13 MAR 1980

"Rubicon",
Elizabeth Town, R.S.D. 180,
Deloraine,
Tas. 7304
3rd March, 1980.

Mr. H. J. Clappison,
Secretary,
Australian Nuffield Farming Scholars Association,
Ascot Vale,
Vic. 3032

Dear Sir,

Please find enclosed three copies of my report of my visit to the United Kingdom last year.

I am sorry for the delay but I have been extremely busy since my return.

Yours sincerely,

Michael S Bennett

Copies to GPAW, CR Kelly } 13/3/80 CQ

ACKNOWLEDGEMENTS

I would like to thank the Australian Nuffield Farming Scholars Association and all the sponsors, particularly the State of Tasmania and Qantas who made it possible for me to study in Britain.

I would particularly like to thank Captain J. S. Stewart, the Director of Nuffield Farming Scholarship Trust, and the Chairman, Mr. R. J. Cyster for their help, information and advice.

In addition I would like to thank the Milk Marketing Baard for the use of a car which made travel so much easier; the personel of the National Farmers Union, A.D.A.S., M.A.F.F., and M.L.C. who gave me a great deal of assistance.

My thanks also go th the Nuffield Scholars of Britain, particularly my first farmer hosts, Mr. and Mrs. Neville Stangroom.

INTRODUCTION

One does not fully appreciate the value of a Nuffield Scholarship until arriving in Britain when it becomes apparent the high regard in which the Trust and Scholars are held and the assistance that is freely given from all areas relating to agriculture.

Arriving in Britain in February from Australia one cannot help but be impressed with the Northern winter and this is the first major difference one notices between our farming systems. The high capital cost of housing stock for 5 to 6 months, the labour required to feed and clean, and the quantity of fodder needed is something we have little experience of in Australia.

The British farmer on the whole, is a very good business manager. With the high investment they have in farming this is most necessary. Good arable land is selling for £ 2000 - £ 2500 per acre. Money is costing from 15 to 20 per cent.

Grants are available for capital expenditure on a wide range of items, the main ones being farm buildings, silos, yards, farm waste disposal, gas and electricity supply, field drainage and water supply, roads, bridges, the provision of sheep and cattle grids, pens and dips, fencing, land clearance and improvement work and orchard grubbing. Fans for barn hay drying and associated equipment, milking and associated equipment and bulk milk tanks are also eligible for grant. The standard rate of grant is 20% of approved expenditure, and for field drainage the rate is 50%. Grant of 30% is payable on silos (other than for grain) and buildings for cattle accommodation, dairies and parlours and associated services for such buildings.

EUROPEAN ECONOMIC COMMUNITY

When looking at agriculture in Britain one must also look at the E.E.C. and the Community price structure. The European farmer operates in a protected economic environment that is far removed from world prices. The Australian farmer with comparatively small domestic consumption is subjected to the fluctuations of the much lower priced World Markets.

COMPARATIVE PRICES

	E.E.C. Support Prices	World Prices
Wheat	£ 118.22	£ 67.79
Barley	105.86	51.46
Maize	105.86	60.76
Butter	1893.38	487.16
Skim Milk Powder	769.33	185.71
Beef	910.60	522.10
Sugar	227.03	107.47

These high support prices have led to a high production of food. The E.E.C. produces 90 - 95% of its total food requirements. (50% of U.K. Food is imported).

Some commodoties are produced to excess. Dairy products are 110% of requirements. Much liquid and powdered milk is being used for stock feed especially calf powders - 20% of its market price is subsidised by E.E.C.. The average herd size in Europe is 15 cows while in the U.K. it is 40 cows. Increased yield per cow is given as one of the main reasons for higher feeding, breeding and management. There is not the political strength tocurb the production of dairy products so it is likely this will continue to influence world markets. It was interesting to note that farmers are still very nationalistic in their outlook. The British dairy farmers believe that they are the most efficient dairy producers with larger herd sizes and should be allowed to continue the expansion of their herds.

Dutch farmers said that their land was more suitable for dairying and production should be in the most suitable areas. The German farmers with whom I spoke blamed the Dutch for producing too much and creating the surplus.

The E.E.C. is 65% sufficient in lamb. The gap between production and demand is not likely to be filled by E.E.C. countries. 85% of imported lamb comes from New Zealand. High import levies on Australian meat mean that little is purchased.

Beef production is reasonbly stable and the Community is nearly self sufficient. 90% of E.E.C. beef is produced from dairy cattle.

Three more countries will join the E.E.C., namely Spain, Portugal and Greece. Greece will join in 1981 but the transitional period for Spain and Portugal will be longer. This will add to some economic and social problems such as the free passage of workers between member countries: regionals policies; richer areas having to subsidise poorer areas and lower per capita income.

Conclusion: Because of the high producion and surplus of some agricultural commodoties and the higher tariff on imports there would appear to be little hope of Australia being able to export foodstuffs to the E.E.C.. However politics do overweigh agricultural policies at times and this was illustrated some weeks after we visited Brussels when it was announced that Australia had been allocated a small quota of cheese on the E.E.C. markets. Trade is a two way business and as we are a market for E.E.C. industrial products I believe Australia should continue to press for agricultural access to Europe.

WHEY FEEDING

The great bulk of the liquid whey used directly for livestock feeding is fed to pigs and this has always been the traditional means of utilisation. Where cheese is produced on a relatively small scale a co-ordinated pig enterprise to utilise the by-product, whey, is a useful adjunct to the cheese making enterprise.

Pigs: I visited one pig farmer in Scotland who was feeding whey to pigs of all ages. He was using 30,000 gallons of whey a day and transporting it from 15 miles away and some from 60 miles. Two-thirds of the total feed input is whey. All Pigs are fed 2 lb. of meal a day and whey to appetite. Dry sows are restricted to whey for 3 hours per day otherwise they get too fat. The whey is fed in troughs which are all on the some level and the flow is controlled by a master ball tap that serves a number of troughs.

Whey holding tanks are lined with engineers' clay bricks and an acid resistant jointing compound is used in the outer half inch of the mortar joints.

Pig mortality was twice as high as with grain fed pigs but the low food cost more than compensated for this.

Cattle: On the farm of Mr. Beckett in Cheshire where milk from the farm as well as several neighbours is made into cheese, all the whey is fed back to cattle on the farm. 160 cows were drinking 1200 - 1800 gallons per day. These cows were producing 1340 gallons per cow per year. Young dairy stock were being fed whey including calves over three months of age. The fresher the whey the higher the consumption.

Whey is not commonly fed back to dairy cows but this can be done provided proper facilities are available. The whey should be introduced into the ration gradually to give the animals time

for their digestive systems to adapt to the new feed. When whey is fresh and sweet animals become accustomed to it quickly and will consume it readily. It may be necessary to restrict the supply of water initially to encourage the animals to take the whey. Some water should be available in addition to the whey as individual animals may drink little or no whey even when the latter is freely available. An alternative is to feed very dilute whey with no access to a separate water supply and gradually reduce the dilution until neat whey is offered along with a separate water supply.

On a dry diet based on hay and concentrates, animals may consume 100 litres or more of whey a day, according to their stage of lactation and the availability of water. Very high intake of of whey will be associated with excessive urination.

Whey is used to replace compound feed in the ration, 10 litres of whey being equivalent to about 0.8 kg. of meal (containing 12% protein).

Liquid whey is not often used as a feed for young calves. Dried whey powders are however widely used in milk replacers and calf starters.

Whey can be fed to dairy herd replacements and growing/finishing cattle and should be introduced gradually over one or two weeks until it is available to appetite. It should be offered fresh daily and care should be taken to prevent any spillage which will attract flies and increase disease risk. In an A.D.A.S. study, 300 kg. animals on a rationed diet were given 27 litres of whey daily as part of fattening diet with a very satisfactory performance resulting. In another A.D.A.S. study where similar animals were given whey to appetite the intake rose to 45 litres per head daily, the animals improved in condition and developed a typical milk fed bloom.

As with other classes of stock, whey should be introduced into the diet with a care to avoid the risk of souring. Bloat may be a

problem if the whey intake is increased too rapidly as it is a very fermentable material.

Conclusion: Whey has traditionally been regarded as a suitable pig food and some pig producers in Tasmania are using whey. However there is a surplus in some areas of the state and whey is at present being wasted. I believe this could all be utilised by dairy cows and now that beef prices are at a high level it could offer attractive possibilities to the beef producer.

SILAGE

On my visit to Holland the thing that most impressed me was the Dutch system of silage making as I feel it has application for Tasmanian farmers.

Holland has an area of 1.22 million hectares of grassland and all this will be cut for silage or hay at least once a year. Formerly a large part of the mown grass was made into hay but at the moment more than two-thirds of the grass is made into silage.

Hay-Silage Ratio (% of area cut for hay or silage)

	1964	1970	1974	1976	1977	1978
Hay	76	68	44	41	30	25
Silage	24	32	56	59	70	75

On modern farms silage is the main roughage in wintertime. On traditional farms the raion still comprises a high proportion of hay. Silage has many advantages over hay and more and more Dutch farmers have discovered this fact. The following table shows the types of silage being made in Holland.

Types of Silage (% of total)

	1964	1970	1974	1976	1977	1978
Wilted (35% DM)	30	67	83	80	87	87
Direct cut or with additives	30	19	17	20	13	13
Other silage	40	14				

So the main type of silage at the moment is wilted silage, i.e. high dry matter silage. The number of direct cut Forage Harvesters (flail type) is low and decreasing. Additives are not popular and therefore hardly used any more. The reason for Dutch farmers making this high dry matter silage (av. DM content approx. 50%) is for the quality and intake of the silage and also because of the structure of the Dutch farms and the grassland management.

The Dutch dairy farm is relatively small, a family farm, farmed mostly without hired labour and with intensive grassland utilisation.

In summer time, relatively cheap milk production is possible, provided that the cows get high quality grass, which is good for M ± about 5 gallons of milk.

Fodder conservation can be a very good help in providing cows with good grass. An early start with cutting for silage means a fast regrowth of grass for grazing (after about 20 days). Most of the Dutch farmers, therefore, start cutting in the first half of May, so the regrowth will be available for grazing at the end of May. Grazing normally takes place at about 1700 kilos of DM per hectare.

In order to get phased regrowth it is not wise to cut the whole area at once. Fodder conservation in the first place is at the service of grazing. Most farmers, therefore, spread out the first cut (approx 50% of the total area of grassland) over 3 - 4 weeks, which means that each week 10 - 15% of the total area is cut. In this way they are also spreading risks and labour. This is very important because on most farms labour is at a premium so that not much time is available for forage conservation.

So generally farmers are starting earlier. Yields are low, about 2.5 tons of DM per hectare. At the end of May the yield will be approx. 5 tons of DM per hectare. Grass is cut when young and leafy, resulting in a high protein content and a digestibility of up to 75%. The second cut (June) and the third cut (August) as a rule are leafy crops ($2\frac{1}{2}$ - $3\frac{1}{2}$ tons of DM per hectare).

Direct cutting of such grass results in a rather sticky product without much texture. The silage may have fermented well but animals do not like it too much. Besides, there is some contamination with soil in many cases, which leads to higher feed wastage. Generally a silage with a higher dry matter content will be more palatable, which means a faster and a better intake and this is what a farmer likes to see. There are less problems with soil contamination and, therefore, less wastage.

On Dutch grassland farms as a rule there is not much machinery available; 1 -2 tractors, 1 - 2 trailers. For direct cutting a full team is needed. Only a few farms could afford that. Mostly, direct cutting for silage was done by contractors but that meant high costs and still a low capacity of 3 - 4 hectares per day. Most farmers and contractors like to ensile at a much faster rate. By picking up wilted material with a forage harvester or a forage wagon capacity per day is about twice as high as with direct cutting and costs for contract work are lower.

Cutting, tedding and raking the grass is done by the farmer himself. In many cases contractors will assist in loading, transporting and consolidating the wilted grass. For silage making in Holland the self loading forage wagon is very popular. Flailtype and precision chop forage harvesters are only used to a limited extent. Other advantages of high dry matter silage are: no effluent problems, no additives needed, lower fermentation losses and ease of handling. But there are also disadvantages. The wilting period means extra risks and losses and a loss of regrowth. Wilted silage is more difficult to ensile and has increased risk of surface losses and secondary fermentation. ensiling heavily wilted material, therefore, requires good silos and a good technique of sealing. Airtight sealing during the whole period of storage is the most important condition for the success of high dry matter silage.

Summarising: There are a number of reasons why Dutch farmers are making high dry matter silage: more palatable forage; higher intake; less feed wasted; simple mechanisation with forage wagon; higher rate of work per day, cheaper than direct cut or precision chopped silage.

Conclusion: The Dutch system of silage making with self loading forage wagons would be most suitable for Tasmanian dairy farms. The wagon can be used to feed the silage back to the cattle in the paddocks thus getting a higher utilisation from the machine.

The method of cutting earlier and over a longer period over the whole farm would give a much higher degree of pasture control.

DAIRYING

Grass Production

The dominant role of nitrogen in determining grass production and herd stocking rate is established beyond dispute. On the majority of grassland devoted to dairying in lowland Britain the potential yield of grass is likely to fall between 8t and 12t per hectare with 300 kg. N/ha. applied.

The current utilisation of grass on recorded dairy farms is around 6t per hectare and represents a milk yield of 6,600 litres.

Grazing Systems. The following extract is from a paper delivered to the Nuffield Dairy Group Spring Conference by Mr. R. D. Baker of G.R.I.:

"On average there has been no benefit to any one grazing system but such a conclusion hides the fact that under some circumstances the choice of system has been important. On the basis of current evidence it seems reasonable to draw the following conclusions:

1. At low stocking rates the choice of grazing system is unlikely to influence milk production to any significant extent when it is based on perennial grass or grass/white clover swards. If any advantage has been apparent in trials at low stocking rates it has been in favour of a set-stocked system of management.

2. At high stocking rates rotational grazing is essential for the full exploitation of grass/clover swards receiving little if any fertiliser nitrogen. The effect under these circumstances is that clover does not persist in adequate quantities and the quantity of nitrogen available for grass growth falls.

3. On all grass swards receiving high levels of fertiliser nitrogen there may be an advantage from the adoption of rotational grazing during periods of serious grass shortage. In these circumstances the distribution of herbage above ground may be more favourable to the animal and the plant has an adequate rest period. However, such conditions are usually exceptional and often the choice of grazing system will be of no consequence because of the level of supplementary feeding. *

The last paragraph is most important and the impression gained in talking to many farmers in various regions was that the level of supplementary feeding was their main concern and pasture was secondary.

A typical well managed dairy unit would have an output of 5,400 litres of milk which is sold for 11p (22 cents A) a litre. Concentrates fed would amount to 1950 kg. per cow costing £235.

Milking Systems - Large Herds

Most of the farmers with large numbers of dairy cows did not do any of the actual milking themselves but were managers. So herd size is determined by what the herdsman can look after and consequently a farmer with 500 cows would probably have three herds. One farmer I visited had 300 cows and these were milked in the one herringbone parlour but were divided into two separate herds with two herdsmen

each responsible for his own herd. Most herdsmen look after 100 to 150 cows but have a tractor driver who does the feeding and scraping out and this person sometimes acts as relief milker. The herdsman has full day to day responsibility.

All cows are fed "cake" while being milked and almost all are individually recorded and fed according to production.

By far the most popular milking parlour is the herring-bone. Three farms I visited had a carousel parlour but two of these were programmed to be pulled out and replaced with herring-bones.

Rotary platforms are not very numerous and I saw none of the larger units such as are now being used in Australia and New Zealand. Two I visited, a 21 and a 24 cow platform were probably too small to be of any major advantage over a herringbone parlour. In Scotland I visited a 28 cow unit, with A.C.R., milking 300 cows with two units of labour.

The cost of buildings for a dairy enterprise in Britain is 1000 per cow - cows are housed for 5 to 6 months a year.

Dairying is still quite profitable in Britain, but it has high input costs particularly of bought-in concentrates. The ever increasing use of concentrates to attain higher yields of milk has been profitable for farmers to date, but many are worried because of the large surpluses in the E.E.C. and if the price of milk remains static for a year or two they will find themselves in severe economic trouble.

Conclusions: Having viewed Dairy farms in Britain and Europe I am convinced that our low cost system of production based entirely on pasture inputs must be maintained as this will be the only way we can compete overseas and domestic markets. Our climate helps in this respect.

I do not see herd size being determined by the capacity of herdsmen. In Australia I believe there will be more herds of 200 - 500+ cows as these will be the only ones able to offer acceptable working hours and conditions.

DRAINAGE

On more than half of the Agricultural land in England and Wales field drainage is a fundamental necessity for efficient farming. A National Survey by the Ministry of Agriculture has shown that agricultural production on approximately three million hectares of agricultural land is limited by the absence of efficient drainage systems, while almost another three million hectares depend upon the maintenance of existing systems.

On grassland: The overall reduction in land devoted to grass has been accompanied over the past decade or so by an increase in stock. This has placed pressures on the existion grassland and so it has become increasingly important that standards of grass production and utilisation be raised.

Field drainage is a fundamental factor in achieving these improvements. The main reasons for draining land are to make it easier to farm and to obtain better yields of crops by the improved environment for root growth. Drainage effects both soil and the crop. It will reduce the risk and degree of poaching and extend the growing season. In English conditions a drained field can be grazed without poaching up to ten days earlier than a similar undrained field.

Drainage increases yields and maintains quality: Grasses sensitive to periods of waterlogging once growth starts in the spring. Drainage increases the versatility of land.

The importance placed on drainage was brought home to me when I visited a 450 acre arable farm in Northamptonshire in a 25 inch rainfall area. (I live in a 39 inch rainfall area). The owners considered that drainage was of top priority and over the last five years had progressively drained the whole farm with the exception of one field. When they started the drainage programme this was their driest field - now it is their wettest and tiles were in the field for draining it

when the wheat crop was harvested.

Tile drains are placed at intervals of 20 yards to 40 yards across with a layer of metal to ensure good downward management of water. Then the field is moled at 6feet to 9 feet intervals over the tile drains.

Any land that is unsuitable for moling is ripped with a subsoiler. These are extensively used to break up any hard pan and to shatter the soil and clay to allow better drainage. Many arable farmers subsoil every two or three years after harvest. The subsoil must be dry enough to get a good shattering effect. A new development is the use of wings - about 4 inches - either side of the ripper. This gives a much greater shatter effect without much extra power being required.

I visited the Drainage Fair in Cheshire and was greatly impressed with the range of sophisticated machinery available for drainage purpose and laying permeable backfill.

CONCLUSION: I believe that there are large areas of Tasmania on which production could be greatly improved and management made much easier by better drainage. As land becomes more expensive and where higher returning crops can be grown; and if meat prices remain high, it will become economically attractive to drain land. The availability of suitable machinery will be a restricting factor as will be the fact that Australian farmers have to bear the full cost of any drainage system.

SHEEP

More than 40 breeds and innumerable crosses are to be found in Britain, each breed having originated within a particular area.

On the hills, and especially in the North and in Wales, winter conditions are usually severe. Draft ewes are brought from the

hill areas every autumn to swell the lowland flocks, usually in two stages; first to farms at intermediate altitudes, where they are mated with rams of a larger and more rapidly maturing breeds; then the cross-bred progeny pass on to the milder lowland conditions where they become crossed again with Down rams for fat lamb production.

So the hill country is an important source of breeding stock and one of the problems here is that fewer young people are attracted to this type of farming. Farmers in these areas receive a hill subsidy of £3.60 per ewe and £35 for beef cows.

Many traditional hill farmers do not feed their ewes during the winter and with a very severe one as in 1979 losses were very high. Consequently many lambing per centages were as low as 50 per cent in places like the Yorkshire Dales; yet I saw one farmer there who fed in the winter and had a lambing of 130 per cent.

Indoor wintering and lambing is practised by some farmers and the severe winter increased interest in this system. Lambs sell for approximately £25. Wool is £1.25 to £3 per ewe.

Of interest: a 300 - 400 ewe flock is required to equate with a worker in industry receiving £4,500 p.a..

Bill Casimaty 1967

Following his scholarship he founded Strathayr Instant Lawn and has developed the cool season turf industry in Australia. He now markets turf throughout the nation and recently won a contract in Hong Kong.

He has played a major role in the development of irrigation in Tasmania and is a member of the Council of the University of Tasmania, and Chairman of the University Farm Committee. He is also a past-President of the Tasmanian Oil Poppy Growers' Association which pioneered access to the U.S. market.

Tasmanian Rural Promotions Committee 1987 Award for an Oustanding Contribution to Tasmanian Agriculture.

Daryl Barker 1969

As a result of his tour he concentrated on producing beef cattle, prime lambs and potatoes.

His practical expertise was recognised and he is now a Rural Advisor to Commercial Banking Interests. He is also one of few Stock Assessors for C.A.L.M. (Computer Aided Livestock Marketing) in this state.

He has won beef cattle carcass competitions both in Tasmania and interstate and has also judged beef cattle both here and interstate. He is also an active stock agent, giving regular marketing reports, etc.

Don Walker 1972

Primarily a sheep, cattle and cashmere goat producer, he is Federal President of the Australian Corriedale Association and was President, Royal Launceston Show (1986/87) Chairman, Hagley Farm School Board (25 years), a member of the Rural Training Advisory Committee and Tasmanian Livestock Exporters Council. He is Chairman of the Organizing Committee for the World Corriedale Conference to be held in Melbourne in 1990, and was on the organizing Committee for the World Ploughing Championship in 1987.

Ian Farquar 1972

One of the State's pioneers of essential oil production and now as a leading producer, Ian is heavily involved through Essential Oils of Tasmania Pty. Ltd., in a joint venture with the University of Tasmania and the Tasmanian Development Authority, in marketing and research for 65 grower members.

He is a member of the Agricultural Science Faculty of the University of Tasmania and the T.F.G.A. Small Seeds and Education Committees. His farm crops include vegetables for processing and for seeds, as well as parsley, mint and fennel for oil.

Malcolm Carins 1975

Visited the U.K. and Europe to study dairying. Has, as a result of his tour, diversified into floriculture - specifically commercial Daisy production and mint oil, as well as high grade beef production. He is also very active in a number of local sporting clubs, and the Liberal Party Rural Policy Committee. He was the Convenor and Inaugural President of the Tasmanian Floricultural Association.

For 9 years was a board member of T.H.I.O. (Tasmanian Herd Improvement Organization).

Michael Bennett 1978

Manages a diversified farming operation which includes dairying, beef, sheep, peas, poppies and farm forestry. Michael says the Nuffield experience profoundly improved his management skills and widened his outlook.

He was a representative of the Vegetable Council, to the General Council of T.F.G.A. and a committee member of the Poppy Growers Association.

He is past President of the local Rotary Club, as well as being a member.

John Bignell 1982

John's Nuffield study project was venison production and marketing. He is now one of the recognized authorities in Tasmania on the subject, but during his Scholarship he also came to grips with a range of farm management techniques and issues, including animal welfare.

He is a member and past Chairman of the Hydatid Eradication Council and President of the Deer Farmers Council and is hoping to establish a deer research unit at the University of Tasmania.

Founder and Inaugural Chairman of the Deer Farmers Association. Instrumental in achieving this Association as a T.F.G.A. Council and duly part of the Federal Deer Farmers Association.

Prime initiator of marketing venison in Tasmania and co-initiator of deer handling equipment, enabling deer to be handled as farm animals.

Tony Robertson 1983

One of Tasmania's foremost vegetable growers. He is President of the Onion Committee of the Vegetable Council of the T.F.G.A. Recently he has been retained by the Fijian Government to provide technical advice on potato growing.

Andrew Jones 1985

Pioneered vegetable seed growing in South Eastern Tasmania and now supplies both local and overseas markets. He is continuing to develop this new industry in that region.

Crops include Hybrid Brassicas for seed production, Pyrethrum and a wide range of other new crops.

Further information is available from:

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