NUFFIELD REPORT

OBSERVATIONS AND COMMENT ON THE AGRICULTURAL SCENE IN THE UNITED KINGDOM

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NUFFIELD SCHOLARSHIP REPORT.

In presenting these observations on an invaluable and memorable tour I acknowledge the assistance, co-operation and help I have received from the Provincial Office of Federated Farmers, Southland and the members of its Executive, on which I serve.

(Sgd) G.J. Pullar.

The saying that it is much better to be born lucky, than to be born rich, is still so very true. The experience of being a Nuffield Foundation Scholar studying Agriculture in Britain for six months, with all the associated privileges and benefits, reminds me in all humility how privileged I have been.

Words can never adequately express my thanks to those who made this possible. Even so I would like to express sincere appreciation to the Nuffield Foundation for their generosity and my thanks to the staff at Nuffield Lodge who were always understanding and helpful. The Milk Marketing Board provided us with a car during our stay in Britain and this was a gesture typical of the kindness and hospitality received from so many people and organizations throughout the British Isles. After travelling extensively in Britain it became apparent that Nuffield Scholars and New Zealanders were held in high regard by people in all walks of life, and I am personally conscious of themany privileges accorded me, without question because of the favourable impression created by those who preceeded me.

Through the courtesy of the Nuffield Foundation, scholarships have been made available since about 1951 to enable farmers to travel abroad to study agriculture and farming methods (for a period of six months.) Each year two such scholarships are granted to farmers in each of the Commonwealth Countries - Australia, Canada, New Zealand and Rhodesia, with Kanya also participating until recently. Likewise scholarships are granted to farmers in Britain enabling them to study not only at home but also abroad. All these grants have a monetary value but I am quite certain that the net value in experience and knowledge is something far greater than the cost. Probably this is a point that can only be shown by the cumulative value of students' services to their communities in the years to come.

It was my original intention, on arriving in Britain to place special emphasis on studying the marketing of our produce, primarily meat. I also had thoughts of looking at the latest advances in grain production, harvesting, drying and storage methods, supplementary feed crops and the intensive utilization of land, as well as observing farmer organizations and services. On arrival in Britain I found there was so much activity and diversification in the farming world, all of which held such great interest that one endeavoured to absorb it all, rather than specialize.

As Nuffield Scholars our initial introduction to Agriculture in Britain was made during the first few days in London. Executive members of the National Farmers Union and the National Agriculture Advisory Service gave us valuable background knowledge to british Agriculture, production statistics and costs: not forgetting a thorough and detailed explanation of the subsidy system, which served to indoctrinate us to its value and

economic necessity.

Most of us had nightmares at the thought of driving in Britain and I for one, made a large circuit from Dorking in an endeavour to by-pass London on the way north to my initial hosts, Mr. & Mrs. Ralph Featherstone of Clipsham in Rutland County, where I was made to feel very much at home. A large part of the time was spent recuperating from the aftermath of a hectic last few months in New Zealand, and a fortnight's travel in the United States of America. In our many discussions I was given a very good grounding in practical farming methods and problems of management and when visits were made to the farms of their many very good friends, there was always an unlimited supply of hospitality.

A seventeen day bus tour was a great success in every way. To live with seven fellow Nuffield Scholars, gave one the opportunity to learn of problems in other Commonwealth Countries; with the realization that our own were perhaps, not so bad as we had imagined. We were given a wonderful education by the County Advisory Officers acting as guides as we travelled through the various Counties. We visited the famous Research Centres and Plant Breeding Stations; Farm Institutes, Land Settlement Estates, and farms both large and small, owned by men who were acknowledged as leaders in their particular enterprise and environment.

Can you imagine 15 banquets in 18 nights?

None of us will ever forget the generous hospitality and interesting discussions with the local executive officers of the National Farmers Union. It was inspiring to meet and talk with these leaders in the Farming World, and to discuss mutual problems, with emphasis on the fact that New Zealand couldn't afford to purchase manufactured goods when prices received for our primary produce were too low!

At the conclusion of this tour our time was virtually our own, with the Nuffield Foundation making no regulation as to where, or how, we should spend our time. This was an excellent opportunity to see those things which interested us most. Eighteen weeks to do as we thought best -- if we abused the privilege then, we would be the losers.

I had always been under the impression that the British farmer was rather backward in his farming methods, and that New Zealand farmers lead the world. How satisfying this point of view is to one who lives in a country so dependant on its export of farm produce. This belief may have been near enough to the truth prior to and during the war but it was a shock to find the situation now reversed. The British farmers are most advanced in farming methods and the average farmer has a very sound technical knowledge of his production enterprise, and in appears a successful business man with a very business like approach to farming.

To me there are three points which seem of major importance:-

(1) Necessity.

(2) A ready market with financial and economic incentives.

(3) Adequate agricultural education and advisory services.

1. The situation of threatened starvation due to World War II triggered an agricultural explosion. A comparison of net output production figures shows an increase of 83% on pre-war days. Before the war Britain produced only 43% of its edible produce-today it is 63%, in spite of a 10% population increase.

(2) The Government's sympathetic understanding of problems associated with primary production in Britain, through practical assistance to farmers with price support scheme and subsidies through the years. This has obviously had beneficial effects to the home producer of fresh foodstuffs. To have guaranteed prices for all essential commodities must give the producer a wonderful feeling of stability and confidence in the future. From a business aspect there is a very sure basis on which to budget without the obvious pitfalls of violently fluctuating prices.

It must be of great assistance to the economies of the hill farmer to receive payments to help maintain his breeding ewe flock or breeding cows and heifers. Calf subsidies, ploughing grants, subsidies on lime and fertiliser, on capital expenditure in the form of new farm buildings on houses and cottages, fencing, silo construction, reticulation of water and electricity supplies, land improvement, ditching and drainage. These are some of the many which qualify for Government assistance. As a direct result of these subsidies and grants, very substantial sums of money are being injected into the rural communities each year. In 1960 - 61 - £263 million; 1961 - 62 it was an estimated £351 million and on the basis of no change in the level, an estimated £339 million in 1962 - 1963. This has greatly bolstered up the industry and has provided the finance for better farm buildings and facilities, increased mechanisation, and greater use of fertiliser, and chemicals. Indirectly this has also increased the prosperity of many sections of the community, as manufacturing and chemical industried, processing, transport and other complimentary services strive to meet the increased demands of the farmers.

The present system of guaranteed prices and Governement policy today is founded on the Agriculture Act of 1947 - "That there should be a stable and efficient agriculture industry in Britain". It was necessary that farmers shouldsell on the open market inccompetition with imports. The Government would pay the difference between the market price, and the price level set by theGovernment each year, at the annual review in February. There were limitations, in that the Government could not reduce individual guarantees more that 4% in any one year with live-stock and live-stock products, not more than 9% in three years. The total guarantees must not vary more than 2½%, and must take into account any plus or minus cost changes occuring during the year.

In 1962 the production cost increase was estimated at £19 million and subsidies were reduced by £11 million making a total of £30 million reduction. At 2½% the maximum reduction possible would be £33 million. The present trend, according to the Ministry of Agriculture, is not to go on increasing production, but to encourage a transitional period of stabilized production, with emphasis on improved quality.

The National Farmers Union have also said "That spending £360 million of tax payers money in subsidies, was a small price to pay for cheap food". Over a period of five years the average annual payments in subsidies had been £250 million, averaging about £5 per head of population per year or 2/- a week, so the previous statement is probably true. However there are many who object to purchasing their meat, for instance, in two instalments,

firstly in a taxation demand and later with their local butchers. It does seem rather staggering though, that an extreme position could arise, as in 1960 - 61 where British farmers received only 40% of their income for meat from market realization and 60% from subsidies. However it is understandable that the National Farmers Union should feel entitled to these subsidies which protect the home producer, just as British manufacturers are protected by import tariffs e.g., 30% on motor cars. (Horticulture is also protected by tariffs against imports).

It is traditional in Britain that the Treasury shows a preference for over all grants, rather than long term loans. This seems a strange attitude when one compares it with our New Zealand circumstances, where it is most difficult to convince Governments that producers deserve at least reasonable depreciation allowance on capital equipment and some form of taxation relief, and until recently, even to borrow money has been a problem.

To sum up the points in favour of subsidies, it can be said that they provide security and make it possible for planned production and income, reliable and accurate budgeting, and the ability to compete with imports of foodstuffs from other countries which have a lower cost production.

Production cost increases can also be passed on, whereas in other countries they tend to be continuously born by the producer. Nationally, subsidies cost a considerable sum of money, but tend to keep prices more stable and consequently provide cheaper food for the consumer. The quantities of commodities coming on the market each year are able to be varied according to estimated future requirements by making adjustments up or down in the various subsidy payments.

Any system has disadvantages. Many farmers were concentrating on quantity rather than quality and this, sometimes, irrespective of cost. In dairying it was noticeable that the net income varied from a claimed £22 to £76.10.0. per cow. I feel that a number of farmers, were tending to feed so much high cost concentrated to the dairy hered, that they increased production but finished up with a lower net income. There appeared to be ample evidence of this in the sheep industry, especially in the endeavour to produce lamb out of season, to catch a high price on the early market. It was said by a prominent gentlemen in the Ministry of Agriculture that "British farmers market income for lamb, was £30 million and they received a further £40 million subsidies". He went on to say that "one third are not really making a profit' and from what I could observe this would be true. I also gained the impression that farmers were farming to receive subsidies wherever possible. Some farmers for instance would not plough an unproductive two year pasture but prefer to wait until the third year and receive the £7 per acre ploughing grant. The many new substantial farm buildings throughout the rural areas were visible evidence that many farmers were "cashing in" on the 33⅓% grant towards the cost of improved farm buildings.

From a commonwealth outlook, and as a producer and exporter of farm produce, I consider that ill-administered subsidies are also detrimental to New Zealand's economy. Our produce, when sold on the British market, must stand on its own feet, in competition with home production and imports from other countries. Variation in prices must be accepted by our farmers and

any subsidy or "floor price" is met from our own Producer Board reserve funds.

Our ability to purchase manufactured goods in Britain, is closely related to the prices we receive for primary produce and as these prices have declined, so the cost of manufactured goods has risen. Freight rates too have gone up and it should be remembered that these are paid by New Zealand on both imports from and exports to Britain. Britain is a very great manufacturing and trading Country, but that trade must be a two way business.

AGRICULTURAL EDUCATION ADVISORY SERVICES.

My third observation on the changed scene has been the tremendous advance in general agricultural education and services.

There are four types of institutions providing full time training in agriculture subjects. Universities, Agricultural Colleges, County Farm Institutes in Endland and Wales, and Farm Schools in Scotland. Twelve Universities are providing degree courses, ten Agricultural Colleges provide two year diploma courses, extending to three year diploma courses if desired. Two of the County Farm Institutes also provide diploma courses. In addition there are thirty-six Farm Institutes providing residential courses in general agriculture, dairying, horticulture and poultry husbandry. These courses are usually for one year of about 36 working weeks and are designed for those wishing to become skilled workers in the industry. The Farm Institutes also provide a wide range of short courses and classes for farmers, farm workers, horticulturists and domestic producers. Seven Farm Schools in Scotland provide residential courses of one to three years duration for boys and girls of twelve to sixteen years of age. Northern Ireland has an Institute providing residential short courses for boys and girls over fifteen years of age.

Apart from the twelve Universities providing degree courses there are approximately 54 avenues of alternative agriculture education. This is a most formidable list, and one which we cannot ignore in New Zealand with our two Colleges and (is it three) Agricultural High Schools, especially when we consider the importance of the industry. Unquestionably these earliest fields of Agricultural Education have given the farming community practical knowhow enabling them to utilize scientific and technical appliances.

Farmers and their staff were technically minded, and appeared greatly interested in new and latest methods of production. The Farm Institutes were providing an influx of education and trained youths to agriculture.

FARM INSTITUTES.

I had the interesting experience of visiting four Farm Institutes, which appeared to function in a similar manner. The greatest and most profitable time was spent at Brooksby Hall, near Melton Mowbray, the Farm Institute for Leicestershire and Rutland. I am indebted to the principal Mr. Stern, for his information and the time, he devoted to showing me over the various facilities.

Farm Institutes first began to function about 1930 though there had been a gradual development over the past 100 years. Some are privately endowed, but most are financed and controlled under the general Education System, and administered by the County Councils in the various areas.

It has been the general aim to provide a Farm Institute in each County. At Brooksby Hall students must be at least seventeen years of age at the commencement of the Course, there is no upper age limit. No specific academic qualification is required, but the students must satisy a selection committee that they are capable of benefiting from the instruction provided. The normal standard required will be three o level general certificate in education passes, preferably in English, Mathematics and a Science subject, or the satisfactory completion of a part-time scheme of education. In practical experience, applicants must have a minimum of one years continuous work in Agriculture. Farmers' sons who are resident on farms will be considered to possess the necessary practical qualifications providing, they have reached the minimum age. The Principal can provide help in introducing students to suitable farms to gain practical experience. Priority is given to applicants who are resident in the local Farm Institute County area, although some places are offered to students from outside.

In the general course, 55% of the time is spent in lectures, 10% demonstrations and 35% in practical instruction. Each student has a turn at doing routine farm duties under the supervision of a fully qualified instructor. Sixty per cent of the full time students were taking a general course in agricultural education. The object was, to give these young men a good grounding in the practice and principles of agriculture, of a local nature and if they qualified they would receive a National Certificate in Agriculture. In the Farm Organization and Management Course applicants must be twenty and above and have obtained a credit in general Agriculture through a course, at some Farm Institute or equivalent and have had further experience in practical farm work between courses. There were twenty-eight applicants for fourteen positions in the class.

The course for Farm Secretaries was designed for girls who seek such positions, or who wish to be trained to look after the business side of farming in one capacity or another. The subjects covered include book-keeping, income tax, farm records, the preparation of cost accounts, animal and crop husbandry, poultry husbandry, horticulture, agriculture science, short-hand, typing and office routine. Students should be at least seventeen years of age but are preferred considerably older. For all courses the fees include £200 for board plus a further tuition fee of £30 for students over eighteen.

SHORT AND PART-TIME COURSES.

Part time courses provide for hundreds and instruction is given in three categories. Day release classes, short full time classes and evening classes.

Day release classes are held in various centres throughout the County, one day each week, during two terms of approximately 12 weeks. The object is to encourage every boy and girl to attend classes in the nearest centre. The complete course continues over a period of three years with a specific subject to study each year such as animal husbandry, crop husbandry or farm machinery. Farmers don't necessarily like releasing their employees one appointed day each week, with classes held from 9:30 a.m. - 3:30 p.m. but have realised the benefits, and are now quite enthusiastic.

Block release, or short courses are specialized and are usually for one week and designed for school teachers, rural science groups, agricultural machinery apprentices, Young Farmers Club members.

Evening classes are for the more mature farmer and workers. They are held once a fortnight in the various County centres.

ADMINISTRATION.

Administration is by Governing body which meets four times a year with power to spend up to £200 provided in estimates. The Principal has power to spend up to £100 and the further education committee up to £500. Any expenditure required over £500 would be referred to the County Council Education Committee. Salaries and wages are the largest expenditure. Capital expenditure is dealt with separately and estimates are furnished in July. The Government used to provide 60% of each item of cost but today a lump sum is paid to cover expenses. The total cost per student is about £500 annually with fees returning £230 and the balance being made up by grant from the County Council. The farm is run on the principle that it must show a profit in each of its enterprises, in this case wheat, barley, oats, sugar beet, sheep, cows, beef, pigs, poultry, horticulture and potatoes. Profit has been £10 per acre over the last 5 years with 362 of the total 384 acres being fully utilized.

This is a brief outline of the workings of a Farm Institute. In an amended form to suit New Zealand conditions I am sure that they must come in the near future to safe-guard our industry. They would fulfill the needs of the ordinary farmer or potential farmer who is not provided for to any degree, be either Massey or Lincoln Colleges. Farm Institutes would attract young people from towns and cities as well as the sons of farm workers and farmers who would genuinely be interested in making agriculture a career. Through the lack of these facilities, many young men are lost to other industries. Can you imagine in New Zealand having more than 20 applicants for a Piggery Managers job with several applicants possessing a National Certificate in Agriculture. There appeared an ample supply of good qualified farm workers and managers available, many of whom being products of these educational organizations. Wages were low in comparison with New Zealand standards with the minimum award for 20 years of age and over being £8. 9. 0. per 46 hour week. Overtime at the rate of 5/6 per hour is paid for Saturday afternoon and, or Sunday work, and for any hours worked in excess of 8½ per ordinary week day. Consequently, as can be expected, I found farm workers enthusiastic in their vocation and keen to have overtime when-ever possible. Through planning and management by farm owners and the ample supply of labour there was a tendency to require overtime only for essential work. On the other hand many farmers, particularly the owners, of larger areas, openedly admitted they were overstaffed, and to a certain extent an institution. They felt it impossible to dispense with the services of a loyal and conscientious worker of many years or even generation's standing, who, because of mechanisation and specializiation had perhaps become surplus to the establishment.

FARM ADVISORY SERVICE.

The National Agriculture Advisory Service provides every farmer with free technical advice on all agricultural and horticultural matters. Each County has a County Advisory Officer who is responsible for this work under the supervision of District Advisory Officers, and they, in town, call on the services of Specialist Advisers. These would include general agriculture, live-stock husbandry, farm machinery, poultry husbandry and horticulture. Advice is also available in farm management, architectural guidance on layout and construction of farm buildings, farm economics and analysis of balance sheets, crop and grassland husbandry, milk production, animal nutrition, soil chemistry, plant diseases and pests.

There are approximately 750 farmers under each District Advisory Officer, but it is felt that about 350 farmers per Officer is the ideal.

In all, they provide a very full and useful service indeed.

FARM MANAGEMENT ADVISORY SERVICE.

It was an excellent experience to visit the Farm Management Analysis Unit at Stoke Mandeville in Buckinghamshire. Mr. Turner was particularly helpful in explaining the system of farm economics and budgeting, pointing out the aims which were: 1. To raise the standard of living of farmers by offering a professional service. 2. To simplify the collection of data - their job is advising. 3. Farmers should not have any extra clerical work- first and foremost they are producers. 4. Results must go back to the farmer to be discussed and understood and together, try and assess the position and in some cases decide if it is worthwhile a man staying in farming based on the percentage of interest returned on capital. If it is not greater than 7% , plus reasonable wages, then he may be better in another position. (long term loans are at 6¾% interest). Mr. Turner maintained that depreciation money values should be invested in a special interest earning account. The budgeting and analysis sheet provided, seemed simply enough as were the monthly foodcost and recording sheets for dairy farmers, and the pig management recording sheets. It must be realized that advice on farm management is impossible without good farm records and farmers who desire the benefit of this service must be prepared to keep simple, accurate records.

An interesting point made was the example of a pig farmer who increased his feeding to achieve a higher technical standard. Initially a farrowing average of 7.86, foodcost £1,100 and a six monthly profit of £850. The final result; average farrowing 9.1, foodcost £1,580 and a net profit of only £224, an extra £500 worth of food had been given to the sows. "We musn't worship technology for the whole basis of advisory efficiency must be on economic efficiency". The market of the future will go to low cost quality production.

It is worthwhile remembering that Mr. E. Jones, Director of the National Agriculture Advisory Service said that the plan was not for increased production as much as for increased profitability of that particular farm. Of the future, he said that the problem which the industry faced was no longer just to improve technical effeciency in order to increase output in every direction. In many commodities, saturation point had been reached, and

there is already a danger of producing more than the market can absorb, resulting in an accelerating decline in prices. The problem now, is one of tailoring production to suit the precise conditions of the local market, as well as those of the individual farm. As more attention is paid to the profitability of farming systems, the general mixed farm is tending to disappear. Farmers are concentrating on one or two paying enterprises and specializing to the point where they require advanced technical knowledge.

FARM WALK.

I had the experience of participating in an evening farm walk conducted by the Advisory Service. This appeared to be of excellent value judging by the enthusiasm of the 4/500 farmers who attended. It began at 7 p.m. and continued until 9:30 p.m. in the twilight of a summer's evening. As well as inspecting many of the excellent pastures on the farm we saw the most modern new dairy shed which incorporated the latest in facilities to house and feed the dairy herd over the winter months.

HAYMAKING DEMONSTRATION.

I attended a field event organized by the National Agriculture Advisory Service in Wiltshire. It was a demonstration of quick hay making techniques, and continued over a period of four consecutive days. Its purpose was to visually show how modern machines and techniques assist the speeding up of the moisture loosening process from the high moisture content of freshly mowen hay to the low moisture content, acceptable for safe baling and storage.

There was a control area where traditional methods were performed compared with various other plots where hay was cut with forage harvesters and mowers to be followed by crimpers and tedders of many makes and models. This process continued at intervals as was necessary in a practical and controlled way until such time as the hay reached a conditioned state, suitable to safe baling and storage. A moisture extractinn unit was at work processing a quantity of hay baled much earlier and at higher moisture content than is possible in usual practice. All this proved very interesting and a similar demonstration could have many benefits to our own local farmers. I would like to point out how impressed I was with the very practical nature of the many farmers Field Days organized by the National Agriculture Advisory Service Officers.

NATIONAL INSTITUTE OF AGRICULTURAL ENGINEERING.

On a visit to this institute I found it valuable to see and hear of their work. Fundamently, much of the research has no direct interest to farmers, but ultimately by improved designs of machines and techniques, they benefit considerably. For example; forces acting on plough bodies and their components when at work, studying the flow of air through grain at varying depths and densities; moisture and the drying of the hay swath. This obviously merges into the practical by introducing new principles such as lighter, stronger ploughs, new grain driers, hay crimpers etc. There were adequate facilities to make proto-type machines but the Institute does not aim to compete commercially. If there were machines of an approved principle already produced the Institute might suggest improvements to the existing model based on their research. Manufacturers are encouraged to ask for

advice and comments on the blue-prints of any proposed new machine before production of it. N.I.A.E. would much prefer discussion prior to production. They serve agriculture, and machinery manufacturers, in three ways:- 1. Research and development of agriculture machinery and techniques. 2. By testing of commercial farm machinery and tractors. 3. By acting as an information centre on matters of agricultural engineering.

The testing of standard farm equipment is a very valuable service by supplying the manufacturer and the farmer with an unbiased report on the performance and capabilities of these machines. Any weakness or faults, plus suggested improvements are all contained in the report to the manufacturer. There are a number of regulations and agreements on the application for a test. Some years ago no report would be published without the written consent of the manufacturer but today this has been changed and once consent has been given to have a machine tested, a report is published, unless the equipment is withdrawn from sale.

An important feature in this work, and for that matter in any experimental or research work is to be able to successfully disseminate information, to those it is intended to benefit. The results of the N.I.A.E. work are published in "The Journal of Agriculture Engineering", For 15/- a year farmers can receive copies of all abridged test reports. Under a new and improved scheme the annual subscription of £3. 3. 0. The head farm machinery instructor of the National Agriculture Advisory Service is also stationed with N.I.A.E. headquarters at Wrest Park, Silsoe, to co-ordinate and send information out to farmers and receives and channels complaints to the appropriate quarter.

Associated with N.I.A.E. at Wrest Park is the experimental farm buildings research centre. This deals with the co-ordination of all work in publications, farm improvement schemes, and experimental farm buildings. Design projects were:- cattle yards, slatted floors, cow cubicles, passages, bonded floors, stone insulated floors, etc. as well as buildings for bulk feeding stock, (primarily green feed,) side tipping trailers, belts, augers etc. In the poultry field study was made of performance for laying and hatchability under deep litter, wholly slatted, $\frac{2}{3}$ wire mesh and $\frac{1}{3}$ deep litter floor systems. Sheep:- study was also made in-wintering of ewe hoggets, the bulk storage of fertilizers, and the design of adaptable building to suit any enterprise, as well as glasshouse designs providing up to 60 feet spans without supports, and chitting houses and potato storage buildings.

GENERAL OBSERVATIONS.

After 6 months in Britain one cannot help but be impressed with the tremendous production of foodstuffs, the neat tidy pastures, crops, trees, hedge rows and road lines with the diversified and intensive farming systems reminding me of a large well kept garden. In thinking of British Agriculture I have found it very interesting to study a few brief statistics in comparison with New Zealand.

	GREAT BRITAIN	NEW ZEALAND
POPULATION	52,000,000	2,500,000
Percentage in Agriculture	4 . 3	16 . 9
Number of Land Owners	406,000	84,604
Percentage of farms under 100 acres	60%	40.3%

LAND USAGE (Million Acres)	1944	1960	1954-55	1960
Cereals	9.4	7.7	.27	.33
Other Crops	5.2	3.5	.87	.81
Temporary	4.7	6.8	-	-
Total Arable	19.3	18.0	1.4	1.4
Permanent Grass	11.7	12.8	17.77	18.55
Total Grass and Crops	31.0	30.9	18.91	19.69
Rough Grazings	17.0	18.3	13.39	13.03
Total	48.0	49.2	32.30	32.72

LIVE STOCK (Millions)	1944	1960	1944	1960
Dairy Cattle	4.4	4.8	1.65	1.89
Other Cattle	5.1	6.9	2.79	4.10
Total Cattle	9.5	11.7	4.44	5.99
Sheep	20.1	27.9	33.2	47.13
Pigs	1.9	5.7	.57	.66
Poultry	55.1	103.0	4.47	4.48 1956

MECHANIZATION.	1942	1960	1952	1960
Tractors	11,700	474,000	457,34	78,415
Combine Harvesters		48,000	1,852	4,746

Britain and New Zealand are comparable in size. Geographically and climatically Britain is nearly 1,000 miles nearer the North Pole than New Zealand is the South. This disadvantage is to some extent off-set by the warming effect of the Gulf Stream sweeping in from America. In spite of this, winters are much more severe with a dormant pasture period of between 3/4 months. 17 million acres are at an elevation of 800 to 1200 feet with a rainfall of 45/70 inches. The main production from this area is store sheep and cattle. 31 million acres are used in general agriculture and it is impressive to see a large area of 18 million acres in crops and temporary pasture. This is a vast contrast to New Zealand with its 1.14 million acrea in similar production.

80% of the farmers own between 5 and 100 acres and 45% of these, between 20 and 100 acres. Therefore 35% of the farmers in England and Wales own between 5 and 20 acres, a very small area on which to earn a living based on New Zealand standards. 30,000 acres are lost each year to housing, industry, new roads, aerodromes etc.

The farming industry as a whole is a very prosperous one. After seeing the tremendous production and the very good incomes derived from smaller areas it is obvious that we shouldn't judge a farmer "small", by the number of acres he owns. Most farms were very highly mechanized and equipped, which made a high capital outlay when livestock were also taken into account. Many farms are very diversified but I flet that there was a definite trend toward specialization. This helps reduce costs of production, by minimizing capital outlay for plant, buildings, and labour,

There was also a movement towards the aggregation of the smaller farms with established farmers who owned larger areas using every opportunity to add to their holdings. Farming is most definitely a business in Britain and I was particularly impressed with the business like approach. The intensive and diversified areas of 100 acres or more were often equipped with an office, usually separate from the home or dwelling. It was quite common in the larger business to have a secretary/accountant, as normal staff.

AGRICULTURAL RESEARCH.

After travelling throughout Britain it became obvious that there were a great number of highly skilled research workers at the many research centres. Even the number of these and the experimental husbandry farms, either Government financed or private were most impressive, and, in fact, it is a couse for concern that we are not doing sufficient of this work in New Zealand. The work conducted on behalf of the Ministry by the various plant breeding stations, grassland research, dairy research, experimental husbandry farms and many others is generally under the control and supervision of the Agricultural Research Council for the co-ordination of effort and experiments. The Agriculture Research Council is financed from the Exchequer, which also makes grants to independant institutes not under their control. It is not possible to go into great detail but it was impressive to note the practical nature of the majority of experiments.

AN INTRODUCTION TO MARKETING.

Farming has made many astounding advances over the years, particularly since the beginning of the 2nd World War. This advance has embraced many aspects of finance, planning, administration, science, mechanization and animal husbandry, each assisting in the successful and more economic production of farm produce. Profitable production is very largely dependant on successful marketing. This is even more so in today's world of increasing costs, high capital outlay in land, stock, plant, and buildings. Because of this farming has become very much a business and more interest and emphasis than, ever before is being placed on the successful marketing of produce. Through going overseas, and using the opportunity to observe and discuss marketing, I was able to obtain an insight into the business side, and a greater understanding of the problems which are not so apparent to us 12,000 miles distant. Meat prices have been a most controversial subject in New Zealand over recent years and as a producer it is understandable that I was most interested in this aspect.

THE AMERICAN SCENE.

When flying to Britain by way of the United States of America I arranged to stop off for two days at a time at six of the larger cities. This gave me time to do a "Grey Line Bus Tour" of the city and visit many of the recognized tourist attractions and the opportunity to see and hear something of the marketing business. At San Francisco I met representatives from three of the meat importing companies. We discussed the quality of our produce, and it was their opinion that our lamb was immature and the eye of meat too small in proportion to bone and that the carcases were too light and fat and had been frozen too quickly after slaughter. All the cow and bull beef we can send over, could be used in the manufacture of sausages and hot dogs. In their opinion, N.Z. chilled beef was not even up to the standard of medium beef in America.

SUPERMARKETS.

Mr. Rapp, of Canada Casing Company in Chicago, took me on a tour of the most modern Supermarkets. Here, busy or working housewives were able to do the entire family shopping. Usually there is a car park and a creche for children or, in the case of only one small child, there is a basket seat on the wheeled goods cart. One couldn't help being attracted by the packaging, and I was told the story of how this influenced sales. Manufacturers of sausages asked researchers to design a variety of cartons, and eventually selected three for trial in supermarkets throughout the country. These were placed in the usual display counters, with an observer standing by. As customers made their final selection, it was noticed that a majority chose one particular design, even though the contents were identical. When questioned about their particular choice, attractiveness appeared to be the only answer. Naturally, this design became the basis of the packaged product.

In the early days of supermarket development butchers were jealous of grocers and even spiteful, adding popular lines to the shelves of their shops and labelling them "at cost price". One particular man who did just this expanded his business rapidly and to assist him financially took in

two partners. After fifteen years they sold out and each finished up with over one million dollars. Most supermarkets retain identity with a butcher shop. In a meat section several men are plainly visible to the public on the other side of the glass partition, pre-cutting and packing this fresh meat; their pay equivalent would be in the 14/- to 22/- and hour rate as this is a highly skilled job. I found it interesting to compare prices of household goods and have converted dollars and cents to shillings and pence. Prices quoted are per lb unless otherwise stated. Fresh chicken 3/11, duck 4/2, blade pot roast beef 4/2, flank steak 7/9, browned beef 4/2, pot roast beef shoulder 4/2, lamb shoulder roast 3/2, rib chops 7/9, leg roast 4/10½, lamb sleaks 7/-, pork centre chops 7/-, loin pork roast 4/2, prepackaged sausage 3/2 quality sausage 4/11½, eggs in dozen packets 3/7½ and 3/5½, larger 4/2, sliced bread 1½ lbs 2/6, sweetcorn 5 cobs for 2/9, apples 3lb 3/5½, oranges 6 for 4/2, grapefruit 5 for 2/9.

It was well worthwhile to visit the meat markets, New York's equivalent of Smithfield. Most of them appear to specialise in certain cuts of meat, rather than handle the whole carcass, this being particularly so of beef. The American fresh lamb carcass looked more like our hogget weighing around about 60lbs and more. There is a preference for a heavy carcass and little concern with excess fat which was considered a sign of quality. The beef had to be seen to be believed as there is up to three inches of fat and all the real quality meat has a wonderful grain of fat marbling, in fact the flesh contained very fine pin head cells of fat throughout. Apparently the most successful way to produce this choice quality beef it to feed a rapidly maturing animal on a pure crushed maize diet. It was also most interesting to note that specialist butchers had large quantities of beef stored on racks, ageing for periods of ten to twenty days, which produced choice tender meat. Admittedly the excess fat, green and black mould and whiskers, had to be removed before packaging for display to the public. Actually this cost is passed on to the consumer who is able and prepared to pay for quality.

FEED LOT FARMING.

My first and only close look at meat production and practical farming was at Denver on a feed lot type of farm. There were no pastures as the entire land-was used for grain production, maize silage, lucerne and an area of Summer fallow. Aberdeen Angus breeding cows which calved in July and August were kept in a large, sandy soil, free draining yard. Calves, only just weened, were six months of age and looked particularly healthy to be coming out of the winter. The cows were fed a ration of corn silage and chopped lucerne; the calves were receiving three-quarters of a pound of de-hydrated lucerne hay pellets costing 50 dollars per ton which included 5 dollars for delivery, plus 10 lbs of corn silage and 3 lbs of chopped lucerne. There were 250 cattle to feed which took two men 1 hour each morning by using a side tipping truck driven along the side of an open feed trough running the length of the cattle enclosure. Cattle cost 29 cents or 2/½d. a lb live weight when bought and because of falling prices were sold for 25 cents or 1/9 a lb. Most people prefer Aberdeen Angus which brings 2 dollars or 14/3 a 100 lb more than any other breed or the market. Another advantage is that the black udders of their breeding cows do

not become sunburnt in the hot summer months. Seven hundred and fifty cattle were fed and turned over on this property each year where 250 acres of grain, are grown annually producing about 13,000 bushels. Wheat averages 60 bushels to the acre and is sold for seed at 2 dollars or 14/3 per bushel, with oats and barley being grown for feed purposes. The lucerne is Meeker Baltie type, and is sown at the usual rate of 12 to 14 lbs per acre, with 40 lbs of oats to nurse the crop and keep out the weeds.

MEAT MARKETING IN BRITAIN.

On arrival in Britain the New Zealand farmer is given a very warm welcome by the staff of the New Zealand Meat Producers Board. In fact I found this welcome general with the various organizations where I met many personalities associated with the marketing of New Zealand meat products. We had many interesting discussions and arguments and I feel a number of the views expressed by men of authority are worthwhile repeating. Mr. D.L. Martin, the London Manager of the New Zealand Producers Board mentioned that we should aim to produce lamb at an average of 32 lb. with emphasis on early drafting and less fat in relation to lean. We need to do much more research in the breeding of sheep, with a view to finding the right type within a specific breed to produce the greatest percentage of meat in a correct proportion of fat. This should be the work and responsiblity of our research centres, not individual farmers, unless they do it on a large and organized scale. There is no suggestion that we should depart from the traditional romney, or the romney southdown, standardized type of carcass.

MEAT MARKETING CONFERENCE.

At a meat marketing conference organized by Kings College, Newcastle-on-Tyne division of the University of Durham, under the leadership of Professor Mack Cooper, Dean of Agriculture and an ex-New Zealander, I was able to learn the problems of the local production of meat, and marketing. During the 3 day conference I was able to hear some excellent papers given by men who were leaders in the production, processing, wholesale, and retailing world. In an introductory session, Professor Cooper said that along with other customers he wanted a fair deal, and had no great liking for having to pay for his meat in two instalments, one for the butcher and one for the collector of taxes, but at the same time he appreciated that the farmer must get an economic price for his meat. The average deficiency payment for beef, mutton and lamb was approximately 8d. lb. last year. This was a deficiency payment in two senses, for it also covered the deficiencies in marketing methods, as well as bolstering farmers returns, and it was the unfortunate tax payer who was meeting the bill. There were 3,400 slaughter houses in Britain and hygiene standards, on an average, were very low. It is scarcely to Britain's credit, that the American forces will not accept British meat because, justifiably, they are not satisfied with its hygiene.. The same appalling situation is limiting the possibilities of Britain exporting fresh meat to the Continent, especially to Germany. Professor Cooper also criticized farmers who failed to support their own organization, the Fat Stock Marketing Corporation. The Milk Marketing Board for instance had done a wonderful job for the dairy farmer which has resulted in probably the highest retail price for milk in Europe. He suggested

that it was very important that farmers have some form of central organization to develop the meat industry, promoting sales, investigating market trends, and opening up new markets. It would not be possible for the British producer to supply home produced lamb in appreciable quantities during the January, to April period. In conclusion he expressed certainty that Treasurery would not repeat the situation of the summer in 1961, where it was subsidizing inefficiency. "Anyone who thinks otherwise" he said, "is living in a fools paradise which is the best description I can think of for the present state of British meat marketing."

SUPERMARKET DEVELOPMENT IN BRITAIN.

In a paper presented on supermarket development, it was stated that in the U.S.A., supermarkets account for over 50% of meat sales, combination markets 35% and butchers 15%. These were 1958 figures. Supermarket development in Britain is 20 years behind U.S.A., but now advancing rapidly. In mid 1958 there were 175 supermarkets-- 12 months later 286-in 1960, 367 and in the middle of 1961,572 even after 36 stores previously included in the previous figures had been re-classified. During 12 months to mid-1961 new supermarkets were opening at the rate of 20 per month and the americans have announced plans of opening supermarkets in Britain. Supermarkets at present only do 5% of food trade with an estimated 20% in 5 years and 50% in 15 years, 66% in 20 years. It is expected that the proportion of meat will be only slightly behind these figures with the accent on home produced meat, of good quality. Supermarkets will get larger, and do their own buying from the producer. These "chain" supermarkets will want good value, uniform quality with reliable grading and will be alert to move in and take advantage of surplus and will pass on low prices to the consumer. An interesting question arose when the question was asked "you say you sell New Zealand lamb because of the price, but you also admit that you could not buy English because it is not graded but the butcher who knows his job can grade himself". The reply was "I think that it is a disadvantage that English lambs are not graded. Whoever the buyer, and however skilled, it is an advantage to have a guarantee. We like to know when we order a consignment of 300 dozen, that they will be the same as the sample we have seen. You do not get such a guarantee without grading. There is much more work, if the buyer has to look at each carcass."

PROBLEMS OF PROCESSING AND SELLING.

In the session on "Problems of Processing and Selling" the speaker mentioned market trends in terms of consumption per head of population. In 1938 beef 55 lbs lamb 25 lbs pigmeat 38 lbs poultry 5 lbs a total of 123 per head of population. In 1961 50 lbs beef 26 lbs pigment 15 lbs poultry a total of 137 lbs. Demand has been created for the branded article of consistent quality. Modern self service stores cater for all the customers' requirements. It is of little use for the producer or processor to complain as each has got to satisfy this demand. It is no longer sufficient for the primary producer to offer an animal for sale in the fond hope that someone will buy it at a high price. Similarly it is of little use for the processor to market a product and complain that the consumer will not buy it. Finally he summarized by saying - "that to stay in business the processor and the farmer have jointly to provide the customer's wants, when wanted and at the right price. To do this the producer must be told what is required when it is required, and in what quantity, and what price he will receive.

The processor must keep ahead of the market, not follow it and must obtain, and retain, the confidence of his producers as well as that of his customers.

Chart - Trends in Meat Consumption per head of Population.

	Beef.	Lamb.	Pigment.	Poultry.	Total.
1938	55 lbs	25 lbs	38 lbs	5 lbs	123 lbs
1961	50 lbs	26 lbs	46 lbs	15 lbs	137 lbs

INTEGRATION.

An Economist from Kings College, when discussing American developments in planned production and marketing said this:- "British Agriculture is struggling to adjust itself to the problems arising from both the technical revolution that has taken place on our farms, and the mass market demands for uniform food products from the ever increasing chains of self service stores and supermarkets. These adjustments assume many forms. In attempting to cope with this revolution in retail marketing many individual farm groups, farm industries, farm co-ops, and marketing firms are altering their methods of operation, seeking to extract the utmost benefit from the rapidly advancing technology in marketing and production. Perhaps the most important adjustment affecting farmer, processor, supplier, and seller of farm products which aims to better co-ordination of the function of farm and allied farm industries, is integrated farming. This can be defined as the production of farm products for the exact specification of a particular market, as opposed to hap-hazardly producing for a market. Three basic forms of firm integration are recognized; horizontal, verticle and circular.

Horizontal integration refers to a situation where a number of similar business units are brought together, under a common management, such as in chain retail stores, or an amalgamation into farmers co-ops.

Verticle integration is commonly defined as the combination which results when an organization controls several, or all of the stages of production, from the growing or the mining of raw materials, to marketing of the finished product.

Circular integration is the adding of products to the specialized line, which are sold, in order to effect operating economies, such as meat packing companies selling cheese and butter.

The chain store or supermarket is faced with four choices when placing bulk orders.

1. To find a production unit big enough to ensure that the supermarket, or chain of stores is supplied with a constant supply of graded, quality, produce.

2. To buy bulk from overseas competitors.

3. To go into the production and processing business itself.

4. To create one large production and distributing unit, while dealing with a number or group of primary producers, who sell to one processing centre.

The Americans, who operate a producer integrated operation insisted that only those producers who can supply top quality produce should be allowed to participate in a group scheme. Experience in the broiler industry in the U.S.A. during 1950 signified the danger of flat out production exceeding

demand. Broiler growers took a terrible beating, both as regards selling price and income during most of that year, but feed manufacturers, hatcheries and processors, were rolling in money, because of their high margins and high turnover. Suddenly, growers decided to stop taking risks, and almost unanimously decided not to refill their houses. The mills and hatcheries had to operate or go broke,so over night contractors were forced to commence bargaining. Guarantees and contracts were formulated, and the open market (farmer take all the risk) was for ever at an end for broilers. Integration happended, because the system was imperfect. It did not cause the market to become imperfect. Britain has followed the U.S.A. in developing broiler groups, and is also developing egg and pig groups. The farmer who goes in for integrated production must be something of a specialist, and must be prepared to cost his operation two places of decimals. It is no job for the farmer lacking in common sense - it is a job for the technician, and in a free production system, there is no subsidy to cushion the inefficient. Competition will become red hot between the farmers who have the ability to become specialized low cost producers, and those farmers who are unable to adapt themselves to this changing pattern will suffer defeat with victory to the technical chaps. Contract farming in the States has significantly altered the traditional farmers markets. Already the Chicago stockyards are being torn down, with only 20% of the beef being handled at the Terminal markets. The British meat industry must further develop special eye catching packs with a brand name prominently displayed, and there must be competition between brands. Markets are expanded by the competitive selling of brands, rather than pushing the bulk item. This type of selling is common with broilers and New Zealand lamb - would that it were with British chops, joints and so on, and that economically unfavourable parts of the breast, were making their potentially high profits as soups, sauces or spreads, cooked meats or pet foods. If farmers wish to have a guaranteed price for their produce, they must be prepared to give a guarantee to produce the exact produce required.

A FARMER'S VIEW OF THE FUTURE.

A farmer gave his view of possible developments and asked for a meat research institute to nominate what to produce and how. There are so many tools, market research, carcass research,genetics, nutrition and product development etc, many of them inadequately communicated, and inadequately financed, tools which could be re-sharpened, and re-vitalized by a meat research institute. The meat, and meat products, for which farmers produce the raw materials, must stand or fall, in competition with other foods. There will be more standardized demand in furture for the various types of livestock produced.

NATIONAL SHEEP BREEDER'S ASSOCIATION CONFERENCE.

At a Conference of the National Sheep Breeders Association at Llandudno, Wales a session was held on marketing, relating production to market requirements, export prospects in Europe, and the scope for producer groups. One of the speakers a butcher from Smithfield which he said was the finest dumping groung in the world. Another speaker, who, if I remember correctly, came from the Netherlands Legation and was substituting for another speaker, said that he felt "Like a sheep breeder in a Texan salon." He discussed

the European Economic Community and said that if Britain joined the Common Market, she would have a much better outlet for meat. Dutch lamb is exported to France and the French are roasting lamb and liking it at 7/- per lb for prime quality. New Zealand is advertising lamb in Holland and he thought that New Zealand should even export the mint sauce with the lamb. He said that 4 years ago, he tasted his first mutton - he would now walk 4 miles to eat it. Why not teach French, German and Netherlands people that mutton can be part of their diet too.

There was a question and answer session recorded and broadcast by the B.B.C. A panel of speakers made some interesting comments and the questions and answers were briefly these:-

1. Will New Zealand lamb still be as popular and compete with home supplies?
   Answer: Politically, a large percentage must still come in.
2. Is imported meat responsible for our low prices?
   Answer: Our own local suppliers have forced the prices down.
3. What are Smithfield's chances of selling on the European market?
   Answer: Not very good. Meat for the Continent must be quality!
4. Is it necessary to control the imports of meat?
   Answer: No I don't think so. New Zealand for instance is very wise and sends the bulk of the supplies here to try and sell prior to August, before the flood of home killed meat comes on the market.
5. What about Producers going into the retail side of business?
   Answer: By all means put up your money. You too, would possibly require a profit margin of 20 - 25%.

In a question of lamb preferences, it was stated that New Zealand lamb was preferred because of its uniform standard grade and weight.

FAT STOCK MARKETING CORPORATION.

As a Producer supporting both the Primary Producers Co-operative Society and Producers Meats in past years I was naturally keen to see something of the F.M.C. in Britain, which handles a large proportion of the throughput of of these two New Zealand companies. The F.M.C. were doing something like 20% of the home business, and were handling apporximately 1¼ million N.Z. lambs. Imports of meat are a necessity, as Britain is unlikely to ever produce all her own requirements. Two way trade is necessary and the day this stops, then Britain will be done. Last year's subsidies on meat were 75% greater than were expected, and little is known of the future of subsidies, something must happen.

Large quantities of beef coming from Yugoslavia are in great demand, receiving premium prices over Argentine chilled. The young bulls are fed on a rising plane diet and at 12-14 months of age are slaughtered and dressed for export.

Recently the F.M.C. purchased Marshall and Baxter, and is now to be a public company, with Directors for the Public. Last year's profit amounted to 30% on capital invested, and they are following the policy of ploughing back profits. Future prospects for New Zealand lamb brought forth this comment:- "this year, as I see it New Zealand would be better off exporting 12 million lambs at £4 a head which would equal 48 million pounds, than 15 million lambs at £3 per head equalling £45 million. New Zealand would be £3 million better off and also have a further 3 million lambs to develop

new markets". Meat is a changing trade with a trend towards a smaller number of bigger buyers; similar to takeover bids and mergers in other fields of the business world. Today we see packaged cuts, faster transport colder temperatures in ships, and other techniques being scientifically investigated. New Zealand lamb is a valuable commodity to the British butcher and can be bought in large quantities so that a reserve may be kept in the fridge. F.M.C. realise the importance of quality, and are paying a premium of 10/- a pig and 5/- a lamb for types of carcass most suited to the trade. There are 3,500 slaughter houses in the country but today 200 would suffice and there would be a more economic processing of the by-products. One of the most profitable sides of the business are the edible offals and by-products. Approximate slaughter house by-products values were 2/6 runners, hides 12/6, livers 3/6, hearts 6d., fat 6., head legs and feet 6d., a total of £1, which should average 6d. per lb per carcass. On the weekly throughput of meat at a particular abbattoir, the average processing cost per lb. was 1.117 pence, which included cartage from the farm, slaughter, storage and delivery costs. On this basis there was at least 4d. a lb profit on by-products. F.M.C. receiv 3% commission from the sale of New Zealand lambs and from this they pay freight to a chain of 100 distribution depots throughout Britain. In discussing the market for beef it was suggested that New Zealand should send only cuts of beef frozen and packed in cases. The cheaper cuts such as the flank and flaps should be kept and processed.

THOMAS BORTHWICK & SON.

The firm of Thomas Borthwick & Son is a well known name in the meat world. Of the 18 to 20 million carcasses of lamb and mutton exported to Britain from New Zealand, Borthwicks probably handle 20%. They have a large number of distribution centres, at strategic points throughout Britain, with an effecient delivery service to country towns and townships. Distribution depots and large capacity cool stores are two essentials for the successful marketing of imported frozen meat. It was an education to be shown over Borthwick's wharf cool store, and to be shown and explained their accounting system. The big six, as they are known, all have ample cool storage space. The smaller agents find it necessary to sell their supplies as deliveries come to hand as with no system of distribution they sell, when there is a drop in the market and subsequently discount prices. Continuity of supply is a most essential feature, particularly in the January to June period, when sales must be pushed to the limit. From the 1st January the New Zealand ports are heavily committed when 50/55,000 of meat a month are loaded. In March and April fruit takes preference. Travelling with the agent for Thos. Borthwick & Sons calling on butchers and selling meat was a new experience and when butchers were questioned on thequality of New Zealand lamb, comments of about 80% were, "Why was the lamb so fat?". Most seem to prefer a 31 to 32 lb weight of lamb but you can't please everyone as one butcher commented "Your lambs are wonderful the way they are, but your beef is not so good". We were told that there would be a demand for beef throughout the world and that New Zealand should produce more.

TOWERS & CO.

At Towers & Co., which is New Zealand owned and operated. Messrs. Melville and Robin Pooley gave us some of their valuable time. We discussed the schedule system of payment to producers which has proved to be a very hap-hazard method, They suggested that producers must decide to retain shipping on our own account or suffer as the South American works did after being taken over. Producers and Companies must work together in harmony, and should get together prior to the beginning of the season, to discuss and agree on a figure or a 90% payout with the balance at the end of the season. They agreed that fluctuations were not a good thing for the Company, nor where they for the farmer. In some seasons losses were made yet they made up to 30/- per head profit in others. Towers want the Producer to have confidence in the Company and are prepared to work on a co-operative basis, At the present time they are happy to have farmers shipping on their own account, through their organization. Again it was suggested that there would be a future demand for beef. Argentine for instance was not able to compete very greatly for the next 3 years and there was a demand for rapidly matured well finished beef at 580 - 600 lbs, as long as it was not too costly. If the quality did not qualify the carcass should be packed without fat. Chilled beef is worth while, but the problem is to have a regulated continuity of supply over the 12 months to build up and retain a worthwhile market. There is a limited and worthwhile demand for wethers in the 45-65 lb. group but at that weight are worth no more than ewe mutton. Primal cuts are costing 3d. a lb on an overall carcass weight, with 4½d. a lb on the cuts weight and these are proving very popular. Primal cuts are also proving very versatile, and can be sent where there is a market demand for the particular joint within the price range of the consumer. Recently 280 tons were sent to Ghana, and 200 tons of these were breasts. There are prospects of new markets on the Continent and at some time, Towers have sold meat to all Countries other than Spain. Apart from costly import tariffs, one problem for New Zealand is that Western Germany and Italy must be able to carry out veterinary inspection in slaughter houses. There are also prospects of markets in Malta, Norway, Sweden and Denmark. Large sums of money can be spent in promoting these new markets but there is always the risk that an opposition firm will undercut your prices to gain next year's contract. It was an unusual experience to spend an afternoon in the office of MacPherson , Train & Co., listening to the talk as many sales were persuaded and encouraged over the telephone. It made me feel proud to be a Southlander when I was told that the finest and best processed slipe wool in New Zealand came from the Southland Frozen Meat Company.

OBSERVATION.

Southland Frozen Meat Coy.,

One couldn't help noticing a number of trends in the enterprises of the sheep farming world. In the sheep industry, the trend is to the early maturity of lambs, at reduced carcass weight. Many are endeavouring to produce lamb out of season, lambing extremely early by the use of the Dorset-Horn, and in some cases, hormone injection. Today, it is not difficult to

combat, and overcome the rigours of nature in many avenues of farm production, when good prices justify the cost involved. It was also surprising, and yet practical, to find a considerable number of farmers, producing lamb for the fresh meat trade, neither docked nor castrated, especially if the lambs were from ten to twenty weeks of age. There are approximately thirty six breeds of sheep in Britain. Pure bred sheep are used for stud purposes, breed replacement and to produce first crosses. Many breeds have characteristics to suit a particular environment. Very few British farmers who produce lambs commercially for the fresh meat trade, are particularly satisfied with the merit of any one breed or cross, therefore in many ewe flocks, you see the results of two, three, four and five crosses. Some flocks have four and five combinations of crosses, and while some farmers could state the background of each of these, it looked to, me as though a number were an accident the result of private courting. Many crosses were most interesting, and I personally could not help being impressed with the larger size and weight at maturity of some breeds. When dressed and on the hooks, many carcases were in wonderful condition in relation to the correct fat covering needed to suit present market requirements. On the other hand I did feel in the majority of cases, comfirmation and standardization of type compared very poorly with New Zealand's Romney-South down cross. This is rather surprising since the British meat producer has a great advantage as when selecting breeds or individual animals for crossing purposes, he places little emphasis on wool type, quality or weight. This disregard for wool is understandable, as the wool income is only 10 - 18% related to the ewe income equivalent, whereas in New Zealand it is rated at probably around fifty per cent. A number of breeds only shear 2-5 lbs. of wool and I did hear one farmer refer to his wool income as "only amounting to beer money".

During the National Sheep Breeders event held at Llandudno in Wales, the conference members visited the Llysfast Farm Institute at Rutham. I can well remember a most educational display of ewe and lamb crosses. While breeding centred around the Welsh Mountain ewe, and from this angle, was not relevent to New Zealand conditions, the method of display was most commendable. Each of six pens contained a ewe and her lamb, representing particular crosses. Also on display, above each pen, was half a dressed carcase from a similar lamb. The other half was joined into the various cuts, demonstrating fat covering, depth of the eye of meat, etc., The skins from each lamb were also displayed, along with its recorded weight, as were stastistics of the breeding, birthweight, present weight, and live weight gain per day. The ages of these lambs varied from twelve to nineteen weeks. How revealing and educational similar displays could be to New Zealand farmers.

The general day to day management of the ewe flock, was most interesting. Under the intensive farming systems to be found in Britain, concentrate feeding is normal practice for a large proportion of the year. It seems to cost the average farmer around about thirty shillings per ewe to provide the necessary concentrates, and grain supplementary feed for a period of twelve months. For lambs it wasn't unusual to spend ten shillings per head on concentrates prior to marketing. The total concentrate feed stuffs used on farms in Britain is estimated to be 14.5 million tons per annum.

Stock health in general seemed on the whole very good, although the Nematodirus Worm is proving a real problem. Because of this, it was common practice in many areas, for ewes and lambs to be grazed only on those fields which had been free from live stock during the previous twelve months. While we in New Zealand could possibly teach much in the extensive management of sheep, I felt that we could also learn a lot from the British farmers in the way of intensive management. In lambing time their weather, by comparison to our own, is quite unseasonable. During the stormy days, we could profitably consider using the indoor shelter pens for ewes with new born lambs; the ewes can be speedily transported to these comfortable surroundings by the use of the tractor tray and stock crate. Many farmers practise the forward creep grazing system, although this involved quite a lot of extra labour and expense for temporary subdivision. The results were apparently worthwhile, or farmers would not have perserved with this system of management. It is usual to have a paddock subdivided into six with sufficient creep hurdles in each. The main aims are to see that the ewe has an ample supply of lush feed to maintain the milk supply at the highest level, until the lambs begin to graze. Their lactation peak should be reached at two to three weeks after lambing and from this point onwards, the lambs are allowed to graze ahead of the ewes, the flock being rotated around the small paddocks as is necessary. If the growth of the pasture becomes too lush or mature, then such areas can be used for silage or hay, unless the flock numbers are increased to cope with the increased growth. The farmer must always be watchful for the Nematodirus Warm, and on request, the N.A.A.S. Officer will take sample droppings from the field. These will be checked at the laboratory for worm counts, and, if necessary a treatment will be advised.

The lambing percentages heard of as we travelled around Britain were something that would bring headline news in New Zealand.

For instance one hundred and eighty six per cent for four years in succession in one flock. Another, 120 ewes, 245 lambs which included 24 sets of triplets. The general animal husbandry and live stock management, are something of which we only dream. It must be remembered that so many of these results can be attributed to an abundant supply of qualified farm labour.

In beef production nearly seventy per cent of the fresh home killed beef is a by-product of the dairy industry. The dairy herds of Britain are today predominately of the Friesian breed. Where the Calves are not required for herd replacement, it is common to cross with a beef breed bull. These crosses, and also the pure friesian are producing an excellent quality beef when the animals are housed and efficiently managed. At the present time production and market demand is for an 8 - 12 cwt animal, which will reach this stage at ten to fourteen months of age. These animals are practically all housed, and fed on varying diets, ranging from combinations of hay and silage, roots, crushed grains and concentrates. The Rowett system of barley beef is having a remarkable result in growth rate, and producing an excellent quality animal and carcase. The animals are fed on a pure diet of lightly bruised barley without restriction to quantity, and consume 26 - 30 cwt per head in a twelve months period. A small quantity of soft straw or hay is also given as roughage to aid digestion. With barley prices at £27 - 28

a ton, the economics will most likely rule out any extensive use of this system in New Zealand, unless our beef prices rise much above their present level. I do feel that housing and alternative methods of feeding beef cattle will come to New Zealand in the very near future, even if only to prevent the animals poaching good pastures in the heavier rainfall areas. Fodder could consist of self feed silage, hay and chaumollier or roots, such as swedes. With modern mechanization, all this is possible without involving too much labour. The greatest deterrent to the average New Zealand farmer will probably be the lack of capital to provide necessary suitable buildings and yards.

MARKETING OUR MEAT.

In reviewing the meat marketing situation in Britain in light of these observations and discussions, many points appear obvious. First and foremost New Zealand has developed and established a tremedous market, particularly fat lamb. The main funda-mental principles of providing quality graded carcases, with a continuity of supply, plus market research and adequate publicity from the New Zealand Meat Producer's Board, has gained us good will which is enviously looked upon by local producers of fresh meat. This is particularly so in times of shortage, when loyal customers demand New Zealand frozen lamb, and the price has at times exceeded that of fresh meat. It would appear, that there is at present a sound market for at least 18 million carcases a year. In spite of talk of developing new Market, I believe it would be most unwise to divert too many of these from the British market. It is, afterall, worth a lot to us as producers to have a relatively stable market, absorbing so much of our annual production. While we desire increased prices, we should also remember that the cost to the consumer must be competitive. Any reductions in our supplies would mean an increased price to consumer, with possible consumer resistance and reduction in volume consumed in favour of alternative meats. This would also be a wonderful opportunity for other countries, such as Argentine and Australia to fill our deficit on this market. Prices are of considerable influence in the sales of the product. A prominent economist said that when the Kroger Chain in the U.S.A. reduced the price of chicken from 29 cents to 19 cents, or 2/0½ to 1/4d per lb, consumption went up 500%

BREAD RESEARCH.

After reading and hearing the results of various Breeding programmes, organized by such men as Oscar Colburn, Professor Mac-Cooper and his staff at Kings College, Newcastle on-Tyne; the Thornber Enterprise, or the Animal Breeding Research Organization, I wonder if we in New Zealand are not resting on our laurels and the tradition of the Southdown Romney Cross. One has only to consider the astounding results breed research has had in the poultry or the chicken industry, to know that the same outcome can be expected for the sheep, cattle, pork and bacon. Another interesting fact was that so many of the breed research experiments were being conducted by private enterprise, farmers, stock food manufacturers etc., This is in addition to the very extensive work carried out by agriculture universities, colleges and experimental husbandry farms. Research on breeds, and the variation of types within a breed, in relation to carcase size, fat content, eye of meat and joint size is most essential. It would appear that prices of

the future will be mainly based on quality, in relation to the quantity and variety of meats offering. As wages of consumers rise, standards of living rise accordingly. But the demand is for increased quality rather than quantity. By today's standards a large number of our lamb carcases are going overseas, containing excess fat, and it seemed more than coincidence that the greatest offenders are producers from Dunedin-South. To me, the reasons are that firstly, the farmer knows that under present schedule rates it pays him to produce heavier lambs, as the nett return is higher per head. Secondly many Farmers draft less often than they should, with the first draft not taking place sufficiently early in the killing season. When a study is made of the prices received on the British market from weekly quotations, it can be seen that there is as little as ½d. per lb variation in prices of the various qualities. This means that lambs which are considered second quality are of nearly equal value to that of first quality. The first quality lamb is discounted in value because of excess fat, in spite of excellent conformation grading. This shows the predjudice against excess fat.

We in New Zealand should be concerned at our apparent lagging behind of any large scale directed and controlled research of breeds, types within a breed, carcase analysis and evaluation, maturity weights etc., This is a national problem and we cannot afford others to race us in the attempt to produce the ideal carcase to meet the market requirements of Britain- or any other country.

Neither do I believe that extensive experimental crossbreeding of various breeds of sheep should be allowed to take place at the pleasure of the New Zealand farmer, except in co-operation with the Meat Board or the Meat Research Institute. Alternatively, if an experimental plan was worked out by some responsible body, with the ability to also supervise and co-ordinate the results of this work, then much could be achieved. We are fortunate to have at our disposal a very large number of ewes of a stardard type Romney Crossbred, and this would greatly assist any experimental work. There are many farmers throughout New Zealand who would be prepared to co-operate, and portion of their breeding flock could be crossed with a number of rams of selected breeds. Their progeny, reared in the common environment, could than be tested and evaluated as they reach various stages of maturity, and a comparison made of their relative qualitites. This must surely be of more value to the New Zealand meat industry than by having farmers blindly and indiscriminately crossbreeding to their own fancies, or the enthusiasm of any particular breed society. It seems logical that this research could be the responsibility of the New Zealand Meat Producers Board, and the Meat Research Institute, along with the Freezing Companies and Meat Operaters. In the early stages this would virtually mean preformance testing, and carcase appraisal of the progeny from various combinations of ewes and rams or ram crosses. The latter stages would result in progeny testing of the approved types of rams.

In the country so dependant on primary production, it should not be a farmers basic problem to be worried about economics of production, prices, markets, market trends or demand. This is a national problem, and while we must always try to be efficient the responsibility and directive policy

must come from the Government and Meat Producers Board. In adopting a policy such as this, we would be following the present practice of many in Britain who are endeavouring to produce quality food stuffs. Premium prices are paid as an incentive to the farmer to produce top grade To be successful, we must produce for the market; not follow behind it.

The most important characteristics required to retain our Market in Britain are:1. To improve the quality of our lamb carcase where possible and resist the production and export of any carcase with the slightest excess of fat. Conformation must resemble as closely as possible the down cross type of lamb, which inevitablely wins a lamb competition at Smithfield. 2. We must retain and enforce a uniform grading system with thought given to any improvement possible. Countless numbers of our client butchers are able to order supplies of the type or grade of lamb required, through a travelling agent. They have sufficient faith in our grading to purchase without appraisal. Our standardized grading and efficient marketing is the envy of British producers. 3. There must be a continuity of supply to meet the demand at all times. Nothing is more disappointing to a customer than to be told that supplies are short, or that they have not come to hand. 4. We must produce, and provide sufficient quantity of carcases to hold the market steady, at a reasonable consumer price leval throughout the year , avoiding violent fluctuations.

INFLUENCES ON MEAT PRICES.

Producers in New Zealand have often criticized our schedule system of marketing lamb and meat, particularly when market prices soar late in the season and they secretly wish they had shipped on "Own Account". Very little comment is heard if prices fall! There are so many governing factors affecting the price of meat that to be able to forcast the average seasonal price is a most difficult task, comparable only with predicting the form of race horses. On our own doorstep the lambing can be good or bad making a variation of numbers for export. We may have an excellent season with ample feed throughout, thus providing heavy weight lambs as against lightweight lambs when in drought conditions. When the lamb reaches the market, there may have been a considerable carry-over of frozen meat from the previous season, or there could be a shortage. Home-grown lambs may have done exceptionally well and are marketed early, or may have been carried over on feed and sold late, about the time fresh new seasons New Zealand frozen arrives. Beef supplies can be heavy or light and prices rise and fall accordingly. Perhaps the weather is very cold therefor the consumer prefers to eat stewing beef in January, ,February and March. Supplies, or even projected supplies from other exporting Countries, whether high or low can also exert their influence. To sum this up, prices basicly depend on the law of supply and demand, consumer preference and the ability of the particular Agents to sell well.

If we are not satisfied with schedule prices, then we have every opportunity to run the risk of marketing on our own account, in a number of ways. The Company Pool, the P.P.C.S. or Producers Meats are perhaps the more common channels, and any profit or loss is spread over a large number of supplies. When shipping on own account you must first be shipping a minimum of 250 carcases. You may then nominate any marketing agent to

handle these carcases on your behalf, but remember that the choice deserves serious consideration. There are many agents who have no cool stores and no chain of distrubution depots. These are mostly classed as among the weaker sellers. If these agents happen to have a large supply of lamb on hand and another shipment arriving, they are often obliged to sell at reduced prices. This automatically depresses the prices of others in a more stable position. It would really seem to be in our interests to only do business through a number of bigger agents who give stability to marketing. I have heard it said that we do not receive full value for our lamb on the British Market, and the suggestion that the agents are not selling to the best advantage. This is really quite ridiculous; the law of supply and demand is always a primary influence and the sale of meat is always most competitive. If the various Meat Operating Companies have bought at schedule prices the higher their selling price the greater the profit margin. F.M.C. sell on a commission basis of 3 per cent and it is therefore in their interests to sell well. It has also been mentioned by New Zealand farmers, that we should distribute and sell all our meat under the control of one marketing authority and they quote the example of the Dairy Marketing Authority, and the disposal of New Zealand dairy produce. To my mind this could not meet with any real success as the very diversity of grades of meat and by-products, as well the extensive number of markets in practically every country and corner of the globe, would make this a mammoth task. Try to imagine the capital cost of all the necessary plant and buildings, the services and qualified staff to be provided. If we were to take this task from private enterprise and replace it with one huge organization, creating a monopoly we would lose the spirit of competitive selling, which is co valuable. Competitive selling of common products has the effect of raising the level of prices, increasing sales and consumption.

THE SCHEDULE SYSTEM.

Many have wondered at the possibility of some alternative to the schedule system of purchasing meat from the producer. Over the past few years there has been violent fluctuations in markets and prices and we know that the Freezing Companies have had severe losses in some seasons and that in others, they made handsome profits. The managing director of one large trading agency, quite openly admitted that at times his company was making up to 30/- per head above schedule. This continuing situation causes discontent and lack of confidence for both parties. At present when schedule values become too low, farmers endeavour to even out the variations by supporting Producer Co-operatives, Company Pools or shipping on "own account". This probably aggravates the situation, when many farmers unconsiously market through weak sellers. In trying to find a solution to the problem, any proposal must firstly be superior to present systems and it must be acceptable to all parties. We must be sure too that this will bring greater stability to the farming and freezing industry. There is no easy answer, but I do wonder why farmers and Freezing Companies cannot get together, prior to the beginning of the season and set an average standard price. Farmers could receive a first payment of 85 to 90% at the time of killing and processing. At the end of the season all allowable costs would then be taken into account, plus a percentage commission margin for

the marketing agent with the balance being paid to the Farmers. The advantages of such a scheme would ensure that farmers receive full market value for their products. The Meat Board and Freezing Companies would have more contol over the distribution and marketing of the produce and those weak sellers would run the risk of losing supplies.

This would strengthen the position of strong sellers, who would receive increased supplies and greater profits. There are probably a number of marketing agents who would resist such a scheme, but it is also known that others are prepared to co-operate on these broad principles. What-ever happens in the future, it is obvious that to be successful in all aspects of production and marketing, there must be a much greater liaison between the producer, Freezing Companies, Marketing Agents and the Meat Producers Board. First and foremost farmers are producers and they look to others for a strong lead on the type, grade and quantity to meet market requirements. Planned production to suit planned markets is a desirable objective.

In Barn Hay drying.

"In barn Hay drying" appeared to be a method of producing top quality hay at practically all times, providing that one has good material at the beginning. This system could be a wonderful assest to those of us who live in higher rainfall areas and especially to lucerne growers. It would enable the baling and storage of hay to take place in a much shorter period from time of mowing thus lessening the risk of weather damage. By shortening the processing period there is a much greater retention of valuable proteins and nutrients. It also makes it possible to bale and store lucerne, or predominately clover hay when it still contains sufficient sap to prevent the loss of leaf. I did see a number of systems which included fans driven by electricity, from the power take off, and self contained deisel units. The most efficient and practical proposition appeared to be the moisture extraction type, a deisel motor in the 40-50 h.p. class, driving a high capacity aerodynanically designed fan, designed to handle either grain or hay of up to 1200 bales at one time. These were placed in a specially designed hay barn, provided with a partially false floor of weld mesh, to act as an air tunnel, and air tight walls to force the draughts from the base to the top of the stack. Under average humidity conditions, bales of hay 90 lbs in weight could be reduced through loss of moisture to 60 to 65 lbs in three days. I have no hesitation in saying that the most attractive and sweetest smelling hay I have ever seen, was made from this process. According to the results of the limited number of nutritionall trials so far conducted this fodder is proving very satisfactory. In one trial of Cross Calves fed on 11 lbs of barn dried hay per day, plus 1½ lbs of cake, there was an average live weight increase of 2.2 lbs per day. These animals were sold at 12 to 14 months in a weight range of 420 to 500 lbs.

The success and addaptability of English farming methods to New Zealand use is of course largely dependant on the economics of the proposition. The greatest burden of "In Barn Hay Drying", would be the initial capital outlay of the drying unit and a suitable building. The cost of drying is estimated at approximately 20/- per ton for fuel and oil, and an allowance of a further 20/- to cover interest, depreciation etc, on plant and buildings.

To offset these costs though, the increased quantity hay saved amounting to nearly 7 cwt per acre would go quite a long way towards balancing the budget, apart from the fact that one would have a quality product. In terms of Insurance value this could mean a cash increase of even 50 per cent in the value of the hay. Another important factor is that if you were also a grain producer, the moisture extraction unit could be a dual purpose machine, and used to condition grain quite successfully, as long as the capacity of the combine did not exceed the limits of the plant's drying ability.

SILAGE OR HAYLEGE.

Silage plays an important part in the economy of supplimentary feeding of live stock in Britain, and was in fact the basic diet in many instances. Quality was of primary importance, a high grade succulent pasture, a good pit or building with airtight walls, polythene lined in some cases, well consolidated and sealed were all essentials. It would appear to be a definate trend to cut and wilt the silage prior to storage. This has several worthwhile advantages through increased feeding value with no effluent run-off problem. Hayledge, as this is known, was also being stored in the sealed tower silo, and fed by automation. This of course involves considerable capital cost, and a more appropriate method for New Zealand conditions would be to self-feed silage for dairy herds or for the in-wintering of beef cattle with a suitably designed buildings and silage clamps fitted with barrier rail or electrified wire. In the colder and heavier rainfall areas of New Zealand we could profitably adapt this to our advantage. Less poaching of pastures, less waste, and conservation of food stuffs and better conversion ratio, are but a few of the many advantages.

INDUSTRIAL SMOG AND CORROSION.

As we travelled through Britain it became increasingly obvious there were many problems associated with industry and manufacturing. Slag and slay heaps, Mines, Pits and subsidents were a menace, as was the industrial smog with its direct and indirect effect on the countryside. One can walk the moors of Lancashire on the outskirts of Blackburn and see the black sheep, discoloured through the effects of drifting smog, or be shown a rusty cyclone wire type of fence and told that only two years previously this had been erected from new galvanized wire materials! In five to six years this fence needs replacing. Throughout the country, even in non industrial areas there was visible evidence of the corrosive nature of the atmosphere. Relatively new farm machines stored in good buildings were showing obvious signs of corrosion around the bolts and wherever paint had lifted. The R.S.J. and tubular steel truss type of buildings were also a problem and many farmers endeavoured to paint the steel work at least once in two years. One wonders at the wide-spread effect this atmosphere must have on the health of the people. One consolation is that I appreciate much more fully the fresh air of New Zealand, even if it does blow a little too generously at times.

Grain Drying.

Most arrable farms producing grain in Britain either had their own grain drying plant or had ready access to these facilities. These have proved to be most essential where the weather conditions are often unsat-

isfactory at harvest time. Practically no one delayed harvesting once the moisture content reached 21 per cent, and some continued up to 30 per cent. This enables the harvest to take place much sooner that would otherwise be possible, ensures a higher quality grain product which can be safely stored; and enables each combine to safely harvest more acres per season. Nearly all grain drying in Britain uses warm air as a means of removing the excess moisture. These methods fall into three main classes. - 1. Continuous Flow, 2. The Batch, with (a) high temperature and (b) low temperature, 3. In-silo drying.

The general principal seems to be that where a big flow of grain is coming in from the combine, a continuous flow dryer is used more effectively. Ventilated silos are quite satisfactory if large quantities are not inserted at any one time, unless the moisture content is reasonably low. The Insack Dryer is going out, because of the work involved, the lack of efficiency and the change to bulk handling. Most plants used are diesel fuel oil burning heating units, but I was also amazed at the number of electrical fan heater units, coupled to banks of permanent storage ventilated bins. The latest trend would appear to be the open floor method of storage, six to ten feet deep after drying. Alternatively others are laying mesh ducting on the floor prior to storage. This ducting covered with a hesiam material is coupled to a central air tunnel and warmed air is passed through when the grain is stored. This is a cheap and efficient method of conditioning granin, so long as the moisture content is not too high, and the incoming quantity not too great, or stored too deeply. Another trend, perhaps still much in the experimental stages, but used in conjuction with the open floor buildings are the pallets or boxes of grain with a mesh floor and containing approximately one ton each. The grain can be dryed and stored in the same container, and stacked three or four high. This is estimated to cost approximately £3 per ton. Potatoes cost about 55/- in boxes of about one ton. There are a number of worthwhile advantages of open floor storage, 1. the cost, which is approximately 10/- per ton, 2. if the farmer decides to stop producing grain, the building is a most versatile one, and can be adapted for many other purposes, 3. the accessibility and ease of cleanliness and hygiene, prior to the storage of the new season's harvest. Another system of reasonable cost storage is the weld mesh and hesian lined bins, costing 32/- per ton. They also had the advantage that they could be used on an open floor and after use could be rolled up and stored away until required again. There are many other permanent in-bin storage systems, a number of these of a completely self emptying type, but the cost is greater. One of the systems that impressed me was the syndicate grain drying plants, but I will give more details later.

In the course of visiting many farms much advice and many useful tips were given. When deciding on any particular method of drying and storing grain, a farmer must take into account all his own particular problems and his own situation. Unless a most suitable building is available it is usually cheaper to design the building to suit the plant, rather than the plant to suit the building. From observations this is very true. Two pits are desirable, to cope with various varieties of grain and moisture contents during the day, unless adequate provision is made for temporary

storage bins. Few grain drying systems are able to cope with the harvesting capacity of combines and the incoming grain, but with temporary storage and shift work the output is greatly increased. It was said that grain can be stored safely for five to six days at 20 to 21% moisture without harm, and that it did grain good to sweat, as it drys much more quickly. I haven't been able to check on this statement, but from my own experience would certainly not like to see it more than six to seven feet deep at the most. The drying unit should be contained in a separate room to the permanent grain store, unless the dryer itself is fitted with a moisture extraction canopy, to force the fumes and bumidity laden air outside the building. If held within the building, these can cause serious trouble to grain already dried. Most Farmers dried their grain down to at least 14% moisture content. As many variations of moisture content can be found in one particular field of grain it is important that accurate readings are taken regularly and that the grain be overdried where these variations occur. Prior to storage of the new seasons crop care must be taken in thoroughly cleansing out dust and grain residual from the previous season. Where the buildings or bins can be effectively sealed, fumigation with smoke generators is recommended, but otherwise insecticidal sprays are necessary. If erecting new bins then choose a type without cracks or crevasses in which grain can lodge. When drying grain excessive temperatures should not be used and this is particularly so in the case of grain of very high moisture content. A recommended scale is as follows -- Feeding grain 180 degrees farenheight maximum, Milling 150 degrees maximum, Seed and Malting 120 degrees up to 24% moisture content, 110 degrees above 24%, Oily Seeds 115 degrees. Accurate readings of these temperatures are very difficult to obtain in many driers, and it is advisable to allow a certain amount of tolerance for this. After drying one should be certain that grain is cooled sufficiently for storage, otherwise sweating can occur and cause wet pockets and trouble spots in the bulk. During the storage season regular temperature checks and samples should be taken at many points within the grain bulk to ensure quality remains high. If trouble does occur this can very rapidly spread and contaminate a large mass. The main object is to ensure that a thorough and business like job is done initially, and little trouble is likely. Finally it is essential to service the machinery on every idle occasion during the harvest season and so avoid any breakdowns or unnecessary stoppages.

GRAIN MACHINERY SYNDICATES.

I was very impressed with the syndicate system of machinery ownership. This was particularly so in the case of high capital cost machinery for hay and grain harvesting, grain drying and storage plant. Where there are farmers with smaller areas of land and consequently samller areas of crop, individually they could not afford many higher capacity or labour saving machines, but by pooling their resorces this was possible. It gave farmers the benefit of modern and up to date plant at a cost of operation rates, which in some cases was a nett charge of considerably less than 50% of the contracting rate. Many farmers were taking advantage of these syndicates to purchase such equipment as combine harvesters, balers, weed spray units etc. In the main these machines were shared on a set rotational basis by three or four farmers. The grain drying and storage syndicates were on a larger scale, and appeared

to involve 10-17 farmers in each group. The plant was erected in a centrally situated position in relation to its members. It was a modern one operator push button plant, and all farmers had the advantages of bulk handling, drying, dressing, batch weighing and bin storage if designed. The plant would quite normally be able to cope with the harvest of the group, usually around 1,000 tons, using a grain drier capable of 3 ton per hour at 5 per cent moisture extraction. Each syndicate has a chairman and a secretary, and draws up its own rules for day to day operation of the plant. Any problems or issues arising are decided by the committee of three or more. The syndicates are all formed under the constitution or articles of association of "Syndicate Credits Limited", which have been drawn up and sponsored by the National Farmers Union. A special committee from the National Farmers Union investigate, advise and aoprove, or otherwise, each scheme proposed. There is also an agreement with Barclays' Bank, whereby the farmer members pay an initial deposit of one fifth of the capital cost involved, and the bank pays the other four fifths, by way of loan with an interest rate of 1½% more than the normal bank rate. The farmer members repay this loan over the next four years if it is for Farm Machinery, or five years for fixed equipment in equal half yearly instalments. Each farmer's share in this syndicate is proportional to the actual tonage he guarantees to grow annually in relation to the total tonage guaranteed by all members as a fraction of the total capital outlay. Mr. Aylward, the farmer who initiated the syndicate system is owner of two farms, and personally involved in ten or eleven syndicate groups. He has at his disposal machinery and equipment which cost £55,000 yet his total capital payment has only been one fifteenth or approximately £3,660 pounds as his financial share. As he says, this not only gives him the benefit of full mechanization but also substantial cash savings, to invest in live stock or land, with its greater earning power. The bank also has greater security by lending to a group rather than an individual.

FARM MECHANIZATION.

British farms are very highly mechanized by our standards, and I could not help feeling rather envious of the vast range and selection of machines available. The ever increasing cost of farm mechanization in New Zealand to-day is one of our many problems. This relates to most normal every day equipment, and even more so when it comes to the costly specialist type of machine, which is used for the one purpose, such as a combine harvester or the hay baler. When we compare the farmer's purchase price of a machine in Britain with the New Zealand list price, it seems that in many cases we are being exploited. I fully realize that in New Zealand we must bear the cost of freight charges, but on the other hand there is no import duty or sales tax on agricultural equipment. It would also be fair to assume that New Zealand agents of machines would import equipment from the manufacturer at substantially reduced rates, in relation to the British farmers' buying price. Consider the differential in combine harvester prices. English £1,800, New Zealand £3,403, English £1,910, New Zealand £3,570, English £2,525, New Zealand £4,340, English £2,950, New Zealand £4,714. The mark up on these and other articles seem much in excess of reasonable freight and handling charges. Many of us in New Zealand are aware that Agricultural

Production in Britain is highly subsidized but probably few know general details of its administration or generous extent.

GENERAL FARM SUBSIDIES.

In 1962-63 grants to farmers were as follows:- Ploughing pasture or lea which had been under grass for at least three years £7 per acre. For land continuously under grass since before 1946 a special grant of £12 per acre is available. For hill cattle a subsidy of £12 per head is paid on cows and heifers in calf in regular breeding herds kept on hill land throughout the year. A subsidy of £9. 5. 0. per head is paid for steer calves and £7. 10. 0. for beef type heifer calves, born before 29th of October 1964. Heifer Calves of the Guernsey , Jersey, Ayrshire and Friesian Breeds are not eligible. Hill sheep subsidy of 6/- per head is available on eligible ewes, shearling ewes and standard grade flocks, while reduced rate flocks were 3/- per head. Where there are farm improvements a subsidy of 33⅓ per cent is granted for approved schemes. This would include the building of new permanent buildings or alterations. Farm sewerage disposal, work on roads, fords and bridges, electricity, sheep and cattle pens, fencing, cattle pens, fencing, cattle grids, shelter belts, reclamation of waste land, removing hedges, ditches, boulders etc., as well as claying and marling. A 50% grant is normal on the actual cost of approved farm drainage and ditching. A grant of 25% is available to-wards the cost of providing farm water if from a public supply, or a flat rate of 40% of the approved cost when using private source. When applying more than two tons of lime from an approved source, 65% of the delivered cost and a contribution towards the cost of spreading is received. Subsidy contributions towards the cost of sulphate of ammonia fertilizers is £8. 1. 0. per ton, super-phosphate 18% p. 2. 0. 5. £5. 9. 6. per ton, and the subsidy on compound fertilizers are based on its nitrogen and phosphoric acid content. There are guaranteed prices for the main items of farm produce. For fat stock during the 1961-62 season cattle, per live hundred weight, received 167/-, Sheep, per pound dressed carcase weight, 3/2, Pigs per score dead weight, 46/9, for cattle and sheep any subsidy paid is based on a seasonal scale of weekly standard prices. The weekly rate payable is calculated by taking the average market price of the previous four weeks, and the estimated average price for the following four weeks. The subsidy is then the difference between these averages and the guaranteed price set for the season. For steers and heifers this is only an average rate. Grade 1. animals received 2/1d. per cwt. more, whereas grade 2. animals are 2/11 lower. The price for pigs also varies according to the price of a basic ration of feeding stuffs, and the basic level of the pigs certifications. This is adjusted up or down at quarterly intervals if necessary. Where baconers are sold by grade and dead weight premium quality. A.A. plus receive 3/- per score extra and 2/- mor for A.A. Grade.

WOOL MARKETING AND PRICES.

Marketing of Wool grown in the U.K. is regulated by the British Wool Marketing Board. In 1962 the Government fixed price was an overall average of 53¼d. per lb. 5d. per lb will be deducted for marketing costs including one farthing per lb., for wool promotion, leaving a clip average of 48¼d. per lb. Prices vary for the differing breeds and reductions are made for the following defects. Tinted fleeces 4d. per lb, stained fleeces 12d. per lb,

tar or paint branded fleeces 10d, fleeces tied with binder or bailing twine 2d, unwrapped fleeces 2d, claggy or undocked fleeces 2d. Merchants also supply sheets and lacing string, (packs and seeming twine) and freight is paid from the nearest railway station.

Milk prices for 1961-62: these were guaranteed at 3/2-3 pence per gallon for the standard quantity of milk required. Excess milk earns for the Pool Market Realization of manufacturing milk about 1/5d per gallon. After allowing a ½d. per gallon for sales promotion and administration, the price for T.B. Tested Producers is estimated to average 2/10¾d. per gallon. Ordinary milk will receive 4d. per gallon less. The actual price paid to the producer varies month by month throughout the year, and from region to region in some instances.

CEREAL PRICES.

The guaranteed price for barley is 27/7d. per cwt., and has a 9d. per cwt penalty if sold during the July to October period, but during January-February, gains 1/- per cwt, March to June plus 1/6d. per cwt. Each farmer sells at the best market price he is able to receive throughout the year. At the conclusion of the season the average yeild calculated according to the number of æres grown which enables an estimation of subsidy payments to those who grow barley for their own use. They receive a subsidy based on the overall yield for Britian according to the actual number of acres grown on their property. Payments for wheat and rye are made on the quantity of the millable grain sold. The price for wheat varies throughout the season, and for 1961-62 was as follows:- July - September 24/6 per cwt., October - November 25/11, December - February 27/5, March - April 29/1, May - June 29/6. The basic annual price is 26/11 per cwt, which is equivalent to 14/5 per bushel. The price of rye was 21/7 for the season, and oats 27/5 per cwt or 9/9½ per bushel.

PASTURES AND GRASSES.

Pastures on Farms were generally of very good quality, although a great percentage had little or no clover. Many exclude clover seed from the mixture at the time of sowing, because experience has shown that heavy nitrogen applications had attendancy to suppress the clover, which would eventually disappear. On the other hand I did see a number of pure red clover temporary pastures which had been sown under grain crops, barley in particular, and were used mainly to graze ewes and lambs. Seldom did I see pastures allowed to become rough, and run away to dry seed heads,-any surplus growth is closed up and fully utilized as silage or hay. There is also an obvious lack of perennial weeds, especially thistles. I understand that farmers are prosecuted if any such weeds are not mown by a certain date, prior to flowering. It is a great pity the same situation did not apply in New Zealand.

PASTURE RESEARCH.

Two visits to the Aberystwyth Plant Breeding Station in Wales, and one to the N.I.A.B. at Cambridge were well worth while. I was most interested in the performance of many new pasture plants, breed and growing in trial plots, along side equally interesting established grasses of the famous Aberystwyth varieties. These species impressed me. A hay type Timothy S. 51, the Pasture type S. 48, which was dense for short grazing, and also

the new S.352 Rimorhy looked most promising. The S.170 Tall Fescue is most palatible and has shown a better animal live weight gain than Rye Grass. Meadow Fescue compared very favourably with Rye Grass and many farmers showed a definite preference for it. In their opinion it withstood drought much better, becasue of it's deep rootedness, and was more palatible to the live stock. It will also be interesting to watch the progress of the Meadown Fescue Italian Rye Grass Cross, as this plant looked most attractive. Trial Plots of Cocksfoot, Plants, propagated from seed obtained from many countries gave an interesting comparison. I am sorry to say that one of our New Zealand types showed up in the worst light giving the very poorest performance and obviously didn't have the winter hardiness required for a British climate. Many Plants were missing through frost damage. In general, apart from our clovers which do very well and are popular with the farmers, our other grass seed species produce well in the Autumn but have a most unfavourable winter production and frost resistance. If we plan to produce and have an export market for seeds to Britain it seems we could well afford to pay more attention to the plants' ability to withstand the winter.

Sugar Beet.

There were an estimated 427,000 acres of sugar beet grown in Britain during 1961-62, with an estimated yeild of 5,936,000 tons of beet roots or an ultimate return of 760,388 tons of white sugar, (about 25/30% of British sugar requirements.) There are 18 factories in Britain which process these beet roots and farmers on good arable land are keen to grow it with acreage quotas keenly sought after, The guaranteed price is £6. 8. 0. per ton at 16.5% sugar content. There is a price differential of 7/6d. per ton above or below the ten year weighed average, this at present being 15.96% sugar content. The average yeild of roots per acre in the 1961-62 season was 14.48 tons. One of the problems associated with growing beet has been the large amount of manual work and cost involved. In the past this may not have mattered as ample labour was available but today with the increasing shortage of labour and higher wages there is much research devoted to mechanization. Harvesting takes place during the late autumn-winter months, and if wet weather prevails then conditions can be difficult. As a crop it is a most efficient one to grow. During harvesting operations the tops are removed and these can later be grazed or saved and made into silage. Either way this provides a good quality stock food, equal to 20-30 tons of swedes per acre. The beet roots produce approximately 2½ tons of pure sugar to the acre. By-products from the processing include sugar beet pulp and molasses. The pulp can be dried, have molasses added, and made into nuts or blocks. This is sold at around £20 per ton, as an excellent stock food, equivalent in feeding value to barley. Surplus molasses are also used in the manufacture of yeast and citric acid. A sugar beet industry in New Zealand could be of value to farming but its success would depend on a number of points. Production would need to be fully mechanized; the return to farmers must be sufficiently attractive to encourage this further diversification and be necessary to cover increased capital expenditure for further mechanization; additional labour would be

necessary in many cases, as the important seed bed preparation and sowing takes place during September a peak labour demand period; there must be sufficient farmers willing to grow this crop, not one year but every year. A factory would cost 2½ to 3 million pounds to process the production from at least 12,000 acres annually. The factory would need to be centrally sited in an extensive area of easy arable lands of free draining soil type. It could be necessary to set up a system of "transport subsidies" to assist growers at a distance from the works. Part of the economics are directly connected with the successful sale of the by-products. There would need to be sufficient demand for sugar beet pulp nuts etc, creating the competition necessary to obtain a reasonable price. On the other hand the economics must justify a farmer feeding these products to his live-stock. The industry itself should be self supporting, without subsidy, in open competition with imports of sugar at world sugar price level, or no less than around £40 per ton.

SUMMARY

As a New Zealand Producer viewing British agriculture, it is only natural that I should draw some conclusions to the observations made. I would like to briefly list those points that come to mind which could be of economic and practical value to New Zealand. At the same time I must point out that six months study does not make anyone an authority on British agriculture, nor, by the same token am I completely up-to-date with the latest research projects in New Zealand. I would therefore prefer that these suggestions which I think would benefit New Zealand be classed as constructive criticismand, I hope, worthy of further consideration.

1. Agricultural Education: The Setting up of Farm Institutes to serve Provincial areas.

Day release and/or night classes could be held at the main farming population centres weekly during two terms a year, of approximately twelve weeks each and giving a three year cycle coverage of subjects.

2. Experimental Husbandry Farms:

In the Provincial area, possibly in conjunction with the farm institute, so that most modern and up-to-date techniques may be put into practise at all times and in all avenues of farm production providing a "shop window" to farmers of the area.

3. Farm Advisory Services:

To provide a much more comprehensive personal service than at present. That it become standard practice to annually visit every farm even without invitation.

More specialist advice to be readily available to assist in intensive farm production and management. Investigation into the provision of comprehenisve and complete "farm recording analysis sheets or books to aid farm records and budgeting."

Budgeting service to be readily available.

Organised field-days on hay-making techniques on a practical farming scale.

Conducted, educational farm walks-early evenings

4. In Barn Hay Drying:

More research and practical use could be made of in barn hay drying.

5. Haylege or Silage:

Made from surplus pasture growth in the flush of a season, resulting in better pasture control and management. Can be utilized in times of shortage or by increasing the stocking rate.

6. Thistles:

More positive control of our thistle and other noxious weed problem.

7. Plant Breeding:

That greater emphasis be placed on breeding for winter hardiness and frost resistant pasture plant species, to the mutual benefit of both the export seed trade and local pasture production.

8. Sheep Importation:

To consider the importation of the Welsh Mountain and the Scotch Blackface breeds of sheep on trial; to be grazed in selected areas, with a view to producing wool of a type at present imported to meet the needs of the carpet manufacturing industry.

9. Performance and Progeny Testing:

An extensive co-ordinated and controlled system of breeding and crossing within our major sheep breeds, with emphasis on performance and progeny testing. The same to apply within the beef cattle and selected dairy breeds.

10. Indoor Lambing pens:

More extensive use could be made of temporary indoor pens at lambing time. These prove to be a valuable asset on wet or cold days and nights with a definite saving in mothering up with an increase in the percentage.

11 Livestock Selling Centres:

That we modernise selling centres with weigh-bridge facilities at the entrance to the covered and enclosed auction rostrum, to be suitable for beef cattle, store cattle and calves.

12. In Wintering and Housing Livestock:

That a study be made of the economics, labour requirements, types of fodder, advantages and disadvantages of housing beef-cattle, store cattle or hoggets over the winter months.

13. Pre-cast, concrete truss type of farm building:

Investigations into the economics and supply of pre-cast and stressed concrete beam and truss type of farm building.

14. Polythene Sacks:

The option to purchase fertilizer in polythene sacks which can be stored outside for an indefinite period without covers and without deterioration of the contents.

15. Granulated Compound Fertilizers:

To provide a balanced chemical fertilizer which is free flowing, even flowing and not dusty.

16. Institute of Agricultural Engineering:

Provision of test reports on the complete range of farm equipment, to be available to all prospective purchasers. To work in co-ordination and liaison with N.I.A.E. of Silsoe England. Perhaps by some mutual agreement with them, the farmers of New Zealand could benefit from the many reports and findings already printed and available in England.

17. Mechanisation:

Precision seeders to sow swedes in particular, but also other row

crops; on the flat rather than the ridge, resulting in better and more even germination, easier and more thorough inter-row cultivation, and band spraying for weed control.

18. Ferguson Type Trailer:

To move rapidly towards the universal use of the standard type tractor trailer, with wheels fitted flush at the rear of the body, thus placing maximum weight on the tractor unit, at a point just below and slightly to the rear of the differential. The trailer to be picked up or deposited by means of the ring hitch which is coupled and operated by means of the standard three point linkage. The result is ease of coupling and uncoupling, much greater traction when under load, more control and greater safety. Hydraulic ram controlled tipping also a most useful feature to be fitted.

19. The use of approved tractor safety cabs:

An investigation into imported farm machinery prices where the New Zealand consumer price is excessive in relation to the purchase price in the country of manufacturs.

Progress: Would that the New Zealand farmer be injected with the enthusiasm to learn and progress as his British counterpart! We are too complacent! Prices received for produce have been good since World War II, mainly because we have had no real competition. Too many of us in all vocations struggle along with the philosophy, "she'll be right, we are making a good living and if we work any harder, we only pay it away in tax". Nationally we cannot afford these sentiments and the position must be rectified.

There is a saying in England which is worth thinking about "That an average farmer is only the poorest of the best and the best of the poorest".

20. Immigration:

The immigration of greater numbers to boost the farm labour position is essential if we are to progress and continue to increase our production and efficiency. Increased competition from industry with its forty hour week, high wages and town amenities will tend to sap the manpower from the rural community; a problem more likely to increase than decrease. There are many highly skilled and enthusiastic men in Britain, looking abroad for opportunity for themselves and their families, who would prove most suitable to fill the need in agriculture. Special officers could be attached to the London office of the Immigration Department to seek out, interview, check up on character reference and generally assist in making the necessary arrangements to have each person concerned transferred to an arranged position in New Zealand.

21. Road Courtesy:

The reality of driving a motor vehicle on British roads is not nearly as frightening as one would think. The courtesy of other road users to you is unbelievable, particularly so in the think of London Traffic. When stopping for traffic lights outside London Airport in the thick of six lane traffic, can you imagine a driver in a car on my right slipping across into the passenger seat, winding down the window and courteously advising me my door was not securely fostered. Imagine my surprise on another occasion, a week later when under similar circumstances of four lane traffic and stopping for lights. The driver of the car immediately to the rear slipped out of his car, walked up, tapped me on the shoulder and asked "Sir", are you aware

our door is not securely closed". I have an idea that the general eaction of most New Zealanders when faced with similar circumstances ould be; "Serve him right if he falls out".

Another example of sincere road courtesy, and it happened on several ccasions when travelling in the densest of traffic in London. Placed n the inside centre lane with three lanes travelling in either direction nd wanting to turn right across the path of on-coming traffic is not fun ut it was tremendous surprise and relief to find this traffic halt briefly nd allow you to slip through without the slightest hesitation. Is it ossible that we in New Zealand shall ever benefit from such spontaneous nd common sense action?

22. The Old English Pub:

The character and tradition of the Old English Pub or the Local Inn f which we read so much, still prevails in the villages, towns and cities. ven those reserved in their ideas of "licensed" hotels and the consumption of alcohol cannot be other than impressed with the standards of behaviour nd atmosphere of such surroundings. What a wonderful institution and community amenity; if only we could transplant it all to New Zealand, even ith the late closing. The great problem would be for the New Zealand drinker to adapt himself to the environment and drinking custom as in Britain. It is scarcely to our credit to be known as the country with the "five o'clock swill", a term often mentioned when questions were asked of us in Britain.

23. The World Situation:

In thought provoking discussions held at Nuffield Lodge along with fellow Commonwealth scholars, the emphasis was based on the world situation and our responsibility to other people. We certainly have our own problems in New Zealand but these are of a minor nature and a secondary consideration in relation to those existing in numerous undeveloped countries. Starvation, lack of clothing, hospital or medical benefits, advice, education.

It is of more lasting benefit to under developed countries and people to receive technical materials and educational aid, than continuing gifts of free or cheap food and clothing, except in urgent cases such as times of emergency and disaster. It was well said "That to give a starving man a gift of fish fed him for the day; but give him a fishing line and you feed him for the rest of his life".

New Zealand in its own right must be prepared to acknowledge this problem and give increasing assistance. The race against communism is on nd if we sincerely believe that the democratic way of life provides a etter answer, then let us prove it by providing every assistance possible.

I enjoyed a wonderful experience and acknowledge the assistance encouragement and information so readily available.

Thank you.

(Sgd) G. J. Pullar.

Gordon J. Pullar.