperatures are relatively mild with no continuous snow cover on the low country and stock do not require housing in the winter. Pasture growth, although somewhat retarded in mid winter and late summer is practically continuous throughout the year over a large part of the country. This of course accounts for the high level production in the intensive grass farming districts. Fodder crops such as rape, lupines, swedes, chou mollier, turnips and conserved fodder in the form of silage and baled meadow hay make it possible to carry a large stock population through the leaner periods of the year with little risk of losses. Purchased fodders and concentrates are rarely used.

NUMBERS OF CITIES & COUNTRY TOWNS:

For a number of reasons such as the long narrow shape of the country, difficulties and slow development of internal road and rail transport due to the rugged topography of the country and the fact that New Zealand is divided into two main islands, there has naturally developed considerable decentralisation of the urban areas, firstly into a number of relatively large provincial cities and secondly to many smaller country towns.

At the 1951 census, when the total population was approximately 2 million, there were 4 cities (and adjacent boroughs) with a population over 100,000; 11 with a population of 20,000-100,000 and 47 smaller towns of over 2,000 inhabitants. This is in marked contrast to Australia where roughly half the population is in the capital cities and the number of reasonably sized country towns
relative to the total population very much lower than in New Zealand.

In consequence, not only has it been possible for the Department of Agriculture to decentralise the extension services into four main regions, but the further development of this policy to locate one or more officers of each division at many country towns (where the amenities and social conditions are reasonable to good) has been a logical and relatively simple sequence.

DEPARTMENT OF SCIENTIFIC & INDUSTRIAL RESEARCH:

This organisation was set up about 25 years ago following recommendations by Sir Frank Heath, Director of the Scientific & Industrial Research Department, England, to provide scientific service to the industries of New Zealand in the forefront of which stood agriculture.

In the agricultural and horticultural fields, in addition to what may be classed as pure research, the D.S.I.R. is responsible, or largely so, for many technical "services" which are functions and sections of the Departments of Agriculture in most other countries. Under this heading are:


Plant Disease - Auckland - research into the nature and control of fungous, bacterial and virus diseases of plants, certification of spray materials and advice on plant quarantine.

Botany Division - headquarters Wellington - Taxonomic and economic aspects of indigenous and introduced plants - maintenance of plant-introduction register - herbarium (70,000 specimens).

Soil Bureau - headquarters Wellington - five district offices - responsible for soil mapping and classification.

The appropriate division of the Department of Agriculture carries out research work on field aspects of the above matters but routine identification of insects, plants, plant disease and soil surveys are functions of D.S.I.R. In effect the staff of the Department of Agriculture does not include, any entomologists, botanists, plant pathologists and soil surveyors as such and any specialist advice or identifications etc., either for use within the Department or following farmer enquiry must be obtained from the D.S.I.R.

Officers of the Department of Agriculture were agreed that the present system worked reasonably satisfactorily and that there was a close liaison between the two organisations. This was no doubt influenced by the close personal relationships which existed - many of the officers of D.S.I.R. being formerly officers of the Department of Agriculture,
However, one could not help concluding that this was not an ideal setup and that these functions should be within the framework of the Department of Agriculture.

Other agricultural activities of D.S.I.R. are briefly as follows:

**Crop Research** - headquarters Lincoln - with 3 sub-stations - the improvement of field crops and vegetables by introduction, selection and breeding.

**Fruit Research** - headquarters, Auckland with five research orchards - varietal, cultural and physiological studies.

**Grasslands Division** - headquarters at Palmerston North, with sub-stations at Lincoln and Gove - the breeding and improvement of grasses and clovers with associated studies of management, utilisation and physiological aspects.

**Tobacco Research Station, Riwaka** - jointly with the Cawthron Institute.

**Wheat Research Institute** - Christchurch advice to industry on cereal chemistry, milling and baking.

**VETERINARY CLUB MOVEMENT:**

In order to improve the veterinary service of the Dominion, more particularly in respect to the treatment of sick animals, the Veterinary Services Council was set up about 1946, consisting of two representatives each of the Government, Dairy Board and Veterinary clubs and one each of the Meat Board, Wool Board and Veterinary Association. This Council was charged with the development of the veterinary club movement and a scheme for the training of the necessary veterinarians. Funds are obtained by levy from the three boards and subsidised by the Government on a £ for £ basis to a total limit of £100,000. The Council subsidises each club up to £1,400 and grants between 10 and 20 bursaries a year for veterinary students to the University of Sydney. The direct farmer contribution to his particular club is determined by that club and is obtained by deduction at the dairy factory or by the wool broker.

The growth of the club movement has been phenomenal. Approximately 40 veterinarians were employed in 1946 - today the number is 120 and there are about 30 vacancies. Considerable further expansion is forecast. There are less than 30 veterinarians in private practice and approximately 50 in the Department of Agriculture.

It is estimated that there is over an 80% coverage in the dairy industry whilst in the last two years the movement has spread to the sheep districts and now about 1/6 of the sheep farmers are club members.

Obviously the Veterinary Club movement must be making a very material contribution to animal extension services in general in addition to the treatment of sick animals.
CERTIFIED SEED PRODUCTION:

In view of the significance of pasture in New Zealand's agriculture it is only natural that considerable importance is attached to the availability of high quality grass and clover seed. To meet these requirements the "Certified Seed Scheme" has been developed. In addition to pasture seeds the scheme has been extended to cover most of the farm "seeds" produced in the Dominion. Only small quantities are imported such as mid season and late subterranean clover from Australia.

The production of certified seed has expanded enormously in recent years and in the main seed producing regions such as Canterbury, Hawke's Bay and Rangatika represents a major aspect of the agriculture. Two examples will serve to illustrate the magnitude of the certified seed industry in New Zealand.

The average annual production of the main grass and clover seeds during the 5 year period 1946/50 was 17,000 tons, 2/3rds of which was used locally and the balance exported. In the Canterbury district where approximately 75% of the certified seed is produced covering some 23 different crops; 137,150 acres were inspected in 1950/51 (over 5,000 growers) including 31,000 acres of perennial rye, 12,000 of H.L. rye and 31,000 of white clover. In this district approaching 50% of the Extension Division's time is spent in this work. The total staff under the Field Superintendent - Christchurch is 64.

The development of improved pasture plants by breeding and selection and the basic production studies, associated therewith, are functions of the Grasslands Division of D.S.I.R. and for other crops that of the Crop Research Division. The detailed work of field inspection, supervision of seed cleaning works, purity and germination testing is the function of the Extension Division of the Department of Agriculture. This includes the Seed-testing Station at Palmerston North which handles with a trained staff of over 50, about 50,000 samples yearly.

THE ORGANISATION OF THE NEW ZEALAND DEPARTMENT OF AGRICULTURE:

On the two succeeding pages the main divisional organisation of the Department and the detailed setup of the Extension Division (previously known as the Fields Division) are diagrammatically presented. The Extension Division is one of the four divisions, (Extension, Dairy, Horticulture, and Animal Industry) mainly engaged on extension services and the set up is broadly the same in all four.

Each of these divisions is controlled by a Director located at Wellington who has under him four superintendents responsible for the direction of the field staff in each of the four main regions of the Dominion. In each division there is often
at Head Office and at country centres or institutions, a number of specialist officers, responsible to the Director, who concentrate on specialised phases of the work of the division.

A brief description of the main functions of these four divisions and also that of Animal Research is as follows:

**Extension Division**

For reasons already indicated it has been possible to develop a policy of decentralisation so that field officers are in close contact with farmers. Today there are 43 individual districts with one or more Instructors in Agriculture or Field Instructors carrying out the various functions of the Division. These include instruction to farmers, field experimentation on soils, fertilisers, crop and pastures, seed certification, surveys of farm practices, crop and pasture competitions, field days, lectures, radio talks, Journal article preparation and the organisation and development of the Young Farmers' Club movement. This movement is under the control of the Extension Division of the Department which provides a full-time organising Secretary and two assistant secretaries. There are 310 active clubs.

Field experimental work is an important aspect of the work of this Division. Field officers are encouraged to carry out experiments dealing with such matters as fertiliser requirements of particular soil, variety and strain trials with new releases from the Grasslands and Crop Research Divisions of D.S.I.R. and the use of hormone sprays for weed and insect control. The experimental work of the field officers is under the overall supervision of specialists officers in regard to methods and experimental procedure. Senior officers were emphatic in their insistence that all field officers should be associated with experimental work maintaining that it not only gave a definite answer to a particular question, but also kept the officer au fait with modern research and trends and further greatly improved his standing in the farming community.

The Extension Division controls a number of research stations and the experimental work on several Government demonstration farms. The principal one is probably the Soil Research Station at Hamilton where an intensive, high level, programme of research into manurnal aspects of pasture production is being carried out. At the Invermay Research Station near Dunedin, established in 1949, the experimental programme includes aspects of pasture establishment and grassland improvement on second and third class land. Considerable progress has been made in the short time since the station was established and the work being carried out is highly regarded by the farmers of the region. Spectacular responses have been obtained with molybdenum.
EXTENSION DIVISION

Director

At Head Office

Wellington.

Asst. Director

Field Superintendents (4)

Auckland, Palmerston, Christchurch, Dunedin

North

Asst. Field Superintendents (4)

Senior Agric. Instrs.

Specialists such as

Agric. Instructors

Farm Machinery

Farm Economists

Fields Instructors

Rural Sociologists

Demonstration & allied stations

such as

Dargaville
Stratford
Hawera
Winton.

Specialists

Attached to H.O.

Agrostologist

Land Utilisation Off.

Seed Certification

Supervisor Fertiliser

Crop Experimentalist

Farm Engineer

Farm Forestry officer

Weeds Officer.

Rukuhia

Invermay

Seed

Testing

Station

Station

and

Winchmore

Irrigation

Research

Station.

Palmerston

North.
NEW ZEALAND DEPARTMENT OF AGRICULTURE.

HEAD OFFICE WELLINGTON - LARGELY ADMINISTRATIVE AND EXECUTIVE.

Director General of Agriculture.

Asst. Director General.

----------- Divisional Directors  -------------

Other field experimental areas controlled by this Division are the irrigation research station - Winchmore central Canterbury and the demonstration farms at Dargaville, Stratford, Hawera and Winton.

As indicated earlier one of the prime functions of the Extension Division of the Department of Agriculture is the control of the detailed operations for seed improvement under the Seed Certification scheme. The activities in this regard are twofold. Firstly, there is the organisation for the build up, in the field, of commercial supplies of the small lots of pedigree seed produced by various research organisations. The second phase covers the various aspects of field inspection, seed cleaning, station supervision, tests for purity, germination etc. to ensure the overall quality of every commercial line of seed. Naturally much of the routine work of seed certification is carried out by junior officers. It is claimed that such work is good training experience and on the field side is a useful means of "entree" to the farmer on the more general aspects of extension.

Specialist officers and activities of the Extension Division include farm machinery, drainage, irrigation, farm economics, rural sociology, land utilisation, weed control and farm forestry.

Dairy Division:

This division is concerned primarily with the production of butter and cheese for export. The functions are largely inspectorial and regulatory and statutory authority is provided under the Dairy Industry Act and the Dairy Produce Regulations.

These may be briefly summarised as follows:

1. Instruction on the care and treatment of milk and cream at the farm by 85 Farm Dairy Instructors responsible to the Supervising Dairy Instructor for the district.
2. Check grading and testing of milk and cream at the factories by 7 special instructors also responsible to the Supervising Dairy Instructor.
3. Instruction at the factories in the manufacture of butter, cheese caesin and dried milk by the Dairy Instructors with the supervision of specialist officers including a Superintendent of Cheese Instruction and a Superintendent of Butter Instruction.
4. There is also the Superintendent of Dairy Produce Grading who controls 31 Dairy Produce Graders and 31 Dairy Produce testers.
5. A Dairy Chemist and staff supervises the chemical and bacteriological aspects.
6. Since 1952 the registration and supervision of town milk supply classes has been carried out by Instructors of the Dairy Division.

Note: Since July 1951 all herd recording services are carried out by the N.Z. Dairy Board.
Animal Industry Division:

This division is similarly organised to Extension and Dairy Divisions namely with a Director and Assistant Director in Wellington (largely administrative) and four Livestock Superintendents (Veterinarians) at Auckland, Palmerston North, Christchurch and Dunedin. These four superintendents control the work of the staff of Veterinary Officers, Livestock Instructors, Sheep and Wool Instructors, Poultry Instructors and Meat Inspectors within their areas.

Each of these four regions is divided into a number of livestock instructorates, in all 61, with veterinarians at suitable centres. There are some 50 veterinarians in the Animal Industry and Animal Research Divisions of the Department and in addition about a further 120 under the Veterinary Club movement employed full time on work for members (all primary producers) of the respective clubs.

There is close liaison between officers of the Animal Industry and Animal Research Divisions including the facilities of The Ruakura Animal Research Station and the Animal Research Laboratory Wallaceville (for diagnostic services).

In addition to the advisory services indicated by the sections set out above, the Animal Division is responsible for the administration of the Stock Act which provides for the control of certain specified diseases, the Noxious Weeds Act, the Rabbit Nuisance Act and the supervision of the import and export of stock. Under the Meat Act all meat slaughtered at public abattoirs and meat export works is inspected by meat inspectors of this Division.

Horticulture Division:

The Horticulture Division functions under the same general set up as the previous three described but with the four Horticulture Superintendents located at Auckland, Palmerston North, Nelson and Christchurch under the general administration of the Director of the Division at Wellington. The district staffs are responsible for instruction, inspection, experiments, investigation and regulation services to the fruit, vegetable, horticultural and bee keeping industries. Specialist officers include a Research Superintendent; Biologists and Plant Pathologist (mainly concerned with plant quarantine); viticulturalist, specialists on pip, stone, berry citrus and sub tropical fruits, storage specialists, floriculturalists, horticulturalists and vegetable specialists. Close liaison is maintained with the Plant Diseases Division of the Department of Scientific and Industrial Research. Numerically Horticulture is not as large as the other three extension divisions due no doubt to smallness of the fruit growing industry relative to other types of agriculture. The magnitude of the Beekeeping Industry is however worthy of mention. In 1952 there were 6650 registered beekeepers.
owning 12,497 apiaries and 189,610 hives. Seventy part time apiary instructors were employed to assist the Department’s permanent instructors.

**THE Animal Research Division:**

This Division was established in 1939 to co-ordinate the animal research of the Department of Agriculture. The work as organised, under the direction of the Director of the Division at Wellington, around the two main Research Stations at Wallaceville and Ruakura each under the control of a superintendent.

Wallaceville is the centre for disease investigations and the diagnostic services for specimens forwarded by veterinarians throughout the Dominion.

Ruakura is devoted to animal research mainly in connection with problems of animal production.

The work of this Division is almost entirely research including investigation of diseases, basic problems of animal production, examination and diagnosis of diseased specimens and the development of techniques, procedures, vaccines etc., for the control of epidemic diseases. The detailed procedure for the Artificial Breeding (insemination) Scheme now being operated under the control of the Dairy Board was developed at the Ruakura Research Station, whilst the improvements in milking machine design and efficiency perfected at this station have been widely adopted.

**GENERAL COMMENTS & IMPRESSIONS:**

In order to obtain a broad general appreciation of the agricultural extension services in New Zealand my enquiries were not restricted to officers of the Department of Agriculture and the Department of Scientific and Industrial Research. I also had considerable discussions with representatives of the Dairy Board, Meat and Wool Board, State Advances Corporation, Agricultural Colleges (Massey & Lincoln) and with a number of farmers not always introduced by officers of the Department of Agriculture.

New Zealand is essentially a primary producing country, at present enjoying a high level of prosperity dependent largely on a high export trade of quality products. Roughly 50% of the total production is exported, 95% of which is primary products, the principal items in order of magnitude being (1950) wool (43%) butter and cheese (30%) meat (16%) and hides (6%).

Quite naturally technical agricultural services for research extension and regulatory functions have played an important role in the overall development of the Dominion’s agriculture. Further the various authorities concerned are fully aware that these services must continue to expand and develop to keep pace with changing technical aspects and economic considerations. In this regard,
there is a very strong appreciation of the role of an adequate sound, active and up to date extension service.

For reasons which it is quite unnecessary to particularise, the detailed set up of the N.Z. Department of Agriculture is most unlikely to be the ideal for other countries. It has been developed to suit their own local range of agricultural productions and conditions and would be probably unsuitable in other lands. For example, New Zealand's main agriculture is animal production from the grazing animal and in consequence the Departmental organisation is quite strong on the animal and pasture side. Some different set up, certainly on the relative strength of the different sections, would be necessary where arable crop production was a major form of agriculture.

By way of conclusion the following comments are submitted on what appears to the writer as amongst the rather thought provoking aspects of agricultural extension and allied services in New Zealand.

1. It is apparent that the Department of Agriculture has not developed in a haphazard fashion with the increasing demands for its services. The present organisation has been progressively planned and developed over the years. It is a good department and although one encounters some criticisms these are not of a major nature. It can be expected that these will be gradually rectified with increased staff recruitment, particularly of university graduate standard.

2. A high degree of decentralisation of the Department's services has been achieved by the division of the Dominion into four main regions, each with a Superintendent of the four extension divisions (Animal Industry, Dairy, Extension and Horticulture) in charge of the activities of his division in the particular region. At the same time broad aspects of policy and executive administration are co-ordinated through the Directors of these divisions at Head Office - Wellington. Under this form of regional set up, considerable local determination of activities etc., with a better, speedy and more personal service to the farming community is possible whilst at the same time ensuring uniformity on policy matters.

3. This regional decentralisation is only possible and certainly only likely to function properly where there is a minimum of divisions so as to provide satisfactory administration both at Head Office and regional levels.

4. The grouping of field officers of the several divisions into District offices at reasonable sized country towns, is also an admirable feature of the Department's general organisation. It is a natural sequence of the intensive agriculture of New Zealand and the numbers of extension officers in the country but is none
the less appreciated by the farming community. It permits of good office organisation with full clerical facilities; the better use of "top level" men; good training and supervision of juniors; and a better presentation of technical services to the farmer.

5. In the "Extension Division" in particular there is a very strong experimental approach both to the solution of the farmers' problem and to the district demonstration of research findings. The general procedure is similar to that in Western Australia in that there is a considerable amount of field experimentation of both a basic and demonstrational nature. This enables farmers to see the results of all manner of research findings demonstrated in their own districts; keeps the advisory staff up to date with the research worker and ensures a two way link between the advisory and research sections - demonstration is, in effect, the best single method of extension.

6. Technical staff recruitment is an aspect of the New Zealand Department of Agriculture which, in the somewhat limited discussions in the time available, would appear to warrant some more positive action. This comment applies more particularly to the senior technical staff of University graduate training. The type and degree of basic and scientific training required for the varied technical services of an agricultural department is a big question and is subject to considerable difference in viewpoint. Detailed discussion is not warranted on this aspect.

It is pertinent to point out, however, that at the two University Colleges (Massey and Lincoln) only about 20 students were likely to graduate in the degree course in agriculture in 1953 and only two of these would enter the service of the Department of Agriculture. Numbers in this order seem quite inadequate to ensure a sufficiency of officers well trained in the scientific principles of agriculture for the senior positions of a good extension service.

On the other hand the cadet-bursary system, supported by the Veterinary Club movement is providing a much better core of trained veterinarians to the animal sections of the extension services in New Zealand.

To my mind these two comparisons emphasise the importance of definite plan of staff recruitment on the part of the employing authorities to ensure an adequate quality service.

A positive cadetship scheme would indicate requirements of staff, a certainty of employment and by selection probably a better matriculated applicant, and in the ultimate a regular flow of adequately trained personnel for the senior technical positions.

7. The Journd and Publicity section of the Department is first class. It is under the direction of an Editor in chief assisted by a staff of trained journalists and artists.
The "Journal of Agriculture" is a monthly publication and although chargeable has now reached a circulation of 87,000. This section produces a large range of attractive bulletins on practically every aspect of New Zealand Agriculture and related subjects and also "reports of proceedings" of several agricultural associations.

ACKNOWLEDGMENT:

This report is the outcome of a tour of New Zealand during November and December, 1953 made possible through the recommendation of the Western Australian Director of Agriculture (Mr. G.K. Baron Hay) and financed under the Commonwealth Extension Services Grant. In New Zealand a very well planned and detailed itinerary was arranged by the Department of Agriculture covering both Islands from north to south. This enabled a broad general appreciation of the agriculture of the Dominion to be obtained whilst visits were made to practically every agricultural institution, with discussions with literally dozens of agriculturalists on the many organisations concerned as well as with many primary producers. Grateful acknowledgment is made to all concerned.
As a result of my trip to New Zealand and some general understanding of the Department of Agriculture "set-up" in most States of the Commonwealth, I wish to submit the following report and suggestions for the improvement and development of the extension services of this Department. These suggestions are specific to Western Australia and in consequence hardly fall in the ambit of a more general report on agricultural services in New Zealand.

I would say, firstly, that there is no ideal Department of Agriculture organisation or "set-up" which would be suitable for all countries. There are certain basic requirements such as adequate suitably trained personnel for the varied types of extension activities and research sections able and ready to tackle the many technical problems as they arise. However, the broad organisation, as well as the more detailed aspects, must be developed in each country to suit local conditions taking into account such things as the types of agriculture and the degree of agricultural development of the region.

Most agricultural departments or services have developed from very small beginnings but over the years have grown to many times their original size. What has been done in the past in the way of organisation may not have been basically wrong but the growth of personnel, of services, and of the demands by the State and the farming community for a wider, more specific and frequently more technical service makes certain changes in general organisation essential.

By way of example it is pointed out that in this Department say 50 years ago, there was perhaps a dozen, mainly single, officer units. Today this has grown to about 17 branches with between three and 30 or so officers in each branch. This situation can only result in only a very loosely knit organisation without the ideal co-ordination between sections and branches.

In a consideration of the ideal "set-up" for extension services it is suggested that the following factors should be borne in mind.

1. As far as practicable the extension services should be in the country and just as much a part of government services available to the community as schools, hospitals etc. This envisages a policy of decentralisation.

2. A better service is likely where officers, even of different branches or divisions are grouped together, rather than where they are located at a greater number of centres as single officer units.

3. For sound direction on major aspects of policy matters and the development of an integrated and co-ordinated service as one
whole, extension services must be grouped into a relatively small number of branches. This suggests organisation on a divisional basis.

After mature consideration I, therefore, suggest as here-under as a long term policy for the development of the Department as a whole and with special regard to its extension activities:

1. The organisation of the Department on a divisional basis with a minimum number of divisions on the extension side.

2. The adoption of a policy of decentralisation of the extension services with a greater location of officers in the country.

3. The grouping of officers of each division at district offices, with appropriate clerical, stenographic and general office facilities as distinct from single officers at a greater number of individual centres. Advantages of this system would be
   (a) control by district adviser - should not be difficult owing to limited number of centres - incentive for advancement for extension officers
   (b) better office and clerical facilities - less time spent on clerical work by technical officers
   (c) better handling of correspondence - telephone enquiries - office has knowledge of officers' daily movements
   (d) under such a set up instructors, technicians, inspectors, can make a material contribution to the overall service under the direction and supervision of the more highly trained and experienced adviser.

The divisional grouping of branches as suggested in (1) would make the district office organisation much more workable than if it were developed under the present system of numerous small branch controls. Further it would enable certain non graduate staff to form part of the overall extension service. In my opinion the young agricultural college graduate and the non technical instructor type of officer can be usefully employed in an agricultural service provided they are under the direct supervision of trained seniors. Without this supervision they can do more harm than good and bring the Department into disrepute. The service should be primarily based on university graduates with lesser trained personnel to assist in the less technical aspects.

4. The formulation of a plan for the regular yearly recruitment of staff.

The demands on the Department for more extension services are growing. Somewhat greater coverage in the present services is no doubt possible by the use of films, radio, press releases,
pamphlets etc., but primarily to give more extension service, more officers are required. Experience has indicated that suitable applicants - graduate or non-graduate - are not available for any expansion of the service. There are barely sufficient to make good losses of officers from all causes. An estimate should be made of staff requirements for say the next 5 years under -
   (a) graduates
   (b) College diplomate
   (c) instructors where formal technical training not essential.

From this it should be possible to develop a plan so that this staff will be forthcoming. The cadet system would appear to have some merit and is worth exploring for (a) and (b). Experience suggests that it will attract a good type of applicant who is likely to remain in the Departmental service after his period of bond.

5. An information and publicity section should be set up under the control of an experienced graduate agriculturalist with some writing ability and assisted by trained journalist(s),
   (a) for the preparation of press articles, leaflets, Journal articles etc., for the general public and farming community.
   (b) to organise a regular information service to field officers.

6. The organisation of refresher and instructional courses. Field officers are very inadequately catered for in this regard under the present system. Most branches neither have the time nor a suitable officer to detail to such work. It would appear that this is rather a specialist's job for one who has fairly wide agricultural experience and an appreciation of the aspects which, from time to time, should form the subjects for refresher courses. He should have a flair for this type of organisation work and be of such standing as to obtain the co-operation of suitable lecturers and demonstrators.

The expressions of appreciation, particularly by country officers, of the conference organised by the Institute of Agriculture (March 1953) suggests that refresher and instructional schools would have both a psychological and material value.

(Items 5 and 6 could be under the one control and financed largely by the Commonwealth Extension Grant).

7. Assistance for travel and post graduate study. A frequent criticism, to the point of a grievance, particularly amongst extension officers, is the absence of any assistance which will enable them to visit agricultural institutions outside the State. There is no doubt that visits of this type would broaden their knowledge, act as stimulus to their future activities and in some cases given them a more favourable appreciation of their own conditions. Most opportunities for travel appear to be confined to
specialist and senior officers, whilst the ordinary extension field officer gets very few chances in this regard.

It is suggested that consideration be given for a plan for assistance for travel

(a) specialist officers for post graduate study
(b) extension officers - partial assistance basis
   e.g. to approved requests - at not more frequent intervals than once every 5 (?) years - a fortnights leave with pay in addition to annual leave - to visit specific institutions - half expenses plus fares.

(It would appear that the latter (b) could come within the Commonwealth Extension Grant scheme).

The diagrams attached set out suggestions for
(a) divisional grouping of the branches of the Department,
(b) location and staffing of district offices or (centres).

The latter could be set up within 1-2 years and within 3 years staffed as set out. Further staff could be added as they become available. Merredin would be a further centre in the Wheatbelt, at a later period. The South West centres might be subject to modification as I am not so familiar with the area.

SUPERINTENDENT OF WHEAT FARMING.

9th Dec., 1954.

3.H.
| Horticulture including Vegetables Tobacco Viticulture | Dairy | Veterinary including Animal Health Laboratory Poultry Apiculture | Soils including Irrigation | Wheat & Sheep including Irrigation Weeds | Research & Services including Plant Pathology Entomology Botany | Publicity Information Film Units Information service to field staff Refresher Courses | North West (? under Veterinary Division) |
GERALDTON:
District Adviser
Adviser
Weeds Officer
Sheep & Wool Instructor
Stock Inspector
Veg. Instructor

MOORA:
District Adviser
Adviser
Stock Inspector
Weeds Officer
Sheep & Wool Instructor

CUNDINUMIN:
District Adviser
Adviser
Sheep & Wool Instructor
Stock Inspector
Weeds Officer

NARROGIN:
District Adviser
Adviser
Sheep & Wool Instructor
Stock Inspector
Weeds Officer

KATANNING:
District Adviser
Adviser
Sheep & Wool Instructor
Stock Inspector

ALBANY:
District Adviser
Adviser, Wheat
Horticultural Instructor or Adviser
Weeds Officer
Stock Inspector
Veg. Instructor

HARVEY:
District Adviser
Irrigation Officers (3)
Dairy Adviser or Instructor
Stock Inspector
Horticultural Instructor
Vegetable Instructor

BUNBURY:
District Officer (Vet.,)
Dairy Adviser
Dairy Instructor
Veg. Instructor

BRIDGETOWN:
District Adviser
Horticultural Instructor
Dairy Adviser or Instructor
Stock Inspector
Sheep & Wool Instructor

MANNING:
District Officer
Tobacco Instructor
Horticultural Instructor (fruit)
Dairy Adviser
Dairy Instructor
Vegetable Instructor

BUSSELTON:
District Adviser
Dairy Instructor
Stock Inspector.