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REPORT
ON OVERSEAS STUDY TOUR

JUNE / JULY 1970

by S.T. Smith

Tour organised by the Department of Primary Industries and financed from the Commonwealth Extension Services Grant to examine agricultural extension.

Western Australian Department of Agriculture
INTRODUCTION

The above tour was organized by the Department of Primary Industry from monies allocated from CESG funds. The objects of study were stated as including basic extension philosophy and objectives, organizational aspects, roles of Universities and colleges in extension training and extension research, staff recruitment and development and roles of staff trained at different levels, research extension liaison, farm management extension and extension methods, programme development and evaluation. The group included a representative from each State and from the Commonwealth Department of Primary Industry.

During the space of eight weeks, South Africa, the Netherlands, United Kingdom, Canada, United States and New Zealand were visited. Within the short period in each country one could only contact limited people and the lines of enquiry were almost entirely with extension personnel. This may have given a distorted picture as it did not allow a better appraisal of research services and research extension liaison.
from both viewpoints. Another factor which mitigated against a clear picture of any individual situation was the problem of seven individuals each trying to question a single person or group of persons simultaneously, often within limited time. This did not allow a continuity in any specific line of enquiry.

Arising out of the tour it seems relevant to set down some of the impressions gained. These impressions are greatly simplified and even in this form it may be necessary to read them in conjunction with the appended summarised notes on each individual country.

OVERALL IMPRESSIONS

In none of the countries visited were similarities of detailed organization apparent. This is understandable in-so-far as it is difficult to greatly modify a structure which has gradually evolved. Furthermore, structures are somewhat dependent on functions and the latter are closely related to the type of agriculture and its degree of intensity. Hence operational units in countries such as Australia and South Africa are understandably different to Holland, United Kingdom and parts of Canada where in any one area there are so many different forms of agriculture, some very intensive and high specialised. Furthermore, problems of liaison are relatively simple in countries of smaller dimensions with intense agricultural production, such as
Holland, where distances enable easy and frequent discussions. One can therefore only logically gain general impressions and note trends in the development of agricultural services to farmers. This will be done under a number of headings.

(i) Regionalisation

In all countries visited there was a strong tendency to regionalise services. The autonomy of regions varied greatly. In the United Kingdom for example, extension services in regions were very autonomous with a very small Head Office structure. At the other extreme, as in South Africa, regionalisation was accompanied by a massive Head Office structure. Reasons for such differences vary and are only partially related to need. The need to some extent is possibly related to whether research is a major function of the service and whether it is organized separately from Head Office. Other factors such as whether subject matter infringing on agriculture are wholly controlled by the Department of Agriculture or by other Departments, also play a part.

Autonomy of regional centres appears to be an advantage in that field personnel can have greater participation in formulating programmes, working policies, etc. Some of these advantages seem to be lost from too many structural tiers at the regional level. This is shown in the United Kingdom where there are three field levels of region, county and district where a district adviser is just as organisationally
remote from the regional headquarters as he may be from Head Office in a lesser tiered field structure.

The extent to which a region can really be autonomous must depend in part upon the extent to which it influences local agriculture. This influence varies depending on the extent to which research as well as other services are co-ordinated. In no case did there seem to be strong research and extension regionalization together. In most cases research control was at Head Office and frequently in another Department. This seemed to necessitate an elaborate mechanism of committees to improve co-ordination. It also tended to make extension a separate profession to research with the result that in some cases the extension organization tended to over-emphasise extension methodology, management, etc., at the expense of technical data. I gained the impression that full advantages of regionalization could only be obtained if extension and research could remain as close together as is possible without unnecessary duplication of research, or of expensive specialised equipment.

(ii) Staff Qualifications

In all countries the basic qualification for research personnel was a degree and in many countries a higher qualification was essential. For extension, however, the minimum qualification varied from the 1st or 2nd level agricultural high school as in Holland, to a National Diploma.
of Agriculture plus, in future, one year's course in extension as in the United Kingdom, to a degree as in South Africa, Canada and the United States of America. It can be strongly argued that the training of many of the extension personnel in basic principles in some countries is somewhat low. Where this is the case it can lead to the need for greater specialisation to handle recipe type extension. Such specialisation tends to reduce the original functions of the general adviser who seeks other outlets of function.

In none of the countries visited were there any undergraduate cadetship schemes although in one country (Canada) scholarships were offered in the final year of the undergraduate course.

(iii) Undergraduate Courses

In nearly all cases the basic B.Sc. in Agriculture was a four year course although a lesser three year course was often offered. In general, the courses seemed to have a higher number of individual agricultural subject matters included than in Western Australia (e.g. Dairy Husbandry, Plant Diseases, Pig Husbandry, etc.) with possibly a consequent lesser emphasis on basic principles. Diplomas were strongly subject matter orientated.

In some cases extension methods were taught within the undergraduate course. From a general cross-section of opinion it was felt that their inclusion was at the expense
of desirable agricultural subject matter. While most agreed on the need for extension training they felt that the quality of the agricultural degrees could only be preserved if the extension training was additional, necessitating a longer course. Many felt that extension training was of far greater value following field experience.

(iv) Post Graduate Courses and In-Service Training

In most of the countries visited post graduate studies were said to be favoured or encouraged. Only in a few cases however, was there clear evidence of positive encouragement. In South Africa, extension officers could return to University at full pay and do Honours in extension (equivalent to Diploma in Extension in Australia). Research officers were similarly encouraged to do an M.Sc. in Agriculture. Promotion beyond a certain point was dependent on these additional qualifications. In the United States, sabbatical leave on pay could be used to attend semesters to give credits to high degrees. In Canada, graduates could return to University on half pay subject to appropriate bonding. The extent to which the latter facility was limited was not learned. In no case could post graduate agricultural degrees be done externally.

In all countries considerable in-service training was given and on the average about 10% of time was spent on various forms of in-service training. The emphasis of this varied from largely extension methods, to extension methods
and management, to training which also included a high technical component. One gained the feeling that it is most important to not neglect the technical refreshment and that its absence tends to encourage the stream of general advisers into less technical avenues with the resulting need for more specialists. The lack of a basic training also seemed to have a similar effect. If one accepts the opinion of many overseas and local people that some association of extension workers with research improves them technically one must also accept the need of using other forms of technical updating and improvement, one of which is short term technical in-service courses.

A range of reporting systems is used for staff reporting. In some countries as in South Africa, these are used as promotional guides. In other countries they may be used as eligibility for promotion or for indicating staff training needs. Their values seem limited in relation to the time spent on them, particularly as many of the reports were subjective. In most countries career ranges were more limited than those in Western Australia and promotion depended upon vacancies occurring. The use of the latter term by our informants, however, could have been misleading; it did appear from the structures noted that positions may have frequently been created to aid the promotion of specific individuals.
(v) Farmer Education

In most of the countries visited, the agricultural component of farmers' education is fairly low as is their general education. It is perhaps highest in the United States and is being actively encouraged in Canada. In most countries there is little attempt to improve the technical knowledge of farmers in a co-ordinated way. Only in Canada and the United States are formal short courses in various subject matters given extensively. Farmer study groups operate in many countries although in these the prime object is one of farm management. It seems that as a means of improving farmers' basic technical grounding, the technical short courses or even perhaps written material could serve a useful purpose.

(vi) Ratio of Advisory Staff to Farmers and Extension Methods

Surprisingly, in the countries visited the ratio of farmers to general advisers (the farmers intended contact) does not vary as greatly as one would imagine although the back-up specialists, many of whom are located in the field and do contact farmers, do vary considerably. For example, in Holland the ratio is about one general purpose adviser to 500 farms. In South Africa it is about one to 1,000.

All services basically aim at individual advice on request but all use the various forms of mass media normally available. Canada and the U.S.A., however, appear to use printed material to a greater extent. With the latter there
is an increasing tendency for releases to be in two forms.

(1) Formally presented bulletins regularly updated covering all aspects of a particular field of agriculture, e.g. “Corn Growing in Ontario” rather than journals covering a variety of topics in a single issue. In the Province of Ontario there is no Departmental journal. The bulletins are not large but include highlights of recent research. Authorship is frequently not shown although contributors may be listed. In some countries such as New Zealand, they are actually sold.

(2) Information leaflets restricted to cyclostyled material covering a recent research finding and recommendation are very common. These are widely distributed and are suitable for adding to a loose leaf binder which is available for purchase.

Farmer study groups are quite common but enthusiasm frequently wanes unless associated with management budget comparisons. Their serious limitation appears to be that extension officers can only deal in detail with up to three or four study groups adequately. The size of the study groups should be restricted to about 12 or so for effective working.

(vii) Programmes, Development and Evaluation

Most extension services seem to have entered the field of programme development to varying degrees. Various methods of formulating programmes are used but few of them appear to
be defined very precisely and none of those seen were preceded by an effective situation analysis. Programmed extension by prior setting of objectives appeared to occupy varying amounts of time of extension officers. The general feeling was that no more than 30 to 40% of individual officers' time can be organised on a pre-set programme. From an extension officer's viewpoint, the establishment of a more defined goal appears to be more purposeful in approach and as a consequence more satisfying and rewarding personally. Programme evaluation, however, appeared to be extremely difficult and at no centre was a programme evaluation seen. Some stated merely that the objective had been obtained. This in itself is hardly an evaluation of the success of the programme. Depending upon the objective set it is often hard in the short term to determine whether effects are due to the programme. Also, if the objectives set are not high or ambitious, it is hardly a measure of effectiveness of extension methods, and frequently it is hard to evaluate the part extension has played. Extension evaluation and initial situation analysis appear to be the more neglected (and perhaps difficult) parts of extension programming.

(viii) Farm Management Services

In all countries visited attention has been given to aspects of farm management although the term "management" appears to have many different meanings ranging from teaching
of principles of gross margins, partial budgeting, analysis of comparative returns in groups, record keeping and interpretation, counselling on managerial aspects, to even computerised farm accounting systems. In all cases the initiative seems to have been taken by Government agencies or extension personnel because they presumably see this as a grave need for farmers welfare. In whatever form management advice is given it is readily appreciated by farmers. Some like it as a means of discussion to verify their own thoughts; others like it as a real comparative analysis of alternatives. The computerised services are sometimes farm management research studies as in the United States of America, and sometimes an extension service as in Canada at the Federal level. When such services are initiated it is rarely appreciated the effect on extension officers who are called on for interpretation and further counselling. The field extension officer can only deal with about 30 farmers in detail and frequently the same farmers annually. Only in the U.S.A. has there been a very positive Federal policy stated that the extension role is to teach the principles of management to farmers, accountants and others connected with agriculture in management schools, so that they can interpret data computerised commercially. Even so it is feared by many that extension officers will be called upon continually for counselling with the result of a heavy demand on their time.
Opponents of such services ask why business advice should be provided to farmers as distinct from persons engaged in other business ventures.

Farm management is clearly important. However, it is equally clear that because of the effect on extension services very careful thought should be given before venturing into the field of farm management. One must be quite clear as to objectives and what benefits will accrue to farmers. It is also necessary to consider to what proportion of farmers such services can be given and to what particular level in managerial ability such a service should be aimed. Consideration in detail as to the form which such farm management services will take must be given. Also, it is necessary to determine to what extent the service will be limited and how it can be controlled within such limits.
GENERAL

As in Australia there are Federal and Provincial Governments. Agriculture was initially mainly a Federal responsibility although responsibilities have been passed increasingly to Provinces. The result however is that the Federal Department - Canada Agriculture is comparatively large and is particularly active in the field of economics, production and marketing, animal health research and services, and general agricultural research. It operates 26 research stations and 12 experimental farms as well as several research institutes. The total staff is 11,000 including 3,500 associated with research. While in general terms one is told that, apart from economic aspects of marketing and trade including commodity analysis, market intelligence etc., Canada Agriculture is mainly responsible for research, and Provinces for extension, there is considerable overlap. For example on the extension side the Federal Department has an active information centre disseminating 6 tons paper daily. It also has a farm management division (in the Economics Department) now involved in a computerised farm record system currently handling 5000 farms annually with an expected coverage of 50,000 within a few years. The information unit (staff 76) is operating ostensibly to gather and disseminate research findings - it also however distributes
technical news sheets direct to farmers particularly on matters affecting more than one Province. It produces a loose leaf series (Canadex) for research data dissemination. This has a wide coverage and is probably far more useful than Rural Research which summarises less than 10% of published papers, and none of the unpublished research.

While it is claimed by Federal Authorities that the Provincial Governments are concerned mainly with extension, one's impressions (judging from the Ontario Province) is that their activities are far wider. Perhaps the progressive movement into the fields of economics, research, teaching etc., is responsible for the type of organisation which has developed. (See organisation for Ontario).

PROVINCIAL AGRICULTURAL SERVICES - (Based on Ontario Province)

Agriculture in Ontario involves 100,000 farms although a large number of these are small and uneconomic - 4% of farmers earn 30% of the total income from farming. The farmers are served by field personnel at regional and county level. In Ontario there are 9 regions each controlled by a regional director or area co-ordinator. (Title varies). Within each region are several county agencies, there being 54 in all.

At the HO level as shown on the chart there are several broad divisions, one being Research and Education and another Production and Rural Development Development. It is within the latter that the extension branch is centred along with several other branches or units (Home economics, Soils and Crops, Livestock,
Apiculture and Horticulture, Crop Insurance, Junior Farmer and Cooperative Loans, an Entomologist and ARDA (Agriculture and Rural Development). Representatives of most of these departments are centred in the field at the regional level and some at county level.

At the regional level one may find livestock specialists, soil and crop specialists, Home economists, an ARDA specialist and an Agricultural engineer together with an Agricultural Representative and an Associate Ag. Rep. Of these only the Ag. Reps and the Ag. Engineer actually come within the extension branch, the others belonging to the other subject matter branches of the Production and Rural Development Division. The Ag. Reps would have their offices separated from the regional office and within the specific county for which they are responsible.

The Agricultural Representative is administratively responsible for his office (even if it is at regional Headquarters) and is responsible for coordination within the county. The regional director or area coordinator has no administrative functions but is responsible only for coordination of programs. He is responsible to the Director of Extension. The specialists are responsible at H.O. to their own departments for subject matter but to the area coordinator for programs. The area coordinator may have been recruited from an agricultural representative or from a specialist. In fact there is quite a degree of lateral movement from
specialists to Ag. Reps and vice versa.

Agricultural Representatives are the basic experienced extension officers. They are all graduates (as are the specialists) and are recruited as associate Ag. Reps progressing to Asst. Ag. Reps after about 2 years and to Ag. Reps after a further 2 years. At the county level all these Agricultural Rep. categories may be found. The Associate and Asst. Reps are given specific responsibilities such as looking after 4H clubs as well as general assisting responsibilities. There may also be diplomates called Extension Assistants to provide general assistance on youth work, etc., as well as having specific responsibilities in drainage, etc.

At H.O. the Director of Extension is assisted by Associate directors for staff development, for programs and for farm management as well as a senior agricultural engineer.

One gets the impression that as far as formal organisation is concerned the H.O. organisation has just evolved gradually. The field organisation of extension however appears to be well coordinated due to the presence of an area coordinator. His duties in this respect are achieved by all officers in regions meeting annually to formulate an extension program. It is subject to modification at H.O. after which it is the responsibility of the area coordinator to coordinate activities of the various personnel to achieve the end desired. At the county level.
ADDITIONAL POINTS WORTHY OF MENTION

1. Research

The Ontario Govt. owns many research stations. The research work on these is controlled by the College of Agriculture within the University of Guelph. The University of Guelph has both teaching and research functions. Money for research comes from the Ontario Dept. Agriculture and Food and the University undertakes research on a contract type basis. Research priorities throughout Ontario are subjected to the influence of a Research Institute - a committee of farmers, business people and representatives of farmers organisations. Proposals for research pass through the Institute in order that their opinion on its relevance can be given. There are also non-statutory research committees between Provincial and Federal level. At Provincial level all field personnel are brought together once a year to discuss research needs.

There are many Agricultural Colleges. While all teach some farm management the emphasis is on technical subject matter. The need for strength in technical subject matter is emphasised even by extension personnel.

The Dept. of Agriculture has an active program to
encourage farmers to undertake Agricultural College courses to raise their standard of technical education which at present is at about our junior standard. The colleges and extension offices also hold for farmers programs of continuing education in the form of short courses of about 1 week in different subject matters.

4. Post Graduate and In Service Training of Graduates

In Ontario there are no cadetship schemes although post graduate formal training is encouraged and assisted. Promotion however is not dependent upon having post graduate degrees. For research on M.Sc. is almost essential and persons are allowed to pursue an approved project at University on half (or more) salary subject to being bonded for twice the period of post graduate training. Extension personnel are also encouraged to the extent of receiving \( \frac{1}{2} \) salary during course. There are many short in-service courses of 3 to 6 week duration in subject matter and farm management. The time of individuals spent on in-service training courses is about 10%.

Courses in management are also offered to bankers.

In addition University staff frequently visit regional centres to give talks extending over 1 to 2 days.

5. The Ontario Department of Agriculture has an active information centre centred at the University of Guelph in order to be close to sources of research information. Printing of nearly all material is done by private firms - there is no
There seems considerable duplication of effort in the information services with the Federal organisation. The information service in Ontario is mainly compiled in updated subject matter bulletins - there is no regular Provincial Journal of Agriculture. The bulletins such as "Crop Husbandry" have no specific authorship.

6. Farm Management Services

Canada Agriculture at the Federal level offers an annually computerised service (Canfarm) to farms and is actively encouraging its use. The cost to the Govt. is about $200 per farm annually although no charge is made at the Federal level. At present 5000 are being analysed annually although it is expected to quickly grow to 50,000. Records are collected and forwarded by Provincial personnel who may make a charge of about $15 per farmer. There is also a Provincial Farm Record Book computerised on a monthly basis. At farmer associated level (e.g. herd improvement association) Ag. Reps work with small study groups of 10 or so using partial budgeting systems. The need for constant interpretative assistance for these services imposes a heavy demand on extension personnel. The result is that the Ag. Reps are very heavily committed in this direction and are tending to become farm management specialists. The increasing need for specialist technical advice by specialists as a result of intensive farming in lot feeding etc. has also encouraged the Ag. reps to move in the direction of management
advice. They are however being caught in a situation of being able to offer a service to only 30 to 50 farmers a year. With approximately 1000 farmers within their territory their coverage is small unless they make an effort to avoid repeating the service to the same farmers.

7. ARDA and other Farmer Benefits

Ontario has a severe small farm problem and 20,000 farmers are located on small uneconomic sized farms. Under progressively modified legislation but now under the Agricultural Rehabilitation and Development Act (Arda) the Federal and Ontario Govts have set out on a program of farm consolidation and enlargement, vocational retraining and natural resource development. Arda officers are within the Ontario Dept and stationed at the regional field level. The scheme includes Govt. purchase of farms for lease to approved neighbours with uneconomic units, under attractive conditions including subsequent purchase. It also involves retirement schemes for elderly farmers.
SOUTH AFRICA

The functional unit serving agriculture in South Africa is the Department of Agricultural Technical Services which has been centred in Pretoria since the Union was formed. Prior to this separate departments existed for each Province. South Africa is subdivided into operational areas, not on a provincial basis, but in terms of ecological regions of which there are seven excluding S.W. Africa. Apart from a Head Office staff the field organisation is a 3 tiered structure consisting of regions, sub-regions and wards.

Organisation (See chart)

1. Head Office

The secretary controls the various services with the aid of an overhead organisation consisting of:

(a) A Departmental secretariat under the direction of two deputy secretaries, five Under Secretaries and a Chief Accountant.

(b) A Directorate of Agricultural Research for the planning and coordination of all research services under the direction of a Chief Director, five full time and six co-opted Directors.

(c) A Directorate of Agricultural Field Services for the planning and coordination of all extension, training, soil protection and control services under the direction
of a Chief Director, three full time and four co-opted Directors.

(d) A Directorate of Veterinary services under the direction of a Chief Director and two Directors.

2. Regional Organisation

Each Region is under the direction of a Chief and two assistant chiefs - one for research and the other for extension. There are five agricultural colleges and 73 research stations under the direct control of the regions.

3. Research Institutes

There are 10 research Institutes to cope with Specialised research services (tobacco, citrus and sub tropical fruit, horticulture winter rainfall, horticulture summer rainfall, wine and viticulture, botany, plant protection, animal and dairy science, veterinary science and soil science). These are nationally and not regionally controlled and each is under the direction of a Chief and one or more Assistant Chiefs.

4. Divisions

There are 5 more divisions centred at Head Office under the direction of Chief and Assistant Chiefs that administer certain laws and services - Stock disease control, Agricultural Engineering, Seed Control, Plant Pest Control and Soil Protection. These divisions do not necessarily have separate field personnel. For example the normal extension personnel largely attend to soil conservation - in fact the H.O. organisation was until recently known as the
soil conservation and extension service. The main emphasis of all extension personnel is on conservation.

Currently there is some further re-organisation of the Head Office organisation taking place.

Field Services in Extension

The lowest operational unit is the extension ward (or district). At this level there is usually an extension officer (graduate) assisted usually by 2 technicians. The latter are non-graduate and in fact are not usually diplomates but receive internal training over 4 years - two 6 week courses per year for 4 years. One of their functions is associated with remedial soil conservation although they do become involved in extension - with some ensuing problems. The extension wards collectively form a part of a sub region at which level there is a chief extension officer. The sub regions form a region. A typical region such as the Orange Free State region has 5 sub regions each of which may have 4 or more wards. Extension officers may have to deal with up to 1500 farmers.

Specialist extension officers exist at the regional level. They are frequently associated with an agricultural college where they do some lecturing, and are sometimes located on or near a research station and participate in collaborative research. They do not make many farm visits.

Extension Programs

The extension program is largely suggested by farmers.
through the soil conservation committee - a group of farmers representing farmer associations. This committee in addition to formulating overall district soil conservation programs identifies various farming problems some of which it may refer to farmer study groups for close appraisal. A study group consists of 10 to 12 farmers with which the local ward extension officer works very closely and which meets formally on about a monthly basis. About 20% of extension officers time is taken up in study group activities.

Farm Management Services

There is no specific farm management advice given by Extension Officers although some is provided by partial budgeting in study groups. The latter are apparently a very satisfying form of detailed extension but as an extension officer can only service about 3 study groups of 10 or so farmers there is a serious limit to the number of farmers that can be served in this manner.

Quite separate to the Department of Agricultural Technical Services there is a Dept. of Agricultural Economics & Marketing involved in both production economics and marketing. By random sampling this Department does some production surveys (e.g. on sheep farming) mainly for aiding policy information. It also runs a computerised farm record system with about 1400 farmers. This is not intended as a service to farmers but is regarded as a research project. They regard any service of this type as being the function of private firms.

The Dept. of Agricultural Economics & Marketing does
not provide a market outlook service for farmers. This is not regarded as necessary because the Marketing Act stipulates farm commodity prices - except for fruit. (The fixed commodity prices are strongly criticised as being not conducive to efficient farming or to the evolution of economically viable farming units.)

Officer Training

There is considerable emphasis on post graduate degrees, and promotion beyond certain limits is dependent on them. A research worker must obtain an M.Sc, which he can obtain by returning to University full time on full salary after 1 year of field experience. The public service has accepted an honours degree in extension as satisfying the promotional barrier for extension officers - again done full time for 1 year on full salary. Since 1959 77 employees have done a M.Sc, and 12 a Ph.D. In addition refresher courses are arranged. The criticisms of the extension training is the very heavy emphasis on sociology.

Research Extension Liaison

Despite the fact that at the regional level the Chief has an Assistant Chief for Research and another for Extension there does not appear to be a close liaison. The following appear to be factors contributing:

1. For promotion and for status extension officers frequently do an honours course which is very heavily weighted in methodology and sociology. Subsequently their refresher
courses are organised by extension specialists not at the regional but at H.O. level again with the emphasis on methodology.

2. While there is an Assistant Chief Research at regional level there are no research people at sub-regional or ward level. The program organisation for extension emanates at the ward level and hence the whole of the field organisation is orientated to extension and divorced from research at the regional level. The 3-tiered field extension structure adds considerably to this problem.

3. At the regional level there are extension specialists many of whom do some collaborative research with research station personnel. They are supposed to be the specialist link between the research and extension. Due however to being frequently heavily engaged in teaching at the Colleges they have little farmer contact and inadequate contact with extension officers. The latter do no collaborative research although many regional chiefs believe they should spend up to 40% of their time on research.

4. The Research Institutes function on a national basis, and are separated from the regional organisation.

5. The extension officer training personnel at H.O. are wholly engrossed in extension methodology and have no formal liaison with technical sections or personnel.
The organisation of agricultural services in Holland appears, and is, very complex. The fact that it appears reasonably well coordinated can, I believe, be taken as reflecting the comparative ease with which personnel can meet on a personal basis in such a small country.

The part of the Ministry of Agriculture & Fisheries associated with services to farmers comes under a Director General of Agriculture under whom there are several directorates centred at the Hague. These directorates are those of General Services, Farm Development and Agricultural Research with smaller directorates of Plant Diseases, Re- allocation, Forests, Veterinary Services, Fauna Control and Information. Of the first three, General Services is a specialist back-up service, Agricultural Research controls applied research on experimental farms (but not the Institutes) and Farm Development is concerned with field services to farmers including extension.

The field services are organised by a 2 tiered structure in which the country is divided into 11 provinces and a total of 40 regional agencies. Each province has a provincial director. Besides there being 11 provincial directors there are in the appropriate provinces Assistant Directors of the 7 sections into which the Farm Development

Farming in Holland is quite specialised and this is reflected in the regional agencies. For example some are devoted almost wholly to horticulture, others to arable crops and others to animal husbandry. This means that the frontline officers have to have specialisation and specialist backstopping.

A regional agency may cover 4000 farms and has a ratio of about 400 farms per adviser. Besides administrative personnel an agency may have 2 or 3 graduates, 5 or 6 subject matter specialists who are diplomates, and 10 to 15 advisers who do most of the farm visits. The advisers are graduates of agricultural high schools - perhaps a little less than leaving standard. The adviser is the main farm visitor - the specialists do not do a great deal of farm visiting. Examples of specialists are machinery and labour, farm buildings, soils and fertilisers, disease, animal feeding, milking machines and specialised aspects of horticulture and bulb culture.

Of the graduate personnel at a regional agency the senior man is called the District extension officer and is in charge. He has a specialised technical responsibility (e.g. arable crops) and is also the director of experimental farms in his area. The second graduate, who also may have a
technical specialty, is responsible for coordination and contacting farmer organisations. The advisory personnel have leaders in each subject field (e.g. cattle or arable crops). As well as the advisers being supported by specialists, the leaders visit the experimental stations once per month. The specialists at the regional agency are backed by National specialists who belong to the Directorate of Special Services. The national specialists are mostly graduates loosely associated with the research institutes.

At the provincial level the director is a coordinator. He is assisted in program initiation by a provincial board of farmers.

RESEARCH AND EXTENSION LIAISON

Research is undertaken at various levels at Universities, Research Institutes, Experimental Stations and Experimental Farms. All Agricultural Research Institutes are set up under the National Council for Agricultural Research and is fully autonomous with a board of its own consisting of representatives of farming organisations, industries and Universities but come administratively under the Ministry of Agriculture. There are about 40 Institutes dealing with agricultural research. They are restricted in size so as not to exceed 25 research workers in order that professional control between the Director and individual workers is maintained. As previously mentioned the contact between the institutes and advisory services is by means of national extension specialists loosely attached to the institutes.
Institutes are financed nationally.

Experimental Stations in Holland number 10. They are subject orientated - e.g. Pigs, poultry, arable, fruit, husbandry, vegetables open air, vegetables glasshouse, mushrooms, flowers, bulbs, shrubs and trees. The Provincial Directors are associated with running experimental stations and the extension advisory leaders visit them for coaching purposes once per month.

In addition to experimental stations there are about 50 experimental farms. The director for these is the Extension Officer in charge of the regional agency.

Work on the experimental farms is often at the suggestion of farmer societies (e.g. pig society) and is substantially subsidised by them. These societies act as an advisory board.

EXTENSION TRENDS

The main trends noted were those associated with management advice and those associated with current economic conditions.

(a) Management

The trend has been from purely technical advice to technical and management. With the aid of a simple record book an analysis of the farm situation is made on a partial budget basis by the regional agency graduate staff. There is also a computerised budgeting service provided through farmer organisations on a charge basis, although only about 10% of farmers use the service. The farmer discusses the
interpretation of the data with senior advisory staff who get training from national specialists. One officer can only deal with about 30 farmers on this type of advice which is given mainly during the winter period when other activities are restricted.

(b) Social

Farming in Holland has been a traditional family enterprise. Due however to changing economic circumstances particularly as a result of the EEC it is apparent that farm size will have to greatly increase, and much of the area devoted to agriculture will have to be devoted to other purposes - particularly industry and recreation. As a result social advice is given on such matters as educational and employment opportunities for children, advice on pension retiring schemes (a basic support given to farmers who sell their farms and who may be unemployable except in unskilled work), family budgeting, home economics, etc. About 105 men and 88 women are employed on this type of extension.
UNITED STATES

Because of the complexity of organisation and operational procedures between States the broad principles alone seem relevant. There is a considerable difference between methods of organisation in States and as only three were briefly visited one cannot regard these as being in any way indicative of how agriculture is organised in all of the States.

Agriculture in the United States is highlighted by the enormous agricultural potential given favourable price structures, the doubling of production over the last 30 years, and the reduction in the number of farms by about 3/5ths in the last 30 years. At the same time as paying high price supports for agricultural produce they are providing huge sums for irrigation projects which will further increase production. The political influence is exerted throughout the agricultural system and makes some facets appear hard to view logically.

Agriculture is organised on both a Federal and State level. Very briefly the broad functions might be listed as under:-

1) The Federal Level (USDA)

The USDA is actively associated with agricultural policy formation, agricultural stability, subsidy and price support schemes, etc. It also operates Federal agencies
such as Farm Home Administration and Soil Conservation. Although it has an organisation of some magnitude it does not operate at the field level other than for specific agencies. Its function is to stimulate, initiate and provide guides, and budgeting. The USDA appears to be an enormous machine carried by momentum.

2) State Agricultural Departments

Although none of these were seen it appears that in general they are not responsible for extension or research, but accept regulatory functions only.

3) Universities

To facilitate teaching, research, and extension being coordinated within each State the Federal Government established land grant Universities in each State to carry out the above roles. Quite separately however the Federal Govt. does operate some research centres or agencies. The manner in which land grant Universities carries out these functions varies between States. There is however, a general similarity in the extension services provided in that they have been traditionally based upon county agents serving as an adviser at the county level. In all cases the county provides some of the monies provided for the employment of county agents - as much as 50%. In some cases there are county employees even though money is provided by the Universities. They do however usually enjoy civil service benefits. In other cases they are university employees even though money is provided by
counties. Salaries vary considerably as does the program control exerted by the county. Federal money is mainly allocated on a formula involving farm numbers and rural population.

On extension the proportions of monies from various sources is about 30% from the State, 30% Federal and 40% local (county). The strong local contribution necessitates budgeting for programs of local appeal. These programs are usually subject to approval by a local board of farmers at county level for normal farm extension.

As in other countries there are increasing numbers of specialists in extension services. In USA these tend to operate through several counties. To overcome difficulties of county employment and contributions specialists are employed by the University extension department. The University contracts with counties to undertake extension programs involving specialists and are paid monies by the counties for fulfilling the program.

As Universities are involved in research, teaching and extension there are various coordinating committees within the University and between the Universities and counties. Many States are attempting to group counties into areas with area directors in centres from which specialists will work. This is complicated by the high county contribution to extension and the local county board's desire to retain their influence on the county extension activities.
Without involving details of organisation which vary between land grant Universities, and are highly complex, and top-heavy partly because of the triple functions of Universities, points of special interest are:

1) Scope of Extension

The Federal Government uses the extension services of the land grant Universities as a means of contact with the public on matters normally considered outside the agricultural field. Extension programs include agriculture, home economics, 4-H quality of living (including urban), environmental quality (aspects of pollution, health, etc.), citizen participation and community decision making, and aspects of business industry and labour. Home economists for example spend considerable time on consumer education involving such matters as education in choice of purchase of agricultural products and processed foods. As a more specific example, extension officers are even employed in restaurant management. More recently the United States Government has allocated huge sums to educational programs with low income families ($30,000,000 allocated this year). This program is purely educational, orientated to teaching families how to best utilize meagre resources. Welfare aspects such as food provision is carried out by another organisation (HED). This special program alone has employed 6,900 extension aides.

One's general impression is that extension is moving more from agriculture to cover urban population and family
2) Role of Extension Officers

The traditional county adviser is still present but with the increasing widening of extension activities and specialization in subject matter he is accepting more organisational and coordinating roles. At the technical level some offer elementary farm management advice although in the United States where such advice is offered it appears to be an economist role. Most county agents, at least in New York State, appear to sociological extension on resources development and influencing community decision making.

3) Post graduate and inservice training

Despite the fact that county agents are largely county employed they enjoy many benefits such as sabbatical leave and are freely encouraged to do post graduate courses such as M.Sc. during such leave. They have intensive programs of 2-3 weeks in each of the first 3 years after appointment and subsequently 1 week per year on varied courses. Specialists, in particular, have in depth subject matter courses of 1 week (e.g. weed control) once per year and economics outlooks training courses.

The main problem of county agents is that being county employed there is not easy employment for inexperienced graduates. Frequently this problem is overcome by the University paying their salary initially. The salary paid to county agents employed by counties varies tremendously and promotion is largely by movement between counties.
4) County agents are encouraged to participate in experimental work with University personnel. They are also encouraged to liaise closely with agricultural business personnel and organise seminars with them.

5) Farm Management Services

The development of these services varies between States. Most land grant Universities however have a management section in their extension organisation and have some field management specialists. It appears that the USDA policy is to concentrate on management education with farmer groups and formally structured schools are held for this purpose in some States. While the county agent participates they are mainly organised by the University, usually by agricultural economists. The schools occupy 2-3 days and concentrate on case studies. These schools result in an increased demand for individual councilling.

While some electronic processing is carried out for research purposes it is regarded as not the intention of the Government agencies to provide such a service which could be handled by private venture. It was also stated that educational programs on interpretation of data would be held for commercial firms so engaged to escape the demands for individual councilling by county agents or University personnel.
UNITED KINGDOM

The agricultural services in the U.K. are somewhat divided. Within the Ministry for Agriculture & Food there are four separate and rather uncordinated units:

1. Animal Health Services - The State Veterinary Service falls into two parts - the field staff mostly concerned with acts associated with disease control, market inspections; quarantine; etc., and veterinary service laboratories.

2. Agricultural Land Service - This service guides landholders on matters relating to land ownership and capital investment on buildings and fixed equipment including design, layout and construction, fencing, roads, etc. It is organised on a regional and divisional basis.

3. Field drainage and Farm Water Supplies.

4. National Agricultural Advisory Service (NAAS) - This is responsible for the major part of agricultural technical advice to farmers.

On the research side there are 23 experimental stations operated by NAAS and 22 Research Institutes operated through the Agricultural Research Council which is responsible to a separate ministry. The Agricultural Colleges or teaching organisations fall in the Ministry of Science & Education.
While some re-organisation of the agricultural services is under consideration the present situation will be discussed. NAAS was established in 1946 to increase agricultural production. Outside the headquarters in London officers are based at regional, county and district level. Of the 1800 qualified personnel in the service there are 26 at headquarters. Under the Director and Deputy Director are 3 senior advisers in Agriculture, Horticulture and Science. These are responsible for policy making in the main subjects under their control. At H.O. there is also a special technical adviser to the Minister.

For the field organisation there are eight regions in England and Wales. In each under a Director and his deputy there are a number of specialists in husbandry; - farm management, crops, grassland, dairy husbandry, poultry, livestock, mechanisation and horticulture; and Science: - entomology, bacteriology, plant pathology, soil science and nutritional chemistry. The science specialists have laboratories and conduct investigational work as well as providing analytical services. The main function of the regional specialists is to provide a back up service to county and district advisers.

At the county level there are 50 county units in England and Wales each under the control of a County Agricultural Adviser. He is responsible to the regional director and usually has on his staff specialists in appropriate subjects.
as well as district agricultural advisers (GP's) the number of which varies according to the size of the county. The DAA usually serves 500 to 600 farmers. His advice includes farm business management. D.A.'s are frequently found in a county central office.

The Government indicates in February each year when the prices of the main agricultural products are announced, the way in which it would like farming to develop. Farmers are free however, to follow any policy suitable to themselves and it is the stated duty of NAAS advisers to give each farmer advice which will make best use of farm resources and yield the highest profit, irrespective of the national policy.

The following points seem worthy of comment.

1. Regional Autonomy

The low ratio of H.O. staff is noteworthy and regions are highly autonomous. This is very apparent when one realises that the science adviser at H.O. may come from any discipline - at present he is an entomologist. Yet at the regional level are soil scientists, nutritional chemists (dealing predominantly with animal nutrition), etc. Also while there are subject specialists at regional and county level (and these frequently deal with narrow aspects of a specific subject) there are not the same subject matter specialists at H.O. The H.O. science specialist has to provide coordination between different regions, particularly with respect to investigation work.
2. The District Agricultural advisers, the county advisers and specialist advisers are mostly diplomates with an NDA although some are graduates. Even many of the non science specialists (subject matter specialists) at the regional centre are diplomates. Now diplomates can only enter the service if they have an NDA plus a post graduate year of extension training. This section of the advisory staff may be of grade 3, 2 or 2 and there appears to be similar promotional facilities within this career range for both graduates and diplomates. Promotion depends mostly on vacancies occurring. Many of the specialist advisers are women (U.K. was the only country encountered in which women occupied agricultural advisory positions. They are frequently employed as home economists elsewhere).

3. At H.O. above the Director are administrative personnel including the permanent under secretaries. These may have received promotion from other Depts. However there is a professional agricultural scientist, a person previously the Director, who acts as a personal adviser to the Minister.

4. The county specialists have a good deal of farmer contact - the regional personnel mainly provide backstopping to the County specialists. Discussions at the regional level however led to the conclusion that except for assistance with farm visits the county specialists were inadequately equipped technically to provide a complete backstop service and there was a tendency for the advisers to go direct to the regional
specialists. The latter specialists had more inter-regional liaison, more technical refreshment, and were more completely backed by science specialists. In addition at the regional centres they have enterprise development groups e.g. glasshouse, hops, etc. Each group consists of several disciplines e.g. The group for dairy farming would have a nutritional chemist, grassland specialist, soil scientist, dairy husbandry specialist and a management orientated specialist. The group is the "think" tank for the enterprise in the region and meets about 6 times per year. Although a county adviser probably attends meetings the group tends to become the group to which the district adviser leans.

5. The regional science specialists are strongly farmer orientated their clientele being either the farmer in association with the D.A. or the D.A. himself. While they provide some analytical service to farmers (as in soils), and provide an educational service to advisers they do some investigational work in the field - on farms. However when a practical answer has been obtained the problem if warranting further investigation, is suggested to the Ag. Res. Council as requiring further study. Liaison with ARC and Universities is largely informal but is considered very essential at the regional level as there is no formal correction. In fact they are all in different ministries.

6. The presence of county specialists has tended to cause much of the extension work by individual visits to be done by them. While in theory they work through the D.A. the
specialist is just as close distance-wise to the operational front. As a result the D.A.'s tend frequently to feel redundant. They have partially as a result spent considerable time working with farmer study groups and giving farm management advice.

7. There are various committees at regional and other levels. There is a Regional Council presided over by the Regional Director and his Assistant but including all grade 1 officers. These are mainly the Regional specialists and some County Advisers. This is a program policy discussing committee which meets 4 times/year. There are subcommittees such as a regional experiments committee, and other committees on a discipline basis (e.g. horticulture, FM) which report to it. These meet only once/year. The Regional Directors meet at H.O. once/year, and feed back highlights to the Regional Council.

8. The experimental husbandry farms of which there are 22 are not regionally controlled - they are under the Director expt. farms at H.O. They have an advisory board consisting of farmers (80%), NAAS personnel (10%) and University or other research personnel (10%).

9. NAAS has farm management specialists at the regional level, and many of the D.A.'s have had some farm management training from Reading University. Short inservice courses of 6 lectures are also given. These are partly to assist familiarising staff with a Farm Business Recording Scheme in which farmers receive grants to encourage record keeping and a Small Farm Business Management scheme in which grants are
given for records kept for analysis. The management approach is a gross margin analysis rather than linear programming and discounted cash flow which farmers do not understand. The general feeling amongst the staff is that the main effort should be in educating the farmer in management and record interpretation rather than taking over these functions for the farmer.

Strengths and Weaknesses of NAAS

While autonomy is claimed for both regional and county levels one cannot see how both can function in this way. Insofar as the D.A.'s are largely operative from county offices one cannot see the need for a 3-tiered field structure. NAAS appears to have grown in this way partly because of the Government's active policy to encourage agricultural production. This policy is very evident in the monetary incentives to the formation of marketing co-operatives, grants for machinery purposes, capital improvements, etc. The strong regional autonomy in NAAS appears a decided advantage although the separation from other research by AEC and Experimental Farms appears a detriment. Although one cannot claim that good informal liaison does not exist. The separation of NAAS at the operational level from the Agricultural Land Service, the Water & Drainage organisation and the Veterinary Services also appear a serious weakness.

They have some useful card coding of field work systems as well as staff reporting systems.