Greensward

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No. 36

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CONTENTS

	Page
Foreword	2
Officials: SWSGS	3
CSGS	4
BGS-MLC Grass to Meat Awards 1991	5
BGS Summer Meeting, Cork 1992 - G Melvin Stuart	8
Spring Farm Visit in the Stewarty (SWSGS)	11
Evening Visits to Farms in Summer 1992 (SWSGS)	15
Nutritional Analyses and Making Up Rations (SWSGS)	21
Keenan Nutrition (CSGS)	25
Mix 'n Match (CSGS)	27
Realistic Storage Systems - P Jefferis	32
SWSGS Silage Competition 1992-93	34
Grassland Environmental Competition 1992 (SWSGS)	40
Conservation at SAC Crichton Royal Farm - D M Webster	42
Reflections on a Visit to New Zealand - J Frame	45
Agricultural Policy in Europe (SWSGS) - A Smith, MEP	51
CSGS Silage Competition 1992-93	58
Panel Evening (CSGS)	60
Isle of Man Highlights - J Harris	64
Grass Machinery Firms - G Tiley, C McCombie & D Reid	67

FOREWORD

Members appeared to find useful the article on grass seeds firms in the last number of *Greensward*. The Secretaries of the South West and Central Societies, therefore, proposed a similar article on grass machinery firms. A questionnaire was sent out to all the appropriate companies known to trade in the areas covered by the Societies. The response to this survey was poorer than that to last year's survey, but the information received has been assembled in an article which I hope will be informative to our farmer members. I gratefully acknowledge the help of the companies who responded to the questionnaire.

Because of the importance of the subject, I have printed in full the text of the talk on agricultural policy in Europe given by Mr Alex Smith MEP to the South West Society in February 1993. This is a most illuminating account of the European Parliament and associated bodies in relation to agriculture. Of particular interest is Mr Smith's description of the Treaty of Europe - Maastricht!

In addition to the usual reports of the meetings of the two Societies, there are articles on national and international meetings. For the report on the BGS Summer Meeting in Cork in 1992 I am grateful to the North of Scotland Grassland Society for permission to reprint Mr Stuart's article from *Norgrass*. I also thank Dr John Frame for contributing a lively account of his trip to New Zealand in February 1993, when he visited farms and research institutes and attended the 17th International Grassland Congress.

I once again thank Dr Gordon Tiley and Mr Colin McCombie for their assistance in the preparation of this Journal. Mrs June Bishop of the PVA Unit, SAC, Auchincruive is also thanked for her help.

David Reid - Journal Editor

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GS-MLC GRASS TO MEAT AWARDS 1991

Visit to Crailoch, Ballantrae (H R & C Dalrymple) on 20 May 1992

The Grass to Meat Awards are an annual recognition of those farmers who have achieved an outstanding success in producing meat from grass, exhibiting efficiency, profitability, skillful stockmanship and grassland management. Sponsored by the Meat and Livestock Commission and the British Grassland Society, one of the scheme's central aims is to point to the key role played by MLC's Beefplan and Flockplan in finding efficient methods of beef and lamb production.

Robert and Caroline Dalrymple, who are members of the South West Scotland Grassland Society, won this prestigious award for Scotland in 1991 with the impressive performance of their upland breeding flock. SWSGS joined SAC and other organisations in the farm walk held at Crailoch on 20 May 1992 to highlight the components of success in this award.

Robert and Caroline were winners of the first prize and recipients of the BP Nutrition Trophy in the Beef/Sheep Section of the 1991 SWSGS Silage Competition. They were also runners-up in the 1990-91 Grassland Environmental Competition.

In addition to full descriptions of their grass and stock from Robert and Caroline, contributions to the afternoon were made by David Roberts from SAC, Crichton Royal Farm; Peter Cappon of MLC; Charles Young of BOCM; Chris Savage from SAC, Ayr; Gordon Tiley of SWSGS; and John Lorimer of the Forest Authority. Tractor transport was kindly supplied by Andrew Alston, Cumnock. Static exhibits were laid out in the sheep shed, which is one of the pivotal components in the successful Crailoch sheep management system.

David Roberts attributed the Dalrymples' success to combining grass and animal management in an efficient system. The main points in this system were - (1) attention to detail: (2) fertilizer spreading by motor bike early in spring: (3) excellent grass management: and (4) high quality silage for winter feed.

Peter Cappon discussed some of the factors involved in the efficient system practised by Robert and Caroline. The stocking rate on the two farms was very high at 12.4 ewes per ha, and the fertilizer usage was

150% of average. A target lambing percentage of 200 is aimed for, and by the spring of 1992 a percentage of 196 had been achieved. Very few farms average 188 over 2 years, even with lowland flocks. In addition to this, very high lamb prices are being obtained. The lambs are sold in July at a carcase weight 0.7 kg above average and with the highest proportion in the top grade. As a result the prices are £20 per ewe above average. Costs are high but the gross margin is £8000 higher.

Robert Dalrymple told visitors that the 134 ha of light land at Kings Arms carried 360 ewes. Crailoch consists of 130 ha of reclaimed hill plus 24 ha of trees for shelter and shooting, and is stocked with 200 cross ewes and 85 spring calving cows. Labour amounts to two stockmen, a YTS student and the family. Both farms are all-grass and do best in a wet spring. The aim is for top quality stock for the top end of the market. The sheep shed was initially completed in 1984 with an extra four bays added in 1988. The sheep are brought off the grass into the shed in winter to promote early grass growth in March. In the shed the sheep are scanned carefully and segregated for separate feeding. There is a 24-hour watch and animal care to identify problems. The pens and straw are disinfected before lambing.

Charles Young discussed the details of the feeding system on the farms. The first of these was the provision of high quality silage together with monitoring of ewe condition in order to reduce concentrate input. He also stressed the importance of scanning the ewes for the number of lambs they were carrying. R & D work has indicated the need for a diet high in digestible degradable protein. Creep feeding at a rate of 0.7 kg per head per day rising to 0.91 kg allows more stock to be carried and a higher grade of lambs to be sold at a cost of £2.80 per lamb. The feed used must be palatable and fresh with a low phosphorus content and no magnesium in order to avoid urinary gravel. Water must be available. The intake of creep feed is governed by temperature, and varies between day and night. To obtain quality carcasses the Texel cross ewes are crossed with Suffolk.

Chris Savage explained that the ryegrass/clover mixture on the farm received slurry and an early spring dressing of Nitram applied at a rate of 124 kg/ha by motor bike in late February. Following a grazing a second Nitram dressing of 247 kg/ha is applied and then 185 kg of 27:6:6 is applied and the field shut up for 50 days. The aim is for 70 D silage cut about the end of the first week in June. Cutting is by mower/conditioner and Axphast or Ecosyl additives are used. A reasonably long

stubble is left to prevent soil contamination and to speed regrowth. The silo is filled rapidly and sheeted nightly. A second cut is taken 6 weeks later.

The herd of suckler cows consisted of Angus/Friesians and Limousin/Friesians crossed with Charolais. Calving is in May and the calves are sold in April. The cows are housed in October to protect the grass and to leave more for the sheep.

Clover is encouraged in the grazing fields by using the correct varieties, by close grazing in the early summer and by the moderate use of nitrogen. The forestry strip is not good enough for timber but satisfactory for conservation purposes. An annual income could be obtained for 10 years from the Farm Woodland Premium Scheme.

It is considered important to spean early and to clip the ewes in August. The sheep grow better and it is easier to see how they are doing. Tups are purchased carefully, MLC graded and looked after for the whole year. The handling pens on the farm have space for lorries. It is very important to draw lambs weekly, aiming for 19.5 kg killing out weight. Training in judging killing-out weight was obtained from MLC and from the Ayrshire County Lamb Group which is now in its fourth year. This allows better prices to be got working through FASL (Farm Assured Scottish Lamb), though the fee to join was £120 covering advertising.

G E D Tiley

SOUTH WEST SCOTLAND GRASSLAND SOCIETY

VICE-PRESIDENTS PRIZE - 1992

This prize is given to the best final year Grassland student on the Higher National Diploma course in Agriculture at SAC Auchincruive. At the prize-giving ceremony in October 1992 the Vice-Presidents Prize was awarded to Miss Deborah Wrathall. The prize of £25 plus a year's free membership of the Society is funded by donations from the Honorary Vice-Presidents of the Society.

THE BRITISH GRASSLAND SOCIETY SUMMER MEETING - CORK, 1992

G Melvin Stuart, Milton of Birness, Ellon

Since no member of the SWSGS attended the BGS Summer Meeting in 1992 the report in this number of "Greensward" is an abridged version of one which appeared in "Norgrass" No.33. The North of Scotland Grassland Society, who publish that Journal, are thanked for permission to reprint the article.

The British Grassland Society Summer Meeting of 1992 was hosted by the Irish Grassland Association and was held in the south of Ireland in County Cork.

Cork is a large county and the areas visited were situated in a region with sandstone ridges and fertile limestone valleys. To the north and west of Cork the land is heavier and more mountainous and plays a lesser part in the production of grassland for agriculture. Cork is Ireland's leading county in terms of agricultural output and a traditional grassland area where the winters are usually mild and grass grows for up to 10 months in the year. For this reason dairy farming is the most important enterprise in the county. Irish dairy farmers seem to be on top of their grass growing and have reduced production costs substantially by increasing the grazing season. Nitrogen levels are high, averaging currently about 400-420 kg/ha and most farmers sow a highly productive no-clover mixture.

Cork is fortunate to have one of the world's top dairy research centres at Moorepark which was visited at the start of the tour. The 464 ha of land run by the Department of Agriculture at Moorepark and at four other locations have a total herd of 850 lactating cows. The broad objective of the Department is to undertake research which will assist in reducing the costs and improving the efficiency of quality milk production. This involves research studies which attempt to remove technical constraints on producing milk at farm level. There are more than fifty individual research projects taking place at the Department and these cover milk production systems and costs, fertility and animal health, silage and concentrate supplement and grazing experimentation.

The next visit was to an intensively run dairy/beef unit on an 88 ha all grass farm with 113 dairy cows and 90 beef cows. The beef enterprise was added to the dairy farm to compensate for milk quota cuts, but now

that it is easier to lease quota in Ireland the dairy herd may be expanded. An alternative may have been to reduce the overall stocking rate and use clover instead of fertilizer nitrogen. However, the farmer believed that he got better value from nitrogen than from anything else he bought, and he has more control of his grassland production.

A highlight of the tour was a visit to a 156-cow unit where one person milks the herd in 75-80 minutes. The farmer had spent £17,000 on a new open-front milking parlour where no ACR's are used and no concentrates given. His object was to extend the grazing season at both ends reducing expensive silage making and purchased concentrates. On the 47 ha all-grass unit with correct grass cover and grazing technique he was able to produce milk from the cheapest summer feed for 10 months. The grassland management system had come from techniques used in New Zealand under the same climatic conditions and were proving appropriate as far as profitability was concerned.

The smallest farm visited was a 28.7 ha unit where a total of 91 cattle were kept, 56 of these being lactating cows. The farm comprised twenty grazing paddocks and the larger paddocks were strip grazed. Topping was done as required to eliminate clumps of grass and to increase the palatability and productivity of the sward. Three cuts of silage were taken from May to September using 420-440 kg/ha of nitrogen to boost grass production and feed all these animals in summer and winter.

A 47 ha unit was visited which had been entirely reclaimed and reseeded from bog and scrub, and was owned by a young couple. The unit carried 37 single-suckled cows and calves, 47 store cattle and 90 Suffolk x Cheviot breeding ewes. The grassland was made up of ryegrass and clover which was very tightly managed. All the stock was sold at times of the year when demand was high, so good margins were being returned.

Another family concern visited was an all-grass unit heavily stocked with sheep and cows. The cow herd is currently being changed from suckler beef production to dairy milk production as the farmer had recently been offered quota. The stocking rate of 3.4 LU's per ha was the main feature of interest due to 32 cows and 370 ewes being stocked on the 48 ha farm where 10 ha is tillage and 38 ha grass. The farmer planned to establish and consolidate the dairy herd enterprise and to divert more of the ewes to early lamb production as well as going for a different market to increase profitablity.

The last farm visited lay on the banks of the Blackwater on free draining loam type soil. In the '70's the 99 ha business consisted of three farms and was an all arable unit. Now it is an all-grass farm where a 196 cow dairy herd is run to produce a high milk output per hectare. This farmer was exploiting the idea of extending the grazing season, as well as growing maize for silage to keep down costs. The farm was well run and a lot of attention had been paid to the grazing management, replacement breeding and genetic make-up of the animals so as to generate as high a milk yield as possible.

The meeting as a whole gave the impression that Irish producers had little to worry about because of high prices or subsidies given to enterprises on the farm. One worry in the minds of beef and sheep farmers, which could not be hidden, was the uncertainty about their future in the light of the CAP reform. This may be the reason for two of the farms visited increasing their dairy cow numbers and reducing their suckler cow enterprises.

SPONSORS

The following organisations are thanked for sponsoring the South West Scotland Grassland Society during 1992-93.

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SPRING FARM VISIT IN THE STEWARTRY

A joint visit of the SWSGS and the Dumfries & Galloway FWAG to Cuil Farm, Castle Douglas on 13 May 1992

The Society visited Cuil Farm by kind invitation of Andrew Campbell with sponsorship from Hydro Fertilisers arranged by Terry Bennett, Penrith. Also attending were members of the Rotary Club and other organisations personally invited by Andrew.

The entire visit was recorded on video by Ian Wilson, and the Society has a copy of this recording. The farm visit was led by Andrew Campbell with contributions from SAC Adviser Sandy Grant, FWAG Adviser June Randell, Vincent Fleming of Scottish Natural Heritage, dry-stane wall builders Stephen and Colin, and Janet Page the Regional Planning archaeologist.

Cuil Farm lies in the heart of the Stewartry ESA, and Andrew joined the scheme and began a 5-year conservation plan in October 1989. Some tree planting had taken place 2 years earlier but it was the ESA plan which gave the opportunity to make a large-scale co-ordinated entry into conservation without threatening the economic viability of the farm, which must remain the prime consideration. Conservation can not be a substitute for economic farming. Only the profitability of farming will keep people in the countryside

Farm enterprise

The farm is well situated for a conservation project because it lies just 1 mile from Castle Douglas and much of the land can be seen from the public road. The dairy herd of 140 cows grazes over 41 ha. Young stock are reared as replacements with half of the herd put to a Holstein/Friesian bull and the remainder to a beef bull. The beef crosses are taken to the prime stage.

The first cut silage is taken from 69 ha of grassland based on a perennial ryegrass mixture, and is fed to the dairy cows. Silage from the second cut is fed to the young stock. Fertilizer for silage begins with a slurry application in January, followed by 440 kg/ha of 9:5:5 at the end of March. Cow grazing receives 250 kg/ha of 29:5:5 in early April and the same again in May. Milk production is based on top quality silage (11.8 ME) plus concentrate fed at 0.14 kg per l.

The sheep flock consists of 200 breeding ewes which are mainly Mules put to a Bleu de Maine tup to produce June-finishing lambs from pasture. The 6.5 ha sheep pasture is a 2-year Italian ryegrass mixture established by rotavating an old pasture and sowing the new seeds direct. 100 ewes and 180 lambs are carried on this pasture until July.

A suckler herd of 40 cows is calved in August/September. These cows graze off the farm until July when the calves are speaned. The ewe flock utilize the off-farm grazing thereafter and return in time for flushing in the autumn.

Conservation plan

The 5-year plan consists of the renovation and renewal of hedgerows and boundary dykes, extensive tree planting on a variety of sites, fencing and development of a disused mill pond, restoration of an old barn, and the retention of a wetland area. There are also plans to create a pond within the wetland and then develop a 2-mile public walk through the area which is already part of the Threave and Carlingwark Loch SSSI.

Hedgerows and boundaries

Since October 1989 700 m of hedges have been coppiced and replanted with Hawthorn under the ESA scheme. Single and double fencing has been used where necessary. In 1990-91 240 m of hedge were coppiced and replanted under the SOAFD National Scheme.

The march dyke with Corra is being rebuilt - renewal of dykes is a major part of the ESA scheme. The dykers on the job were trained at Barony in forestry and then took up dyking. Stones for a dyke are picked by eye, and about 3 tonnes are required per running metre, which attracts a grant of £12.

Forestry and landscaping

In 1987 an 0.57 ha wood was replanted with Sitka spruce, Larch and some hardwoods under the SOAFD Shelterbelt Scheme. A further area of 1.7 ha was replanted in 1989 under the Woodland Grants Scheme. The main aim is a commercial woodland of Sitka spruce, but Birch, Alder and Willow were planted on the field side which can be seen from the farm house.

Hardwoods - mainly Oak, Beech and Wild cherry with Rowan, Birch, Field maple and Whitebeam included - dominate the 0.30 ha planted behind the mill pond. Elder, Hazel, Dog rose and Hawthorn shrubs were also introduced to give shelter to the wood which will provide a backdrop to the pond when viewed from the farm. Small areas of woodland have been planted around the mill pond, mainly with Oak, Cherry, Rowan, Birch, Guelder rose, Alder and Willow supplementing the established line of Ash trees.

A 1.2 ha wood beside the farm road has two sloping sides and a flat plateau. The edges have been planted with Elder, Hawthorn, Hazel, *Rosa rugosa*, Rowan, Birch and Whitebeam to give shelter and an attractive surrounding. There is then a band of Norway spruce and Hybrid larch with the central area planted with hardwoods - Oak, Ash and Beech.

The same approach has been used in a 30 m wide strip of woodland which was planted around an existing line of mature Oak. This will provide a useful shelter belt as well as a habitat for a wide range of flora and fauna. A Hawthorn hedge has been planted to the west side of the wood to give extra shelter for wildlife.

No herbicides were used in establishing the woodlands, the trees being hand weeded. Short tree guards are not effective - tall ones must be used.

Watercourses and ponds

An 0.57 ha mill pond has been stocked with rainbow trout for many years. Under the ESA scheme it has been fenced to allow natural development of the pond edges. An area has been provided for cattle to drink, but there is now a splendid habitat for a great variety of wildlife around and on the water - swans, moorhens, coot, mallard, teal, widgeon, little grebe and tufted duck.

The Gelston Burn on the west boundary of the farm creates a natural wetland extending to 10 ha, and containing several rare plants such as Cowbane and Marsh stitchwort. This area is being maintained as a wetland with only light grazing by cattle where appropriate. The grazing management is designed to prevent the herbage becoming too tall and aggressive. Grazing is controlled in the summer by a fence and gate. Poaching is slight but the mixed willow is checked by the stock.

Traditionally the marsh had been cut for thatch, and the old Castle Douglas road ran across the middle of it. This provides convenient pathway access which could be opened to the public to allow appreciation of the marshland. Plans to develop a 2-mile public walk have been accepted by Scottish Natural Heritage. Andrew Campbell suggested that people could disturb or damage the wildlife. However, he believed that it was important that farmers listened to the opinions of other members of the community and gave access where possible. Experience on the Southern Upland Way was that there was little wildlife but a lot of litter.

Buildings

The steading at Cuil is a successful blend of old and new. The 150-200 years old mill pond originally drove the mill in the old barn, which has been restored in the vernacular style. It will be a feature of the farm as well as having practical application as shelter for suckler cows. Barn owls have lived at Cuil for more than 40 years, and nest boxes for them will be placed in the barn. The mill pond has been relined near the sluice to prevent leaking. There are ducks and fish in the pond, the water of which is clean receiving no drainage from the steading.

Labour and cost of conservation plan

The staff at Cuil is small and contractors have had to be used for most of the ESA-related work. However, on some farms the ESA scheme could help to maintain the farm workforce or even provide income on smaller farms. The whole farm plan at Cuil has so far involved expenditure of £16,000, but grants and ESA payments received have totalled £15,500. Thus, for an expenditure of £500 and making the land available, the general public, friends, neighbours and, not least, the family are going to enjoy a better looking countryside around Cuil. Andrew is looking forward to the next stages in his ESA scheme, and is encouraging other farmers to take part.

G E D Tiley

SWSGS EVENING VISITS TO FARMS IN SUMMER 1992

G E D Tiley, Secretary, South West Scotland Grassland Society

A Gladstone, Craichlaw, Kirkcowan, Newton Stewart - 30 June

The Society visited Craichlaw at the invitation of Andrew and Mary Gladstone and their manager George Paterson. More than fifty members attended this farm walk jointly organised with the Dumfries and Galloway FWAG. Andrew was winner of the Society's 1991 Grassland Environmental Competition for which he was awarded the Forum Feeds Environmental Trophy. This was presented by the Judge and 1990 winner, Andrew Campbell after the farm walk.

Craichlaw estate consists of three farms totalling 400 ha situated around the village of Kirkcowan. The farms are all in grass including 167 ha of rough grazing.

Silage is cut twice each year on 40 ha, the first cut being delayed until mid-June due to sheep grazing continuing until April, and the second in August-September. The silage is stored in two clamps with steel and sleeper sides. Reseeding is only done when necessary (8-10 years), and the seeds mixture is usually undersown in an arable silage nurse crop. Fertilizer for the first cut consists of an early dressing of 126 kg/ha of 29:5:5 followed by 377 kg/ha of the same later. The second cut gets 500 kg/ha of 20:4:15.

The suckler herd of 210 cows is calved in spring and summer, and a Limousin bull is used. The high-level slatted-floor building is emptied once a year. August born calves are sold in June/July, and the spring calves throughout the year. There is also a sheep flock of cross and Blackface ewes.

The main interest of the visit was to see three features of farm conservation which have been developed in recent years, and which contributed to Andrew winning the Environmental Trophy. These are described below.

(1) Pond. This was constructed in 1986 at a total cost of £3,200 without a grant though aid could be obtained now. The top soil in a poorly drained part of a field was pushed to the edge and the clay subsoil formed a suitable bottom and also a dam. Water enters by pipe from a burn which

is higher than some of the surrounding land. Little soil had to be removed and no transport of material was required. The border of the pond was curved to produce a natural effect, and an island was created on which trees were planted in safety from deer and rabbits. One mistake was to place the pond too near some mature beech trees some of which were dying. The height of the water table has to be watched. The pond could possibly produce an income from fishing though cormorants eat the fish.

(2) Crow Wood. The 150 year-old wood covers 1.5 ha and consists of Ash, Alder and Oak. Oak has been used for timber on the estate. Originally conifers would have been present, but these were thinned out. A key point in the woodland management is to exclude stock at all times. This is extremely important since they damage the soil and eat naturally regenerating trees. Also present is Rhododendron, which is a major weed problem and poisonous to stock. Andrew is trying to eradicate it by cutting back and spraying the regrowth with glyphosate, which can be grant aided. The cuttings go to a pile for burning or are left to rot. Regeneration after clearance of Rhododendron consists of Foxglove, Bramble and Sycamore seedlings. For natural tree regeneration a large clearing is required, but not complete clear felling because the site is very exposed. Hazel and Holly would give some protection.

On leaving Crow Wood a drumlin landscape feature was mentioned which had been planted as a wood early in the 19th century and felled in 1950. The area was replanted with trees after ploughing to reduce grass competition and also subsoiling with a ripper to break the pan for easier tree rooting. This area will be maintained as a wood.

(3) New Wood. A total of 2.5 ha including an old railway line was planted with trees in the spring of 1986. Previously the area was in permanent pasture which had been undergrazed due to being surrounded by silage land. The dykes also required much repair and had been permanently electric fenced to prevent stock from getting over. The trees were planted directly into the grassland after drawing a single ploughed furrow. Pre-emergence spray and Roundup were applied. It is essential that the young establishing trees are kept free from grass competition - cutting is not effective. Tree tubes are used to protect the trees from herbicides, and, in an existing woodland, to protect against deer.

All the trees planted were broadleaved species - mainly Ash and Oak with Alder, Sycamore and Sweet Chestnut. In hindsight some conifers, eg. Scots Pine, should have been included to provide shelter. The total

cost when planted was £1700 with a £1300 grant and annual costs of about £200.

The Farm Woodland Planting Scheme requires considerable maintenance effort and care. Andrew Gladstone emphasised that prospective growers must be keen on trees, and willing to spend time looking after them in the early stages.

D Biggar, Grange Farm, Haugh of Urr, Castle Douglas - 14 July

Grange is the centre of four adjacent farms (Grange, Chapelton, Corbieton and Nethertown) farmed in partnership by Donald Biggar and family. The business has been slowly expanded since 1830. Dairying was abandoned in 1979 in favour of beef which was profitable at that time. The herd then consisted of 30 Shorthorns and 70 Herefords and a Charolais terminal sire was used.

By July 1992 the herd consisted of 320 sucklers, mostly calved in the spring (February/April). Bull calves are kept entire to sell at 13 months. Hereford bulls are selected soon after birth for pedigree stock. Half of the beef Shorthorns are crossed to Galloway at 2-3 years old to produce Blue Grey heifers. Cows are outwintered, calved outside and stay out. All stock have the polled gene.

Donald is trying to calve Shorthorn x Galloway beef heifers crossed with Charolais at 2 years old. The heifers are also kept out all year on lower gravelly fields and fed from the road. They calve outside or in hay sheds if conditions are very bad. There is a penalty from poaching in the spring, but this is cheaper than a new shed.

Commercial young stock are wintered in a slatted shed and fed outside by one man and a machine. The trough is placed on a plinth up the slope because stock will walk forward but will not reverse uphill. The troughs are fitted with shutter feeding barriers which allow them to be shut off and kept dry.

A sheep flock of 450 Greyface ewes has been at Grange for 1 year and at Corbieton for 25 years. The ewes are shorn in January and then lambed inside. A Rouge tup is being tried on the Cross ewes and on the Blackface.

1992 was a strange grazing season with a late wet spring giving too much grass followed by a drought. Crested dogstail was very abundant

in the pastures. Fertilizer use is less than SAC recommendations for silage and hay, and much less for grazing. Fields for cattle grazing get no nitrogen at all, but phosphate and potash is applied in alternate years. The sheep grazing receives nitrogen at 50-63 kg/ha for an early spring boost. Clover is encouraged by a tight midseason grazing. The farm is probably slightly understocked, but there could be problems in land management if heavier nitrogen dressings were used and more stock introduced.

J & R Marshall, Brownrigg, Lockerbie Road, Dumfries - 29 July

Brownrigg is a 100 ha dairy farm on the outskirts of Dumfries, which has recently lost 4 ha in the construction of the new bypass which now runs through the farm. Though a special bridge was built for the movement of stock and farm traffic, there have been problems with drainage. New hedgerows have been planted and a roadside track has been constructed.

Near the steading the soil is sandy loam, which grades to peat towards the Lochar Moss. The peat is subject to uneven subsidence creating wet hollows and an uneven surface, which causes problems at silage cutting time. A higher than normal cutting height is necessary to avoid soil contamination. The cows also dig holes which have to be filled in. Considerable quantities of ancient bog oak work their way to the surface of the peat during cultivation, and have to be moved to the edge of the field. The bog oak is unsuitable for firewood.

The peat area was redrained much deeper than normal to avoid having to repeat the process for a number of years. The redrainage costing £27,000 was a great improvement though the peat is steadily drying out and shrinking. Reseeding is required on the peat every 5 years. A perennial ryegrass-timothy- white clover silage mix (HD35/48 from South West Seeds) is drilled at 40 kg/ha and Cambridge rolled. The trace elements cobalt, copper and selenium are low on the peat, and stock received bullets soon after going out to graze. All cows were also vaccinated for leptospirosis. The herd consists of 100 Friesians with an average milk yield of 5600 l. The Brown Swiss breed has also been tried, but the herd was originally Ayrshire (1939- 1968). The Friesian herd is now being converted to Holstein.

More emphasis is being placed on milk, less on beef. Two-thirds of the beef bulls are Friesian/Holstein. The present intention is to go back to using Belgian Blue and Limousin on the heifers for beef crosses.

High quality silage is made at Brownrigg, the 1991 silage having a D value of 72 and an ME of 11.5. The parlour feed is half cake-half home mixed. Very little concentrate is fed in the summer, and dry cows are more densely stocked. More quota has been leased requiring an increase in concentrate feeding.

The farm is adjacent to a housing estate and suffers from vandalism, dog walking, and litter dumping.

A field of rough grazing across a side road was reclaimed 8 years ago, but is now reverting due to wetness. The road was built on tree trunks and the field ditch was placed well away, but still the road suffered from subsidence.

A new 950,000 l slurry store was recently installed at the steading after a SAC survey. It provides 3 months storage, and was first emptied after the first silage cut. For safety reasons there is a double valve at the outlet of the store. An electric feeder delivering 40% beet pulp and 60% concentrate had also just been installed. Updating of the milking parlour was planned to cope with the increased concentrate feeding.

J Caldwell, Baltersan, Maybole - 6 August

Baltersan is situated in good dairying country just south of Maybole, and comprises some 158 ha run in conjunction with two other farms: 61 ha, mainly for grazing, at East Rowse, and 28 ha at Auchenbrae. Very high quality silage is made but the emphasis is on low cost, mainly traditional methods. As a result of increasing cow numbers and quota and purchasing more machinery, something had to go and buildings have suffered. The brick covered silage pit was built in 1968 - personally by John Barr - and the walls are still sound. An additional outside pit was being considered but a new slurry tower would have to take priority. Silage is self fed, and 34 ha was used for the first cut in 1992, there being less grass due to the dry early summer and to undersowing.

At the time of the visit, 85 of the 120 cows in the dairy herd were in milk. The herd is mainly Friesians and some Holstein developed from traditional Ayrshires and has an average yield of 6500 l. Bulls are chosen to increase the fat and protein content of the milk. The top milkers are divided from the others in the cubicle shed and are fed a high (21%)

protein mix at 0.30 kg/l. This was not considered to be too high since a decrease in feed rate or in protein content causes a decrease in production and profit. Langhill heifers have been bought in, and Mr Caldwell believes their genetic potential will dominate soon.

Members were taken across a steep permanent pasture which was 40 years old. Cocksfoot gave this pasture a good sole producing exceptionally good grazing. Upgrading might be possible by direct drilling with better varieties. Further up on the plateau close to Mochrum Hill (260 m), an area of whins and *Agrostis* has been reclaimed. On a drier strip the whins were cleared to the side and the land roughly ploughed with a forestry plough in January ready for rotovation and reseeding in the spring. A wetter peaty area of 5-6 ha was drained but still had wet spots due to the 50 mm pipe being easily blocked up. Cultivation, stone removal, drainage and liming involved a lot of work, but got a 25% grant. The HF11 seeds mixture sown germinated and established well despite the long dry spell in the early summer. The intention was to cut this area for silage, otherwise the fence line will have to be changed. A shelter belt will be planted near a small loch to the west and some wet areas will be left for wildlife conservation.

A Claas 680 self-propelled precision chop forage harvester is owned and used cooperatively with two neighbouring farms - another way to considerably reduce costs.

Acknowledgements

Grateful thanks are due to Andrew and Mary Gladstone of Craichlaw, Donald Biggar and family of Grange Farm, John and Robby Marshall of Brownrigg and Jim Caldwell and family of Baltersan for inviting the Society to visit their farms and for their kind hospitality.

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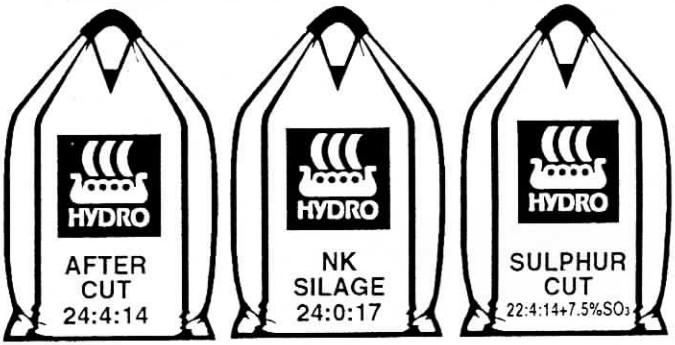

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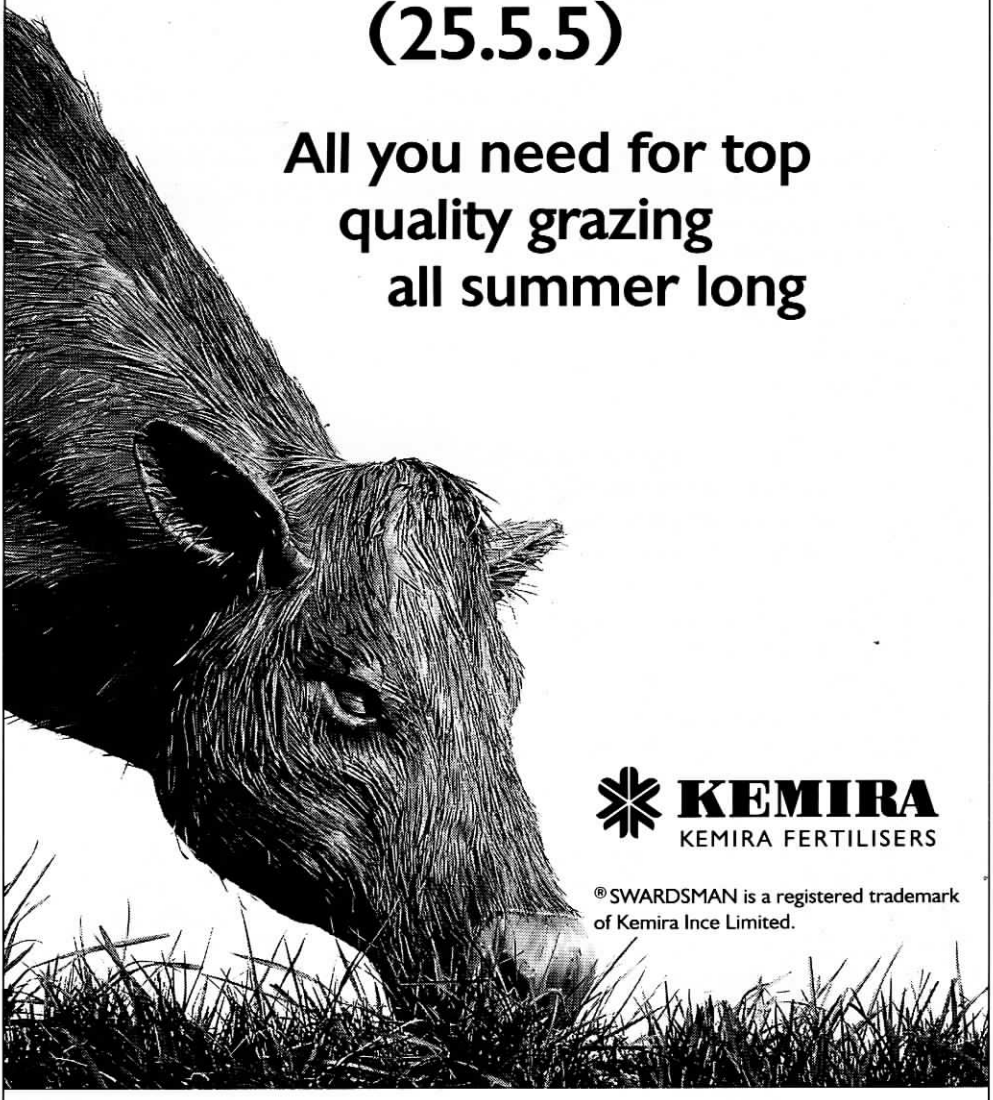

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NUTRITIONAL ANALYSES AND MAKING UP RATIONS

N W Offer, SAC, Auchincruive

A meeting of the SWSGS in the Halfway House Hotel, Symington on 22 October 1992

The speaker at this meeting of the South West Society was Dr Nick Offer, who is a Nutrition Specialist in the Department of Biochemical Sciences at Auchincruive. Nick has long experience in feeds analysis, making up rations and in research on feeds for animals. Jim Forrest was in the chair for the meeting which was sponsored by Keenans Limited represented at the meeting by Hugh Kerr. Hugh is also a Nutrition Specialist experienced in making up rations for farmers.

Nick Offer entitled his talk "Taking the guesswork out of silage feeding", which means developing methods to reliably answer the following important questions: -

(1) How much concentrate should be fed?
(2) What type of concentrate or by-product is appropriate?
(3) How much silage is required?
(4) How can milk yield and composition be manipulated?

Continuous improvements are being made in the systems used to calculate rations and feed plans. This has involved refining existing systems such as the Metabolisable Energy System, and also introducing new systems such as the Metabolisable Protein System. Work is also underway to develop "response-based" models which aim to give better predictions of an animal's response to a change in nutrient supply.

A major limitation to progress is the imprecision of advisory descriptions of the cow and her feed. The new rationing models call for more and more feed information which is simply not available to the adviser doing the rationing. Particularly serious has been the inability to describe accurately the feeding value of silage. Silage is a highly variable material and is, therefore, particularly difficult to describe. How often in the past have silages simply "not fed as analysed"?

To improve this situation more accurate predictions of the intake and nutritive value of silage must be obtained. The two key techniques available to our analysts are Near-Infrared Reflectance Spectroscopy

(NIRS), which is the method presently used at SAC, and Automated Electometric Titration. Progress of research at SAC over the past 4 years using the latter method has already been applied in advisory work.

Using silage juice titration in advisory analysis

Inaccurate prediction of silage intake is often the greatest source of error in ration formulation, but improvements have been hindered by an inadequate description of the silage fermentation in advisory practice. Until recently, only pH and ammonia nitrogen have been routinely measured as indicators of silage fermentation characteristics. A new method based on research in Finland is now used which involves automated titration of juice squeezed from the silage to pH 2 (with hydrochloric acid), followed by stepwise titration (with sodiun hydroxide) to pH 12. Concentrations of juice constituents are predicted from the buffering capacities measured over segments of the titration curve (pH 2 to pH 12). Calibrations have been obtained empirically by the addition of known increments of standards to a range of silage juices. Proportions of variance (R^2) of measurements by reference methods accounted for by predictions from titrations for a validation set of 93 silages were 0.90, 0.78, 0.92, 0.82 and 0.82 for lactic acid, acetic + butyric acids (VFA), soluble nitrogen, sugar and ammonia nitrogen respectively.

Variability in silage fermentation

A pilot study of 1018 randomely-chosen Scottish silages from the 1991 season showed wide variation in fermentation characteristics (Table 1).

Non-hierarchial clustering applied to the titration data for a subset of this population revealed four main silage groups and is in use as an advisory classification system (Silage Cluster Index - SCI, Table 2). Approximately 15% of silage cannot unambiguously be placed in one of the four main groups but are reported as "borderline cases". In Table 2 the values for the fermentation characteristics are the means for each cluster as a percentage of the grand mean.

Table 1 Fermentation characteristics of 1018 Scottish silages (g/kgFW unless specified)

Measurement	Mean	Minimum	Maximum	CV (%)
Lactic (+ formic)	21	0	57	52
VFA	13	2	35	43
Sugar	8	0	79	134
NV[1]	167	16	365	42
AAN/TSN[2]	618	120	1000	22
VFA/TFM[3]	407	64	1000	51

[1] NV = neutralising value (meq of alkali required to raise the pH of 1 kg FW of silage to 5.6).

[2] AAN/TSN = amino acid nitrogen (g/kg total soluble nitrogen).

[3] VFA/TFM = VFA (g/kg acetic + formic + VFA).

Very high NV (>280 meq/kg FW) was measured for 55 of the 1018 silages, and advisory case studies suggest that reduced intakes are common in this group. Most silages were classed as SCI=2 (35) and to a lesser extent SCI=3 (11) and SCI=2/3 (3).

Table 2 Silage Cluster Index (SCI) applied to 1018 Scottish silages

SCI	Fermentation	VFA/TFM	AAN/TSN	Sugar	NV	Ocurrence (%)
1	bad	168	78	28	73	27
2	moderate	70	105	46	127	36
3	good	71	111	188	95	16
4	very good	62	124	494	73	6

Using the new measurements to predict intake

A 3-year study using both sheep and cattle is underway to develop new models for predicting silage intake incorporating the titration data. SCI accounted for 64% of the variation in silage intake compared to a value of 35% for ammonia nitrogen. Ammonia nitrogen values of greater than 150 g/kg nitrogen were associated with reduced intake but there was no relationship between ammonia and intake for silages of lower ammonia content. SCI appears to be a useful index to describe the effects of silage fermentation quality on intake.

Following Nick Offer's lecture Hugh Kerr gave a short talk on his work as a nutrition specialist with Keenans Ltd. The aim of the team of nutritionists at Keenans is to make complete diet feeding work better by providing an after-sales service to farmers purchasing a feeder from the firm. Difficulties experienced here are the prediction of intake, and the fact that stimulation of intake by complete diet feeding may not result in an increase in performance.

The first thing studied is how much silage the farmer has, and then the dry matter content of the silage. A low dry matter gives a low intake and a poor performance. The best complete diet should have an analysis close to that of spring grass, and the aim is for the total diet to have a dry matter content of around 40%. A crude protein content of at least 17% is required, with 19-20+ for high yielders. If intakes of 25 kg of dry matter can be achieved then the energy density of the diet can be reduced.

The vote of thanks to Nick Offer and Hugh Kerr was given by Donald McColm, who also thanked Kennans for their generous sponsorship of the meeting.

D Reid

SOUTH WEST SCOTLAND GRASSLAND SOCIETY

GRASSLAND ENVIRONMENTAL COMPETITION 1993

A Grassland Environmental Competition will again be organised by the South West Society in 1993. The judging will take place in August as last year, so the entry date will be past before this Journal goes to press. However, the winners will be announced at the Silage Competition Night in January 1994.

As in previous years the Competition will be generously sponsored by Forum Chemicals. The winner is awarded the Forum Feeds Environmental Trophy to be held for one year. The Competition will be judged by a farmer (last year's winner) and a conservationist.

KEENAN NUTRITION

A meeting of the CSGS at the Cartland Bridge Hotel, Lanark on 4 November 1992

The speaker after the AGM of the Central Society was Hugh Kerr who was with BOCM for 14 years, and has been the Nutrition Director with Keenan Nutrition for the last 3 years. Hugh claims to know nothing about dairy cows, but learns by listening and watching and then spreading the knowledge to others. His aim is to make more money for those who buy Keenan Feeders.

What goes into the wagon is a vital factor, and to obtain higher yields Hugh believes that more grain should be fed - "more grain in - more milk out". European farmers are feeding up to 10 kg per head, while Swedish farmers are feeding 10-14 kg. The Milk Board wants higher yields of milk protein but does not pay for it.

Some of the present issues in dairy farming were listed by the speaker:

(1) Breeding is becoming more important in maximising cow performance.

(2) The average size of the dairy herd is increasing.

(3) Grain should be cheaper in the future.

(4) There is a need for high quality milk - especially protein.

(5) Maize silage is replacing second and third cut silage in some places.

(6) Interest is growing in maximising cow output using cheaper inputs.

Complete diet feeding started in the mid 1970's, but the machines could not cope with wet silage. The benefits of a complete diet are that it increases dry matter intake, improves feed efficiency and leads to improved milk quality. The system also reduces the stress on the animal, and increases profitability.

It is comparatively easy to formulate rations using a computer but fine tuning is necessary. A typical rumen fermentation curve shows an initial lag phase which is due to the pH in the rumen. This lag phase is more marked if a high level of concentrates is fed. Complete diets reduce the lag phase and the pH fluctuates less, enabling better absorption of the

nutrients in the ration. Complete diets also give a more level lactation curve with more milk being produced in the second 150-day period.

A possible dry cow ration could be 9 kg chopped wheat straw, 10 kg silage, 1 kg molasses, 0.6 kg brewers grains and 0.15 kg dry cow mineral. This ration would be fed for 5-6 weeks until 2 weeks before calving when the cows would be put onto 10 kg high-yielders mix.

Computer rations look like spring grass analysis. A ration with less than 40% dry matter does not work; the silage should be drier. At the other extreme, a ration with 65% dry matter caused feeding problems which were overcome by adding 800 l of water.

Caustic treated grain has a pH of 11 and is a high energy feed which alleviates health problems. It stops or reduces lameness problems, perhaps because the cows walk less and lie down more. Some users are feeding 8 kg/day of caustic-treated grain, and the benefits which have been reported by eighty-two users are as follows:

(1) Feed costs have been reduced.

(2) Milk yields and milk protein have been increased.

(3) Liveweight gain has been faster.

(4) Feeding efficiency has been increased.

Hugh showed in the following table how the price of cake varied with the price of wheat:

Cost of wheat/tonne	130	115	100	85	70
22% protein dairy cake	124.15	118.4	112.65	106.9	101.15
15% protein beef cake	112.9	106.9	100.9	94.9	88.9

C McCombie

MIX 'N MATCH

A meeting of the SWSGS at the Urr Valley Country House Hotel, Castle Douglas on 19 November 1992

Following the AGM of the Society at Castle Douglas, a panel of three farmers discussed their contrasting systems of winter feeding. The farmers were Jan Vos, Coopon, Palnure, Newton Stewart; Robert Ramsay, Lodge of Kelton, Castle Douglas; and Scott Henderson, Carswadda, Dumfries. Sponsorship for the meeting was provided by Britmilk.

Jan Vos

A direct comparison between any two Scottish farmers is not possible because what suits one may not suit another. In contrast, there is a greater similarity between farmers in Holland.

At Coopon the dairy herd is divided into two groups with a total milk quota of 1 million litres. The high yielders are always milked first. The silage is treated with molasses, and is wilted and chopped. One clamp is covered, and the other two are outside with asphalt floors. Draff and sugar beet pellets are added to the silage in the clamp. Use of a sheer grab ensures a tidy face when the silage is used.

Whole crop wheat has been fed for 3 years giving an average yield of 7-8000 l. Jan would not like to be without it, but finds it strange to be chopping up such a valuable crop as wheat. The peak intake on this silage was 64 kg per day, and the peak yield was 12-13000 l.

The aim is for a dry matter content of 40% in the total ration, but the summer rainfall (May - September) makes this difficult to achieve. However, in the dry summer of 1992 more concentrates had to be fed but did not affect performance, so the margin per litre decreased.

Jan believed that feeding the same concentrate with grass silage would probably give a greater yield of milk but a decrease in milk protein. Cow health would also deteriorate with an increase in foot trouble and infertility problems.

Robert Ramsay

Probably the most important decision a farmer will ever make is what to feed in the winter. Milk price is based on quantity and butterfat

content, so it is important to produce milk to quota as economically as possible without damaging animal health, but at the same time obtaining all the bonuses available (hygiene, cell count, etc.).

Maximum use should be made of grass for silage and grazing, balancing it with the minimum possible amount of concentrate. The cows at Lodge of Kelton are fed concentrate at a rate of 2 kg/head after calving and 1 kg/head after 200 days in milk, giving a total of 0.75 t of concentrates per head including dark grains. Robert estimated that 60 kg of the mix gives 35-40 kg of milk. Stored silage effluent is also fed *ad lib* with the cows consuming about 15 l per day.

The first crop from two fields sown with a grass/clover mixture and given no fertilizer nitrogen is cut for silage. Subsequently these fields are grazed by cows. In the winter the grazing is by sheep and about 1,000 geese. Another grazed field which has been in grass for 20 years receives 120 kg nitrogen, 60 kg phosphate and 60 kg potash per ha in three dressings. Robert believes that an individual nitrogen dressing should not exceed 50 kg/ha on grazed grass.

Grass fields cut for silage receive dressings of 55 kg nitrogen and 2300 l of slurry per ha in winter and spring. The grass is direct cut aiming for 25% dry matter and 75D, loaded into a clamp, treated with a good additive, rolled and sheeted. Although silage is the cheapest feed, it does involve a high capital input for machinery and effluent control. However, grass grows better than any other crop in the west of Scotland. The grass fields are mostly over 10 years old and consist of mixtures of tetraploid and late perennial rygrasses.

If the silage is of good quality the cows will milk well no matter what else is fed with it. On the other hand if it is poor no supplement will compensate and improve yield. Last year dark grains were fed as the supplement.

The problem with direct cutting of silage is the large amount of effluent produced. For many years this was added to and spread with the slurry. However, most of the effluent is now stored in a 205,000 litre plastic bag and fed to the cows. For the first 3 weeks after filling the clamp the effluent goes to the bag, thereafter, and if rainfall is high, it runs to the slurry tank. For feeding, the effluent is pumped from the bag to a header tank fitted with an automatic cutout. The effluent kept well in the bag, and analysed at 6% dry matter, 20% crude protein and 12 ME,

and was apparently very palatable to the cows. It was fed for 2 months, and the milk yield dropped by 80 l when it was stopped first and by 50 l when it was cut off again. Further information on this system of effluent storage can be found in the article by Peter Jefferis (p. 32).

Scott Henderson

Carswadda has no milk quota and no flat fields. Scott has been in Scotland for 38 years, and farms 243 ha in two units. Of the total area, 77 ha have been in barley but are being returned to grass. 2,500 t of pit silage are made plus 600 big bales. The aim is for self sufficiency, and reliance is, therefore, placed on grass for winter feeding with the absolute minimum of concentrates fed.

There is a suckler herd of 210 cows and 20 heifers. In addition, 500 cattle are finished fat - 200 from grass. The sheep flock consists of 900 ewes all the lambs from which are sold on a dead weight basis.

The cattle are wintered as cheaply as possible using straw, with supplementary feed to the leanest. The aim is to have the cows in calf and in reasonable condition when they are housed in November. Some condition may be lost during the winter before they calve in May. In the past calving was later, but then there was too much milk and the calves were unable to take it all. The bull is not housed with the cows. Calves are weaned when the cows go onto a starvation diet.

The sheep are housed in the New Year when they are clipped ready for lambing in late March/early April. They are fed as little concentrate as possible. The ewe lambs are outwintered.

Fat cattle are finished on slats and are fed twice a day on barley mix plus silage, which must be cleaned up before the next feed. The barley acts to keep the cattle lean enough until they have reached the desired weight.

Discussion

The speakers were asked to describe any new developments in their silage making systems. Scott Henderson reported that he now took a larger first crop by cutting later for extra yield, although this results in a poorer quality second cut. Robert Ramsay could not see his operation changing much. In particular, he had no plans to wilt as he had never

recorded an increase in milk yield from wilted silage. He had tried taking three cuts of 70D silage. In 1991 the first cut silage took the milk yield over quota, and he had to mix it with third cut silage. The second growth in 1992 had unbroken sunshine and the silage came out at well over 20% dry matter.

Questioned on whole crop wheat, Jan Vos believed that it stopped the silage going through the cow. Robert Ramsay could not grow winter wheat because the geese would eat it. On Scott Henderson's wet farm wheat would be difficult to harvest, and another pit would be required.

Jan Vos thought that the collection of all runoff might be required in the near future with the separation of dirty from clean water, but covering the clamp would be expensive. Scott Henderson said he would have to be forced to put on a roof. Robert Ramsay pointed out that cows take effluent instead of water, and that effluent has to be controlled so it might as well be collected for the cows. The cost was £5 per t of effluent or £1 per t of dry matter. The 205,000 l plastic bag cost £3,000 and is 610 mm below ground and 610 mm above. The total cost of the system was £7,000. Pumps, pipework and feed system are not eligible for grant, but it is hoped to obtain a 50% grant on the collection system.

Following the discussion there was a short talk by **Mervyn Turkington** of Britmilk, who sponsored the meeting. He believed that silage would continue to be the major feed for livestock, and that maximum use should be made of grass. One MJ of energy cost 1.4 p when fed as dairy nuts compared with 0.83 p as silage. The silage additive Bioferm aims at the retention in silage of the grass sugars, and at retaining palatability and natural juices.

To preserve more of the value of the grass in palatable silage the pH must fall from 6.5 to 3.8, and Mervyn suggested that to do this more rapidly a biological additive was required. The enzymes in Bioferm convert the grass fibre to sugar. This process is pH sensitive and stops at pH 4. Bioferm bacteria convert sugar to lactic acid more efficiently and faster than natural enzymes, which break down cell membranes and produce water and acetic acid. Each gram of Bioferm contains 1 million bacteria of four different strains which bring the pH down rapidly. The bacteria are freeze dried together with nutrients which start the bacteria working. A Clostridia phage is included which improves palatability and reduces effluent production. Bioferm has a 7-day shelf life after mixing.

Feeding trials with dairy cows at Hillsborough in Northern Ireland showed little difference in analysis between silage with and without Bioferm. However, the addition of Bioferm increased silage intake by 14%, and milk value by 44 p per cow per day.

G E D Tiley

RETIRAL OF DR RON HARKESS

As this Journal goes to press the Editor has learned that Dr Ron Harkess will be officially retiring from his post of Assistant Principal of SAC at a ceremony in Edinburgh on 10 July 1993. Ron is a founder member and Honorary Vice President of the South West Society, and was Editor of this Journal from 1975 to 1988. He was a specialist adviser on silage in what was then the Agronomy Department of the West of Scotland Agricultural College. He was next appointed Technical Secretary of the Scottish Agricultural Colleges and was transferred to the Perth HQ. Following a further reorganistion, he became the Assistant Principal of SAC at Edinburgh.

In addition to his long period as Journal Editor, Ron has made many contributions to the success of the South West Society. Among other things, he was the main organiser of the long-running Silage Competition, and accompanied the Silage Judge in every Competition for 12 years. The Editor takes this opportunity to express the gratitude of the Society to Ron, and to wish him a long and happy retirement.

REALISTIC STORAGE SYSTEMS

Peter Jefferis, Realistic Marketing, Stafford

Constructing stores to hold silage effluent (or more correctly, grass juice) can be achieved in a variety of ways. To build these stores cost-effectively is another matter, and I have been involved in this for the past 15 years. Over 8 years ago, I came up with the storage system that Realistic Marketing promotes today. Many above-ground structures were examined but these always proved to be too costly. Eventually it was realised that the capacity required could be met by digging a hole in the ground, and then constructing a flexible tank to hold the product securely within the hole.

The first system, which was installed on the farm of Mr Brian Cooke at Adbaston near Stafford, and has given him full control of all effluent produced over the past 8 years. Brian adds this nutritious liquid to his home-mix dairy ration at a rate of 82 l/t. It is also fed directly to the dairy cows through a water trough, and given to calves and bull beef.

Although the liquid is used on a purely commercial basis on the farm and no monitored trials have been carried out, Brian is convinced that feeding the effluent to the dairy cows has increased milk yield, and has also given a milk protein response. In the case of bull beef, which is always marketed through the same butcher, the response to feeding silage effluent has been a higher leanmeat content.

Effluent has been stored and fed back to dairy cows in Scotland for some time, for example by Michael Milligan at Culvennan, Castle Douglas. Both Michael and his neighbour Robert Ramsay have installed the new Realistic Effluent System. On Robert Ramsay's farm where the silage is direct cut, the holding system filled to nearly its capacity of 205,000 l, and the 120 cows were consuming approximately 1360 l a day, giving an increase in milk yield. Robert has assessed this over the winter by turning off the effluent system at times to enable the troughs to be cleaned, and each time this was done the daily milk yield decreased by 0.75-1 l per cow.

The silage effluent is stored between thick plastic sheeting which is specially designed to the high standard required by the grant authorities. The edges are heat sealed to make it completely airtight and produce a type of giant hotwater bottle. Robert Ramsay says "The system has

two great advantages. I have full control over the effluent production from the silo, and I am now able to utilise a highly nutritious product which would normally have gone into the slurry system and been spread on the fields." He added that he was delighted with the way things were going and that he would be able to recoup the cost of the system within a short time.

For further information see Realistic Marketing's advertisement in this Journal.

SCOTTISH REGIONAL SILAGE COMPETITION 1993

This year's Competition was judged by John N Watson, formerly of the Hannah Research Institute and now retired to Cumbria. Five local society winners were judged this year instead of four in previous years, the additional entrant being from the newly reformed Caithness Grassland Society.

The entrant from the South West Society, G & T L Clark, Newmains, Kirkbean, was narrowly judged the winner in a very highly competitive contest. J E Hamilton, Nether Pirn, Innerleithen from the East of Scotland Grassland Society was the runner-up.

Mungo Clark receives the BGS Scottish Region Cup. Since this competition began in 1979 the cup has been awarded to a member of the South West Society in nine of the fifteen years.

CENTRAL SCOTLAND GRASSLAND SOCIETY

15th ANNUAL SILAGE COMPETITION 1993-94

The 15th Annual Silage Competition of the Central Society will be run in 1993-94 with the same prizes as in previous years. The rules for the Competition will be circulated to members with the entry forms.

SWSGS SILAGE COMPETITION 1992-93

A meeting of the SWSGS in the Hotel Embassy, Newbridge, Dumfries on 14 January 1993

Judge: John McCluskey, Lea Farm, Roslin, Midlothian

The Chairman, James Forrest, opened the 1992-93 Competition Night and welcomed a good turn-out of members. He observed that there were still many familiar names high up on the short list for the 20th Silage Competition though a few new names had emerged. The full list was much longer with the new rules for the Competition, but it was salutary and helpful to members to see how far down the league table they were and to consider how they could improve their position. The range in the analyses would be reflected in the financial performances on the farms. The Chairman introduced the Silage Judge, John McCluskey, whom he had accompanied on part of his itinerary. He had been greatly impressed with the thoroughness of his judging.

John McCluskey thanked the Society for its hospitality and for the help he had received from the Executive Committee. He had been disappointed that the storms had prevented him getting to Arran, but he thanked all who showed him around and the farmers who had welcomed him. The system worked superbly. By coincidence he had just attended a Semex conference entitled "Staying in Business". He felt that attention to detail, particularly fixed costs, size of farm and yields, was important. Fixed costs in silage making should be targeted, possibly by machinery sharing.

None of the farms on the short list were self feeding. Only two out of ten used the shear grab, but the judge was so impressed with this implement that he was considering buying one himself. Six out of ten used forage boxes and two had mixer wagons.

Reading the 1990 number of *Greensward* Mr McCluskey noted that all entrants in the 1989 Competition were criticised over effluent control. In contrast, nine out of ten on this year's short list had full control of effluent, and all received virtually full marks for this. Those feeding the effluent to the cows got extra marks.

Table 1 Short list for judge's visit (in order of analysis)

		Analyses (35)	Marks Inspection (65)	Total
Dairy Class				
1st and Rosebowl	G & T L Clark Newmains, Kirkbean	31.35	57.30	88.65
	A Hogarth Curragh, Girvan	28.96	54.80	83.76
Milligan Prize	J Mackie Dalfibble, Parkgate	28.93	56.40	85.33
	H Kerr Bourtreebush, Tarbolton	28.70	46.20	74.90
	W Knox Redhills, Collin	28.53	50.00	78.53
3rd	A & W A McWilliam Colfin, Lochans	28.29	57.30	85.59
	J McFadzean Towerhill, Kilmaurs	25.08	56.60	81.68
2nd	A & I Irving Largs, Twynholm	25.03	62.50	87.53
Beef/Sheep Class				
1st and BP Trophy	H McKeever Hillhead, Tarbolton	26.02	60.30	86.32
	H R Parker Culhorn Parks, Stranraer	22.93	52.30	75.23
	R J Hogg, Gribdae, Kirkcudbrightshire	18.86	50.40	69.26
Best Big Bale Entry				
	H R Parker Inchparks, Stranraer	21.81	N/A	N/A

The Judge recommended sand bags as a cure for shoulder waste on silage clamps. He used polypropylene bags (ex-minerals), because hessian rots. He bought a load of sand, filled the bags with his own labour, and sealed them with a heat sealing unit. Only three farms on the short list used sand bags and one of these was a beef farm. He complimented all farmers for applying their own ideas to adapting buildings.

Table 1 shows the marks awarded to the entries on the Judge's short list. The first prize in the Dairy Class was awarded to G & T L Clark, Newmains, Kirkbean, who were also overall champions and recipients of the Silver Rose Bowl. Winners of the second prize in the Dairy Class were A & I Irving, Largs, Twynholm, who won the third prize last year, the third prize this year going to A & W A McWilliam, Colfin, Lochans, Stranraer.

For the second year in succession Harold McKeever, Hillhead, Tarbolton was the first prizewinner in the Beef/Sheep Class, and received the BP Nutrition Trophy. The prize for the Best Big Bale Silage went to H R Parker, Inchparks, Stranraer.

The Michael Milligan prize for attention to detail was awarded to J Mackie, Dalfibble, Parkgate. A Hogarth, Curragh, Girvan received the Kemira Prize for the best new entrant.

The prizewinners for the best silages (on analysis marks only) in the four counties were A & A Reid, Clauchlands, Lamlash for Ayrshire; J Mackie, Dalfibble, Parkgate for Dumfries; G & T L Clark, Newmains, Kirkbean for Kirkcudbright; and A & W A McWilliam, Colfin, Stranraer for Wigtown.

Plasti-Covers Silage Prizes were awarded to the first and second prizewinners in the Dairy Class, to the first prizewinner in the Beef/Sheep Class, and to the Best Big Bale winner. For the second year the prize trophies took the form of crystal glasses engraved with the SWSGS logo by the local crystal glass works at Mauchline.

Ray Allbrooke: Silage Quality 1992

A summary of the analyses of the silages in the last 5 years is given in Table 2. Because of the new rules for the Competition the number of entries was considerably increased in 1992, but the amount of information obtained on each was reduced. There appeared to be a decrease in the overall quality of the silages, but this was possibly due

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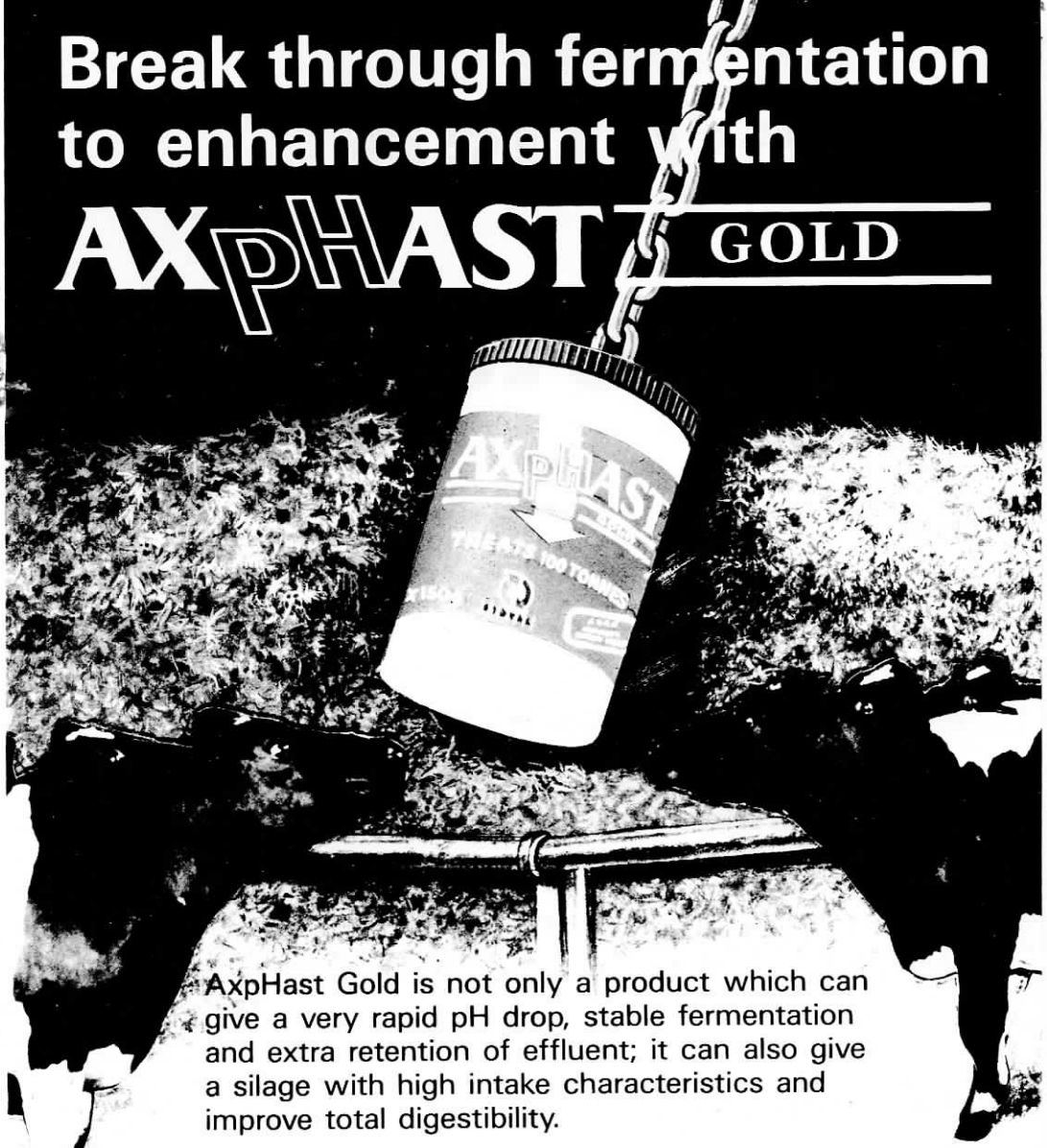

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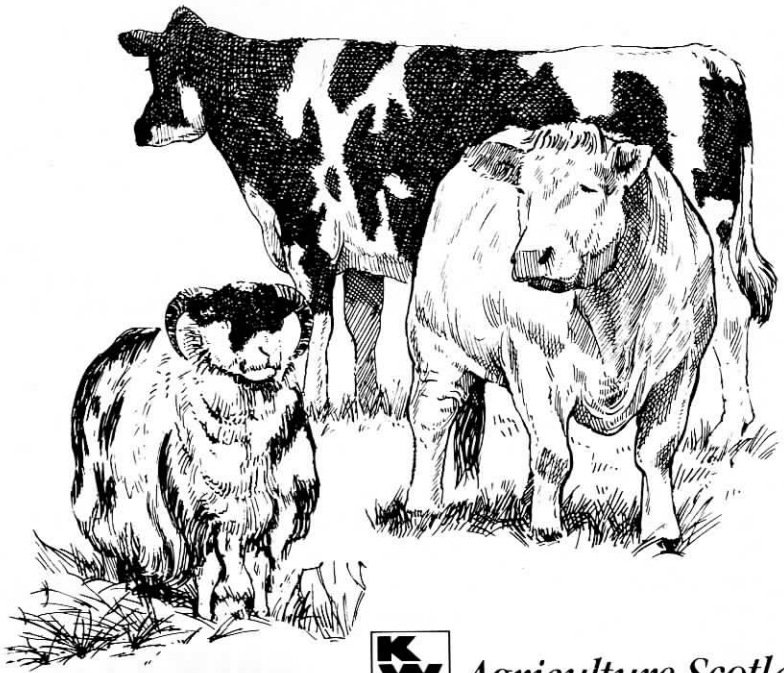

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to the increase in the number of entries and and the consequent wider range of silages included. However, the national trend in silage quality was down. In the Competition the D values of only 25% of the entries exceeded 70, compared with 76% last year. As in the previous 4 years, however, none of the silages had a D value below 57. The average dry matter content was higher this year at 24. The ammonia nitrogen content was the highest recorded for 5 years, though in the top twenty-five entries it was comparable with previous years.

Table 2 Silage Quality 1988-92

		% of total in each group				
Quality	**D-Value**	**1988**	**1989**	**1990**	**1991**	**1992**
Super	>75	3	5	8	18	2
Very good	70 - 75	35	55	53	58	23
Good	65 - 70	42	29	34	18	44
Medium	57 - 65	20	11	5	6	31
Poor	<57	0	0	0	0	0
Mean DM%		22	23	22	22	24
Mean Ammonia N (% of total N)		8	8	8	5	9
No. of entries		66	73	38	33	185

SAC analyses have moved more to attempting to obtain a better prediction of intakes. Nick Offer has combined all the silage parameters into an Intake Factor indicative of how much the cow will eat. This has not been included in the Competition analyses marks this year.

Ray suggested that if there is surface deterioration on the clamp it is possibly worthwhile taking face samples, but for the Competition entries all samples were cored. SAC silage samples now have a 7-10 day turn around.

Lea Farm, Roslin, Midlothian - J McCluskey

Lea Farm is near Roslin Glen and its ruined chapel. It originally had a traditional steading, but new buildings were erected in 1975 and 1980. The old steading is being converted into workshops and houses and the scheme will include an old archway. About 9 ha of the farm will be lost through this development.

A disused railway line along the side of the farm forms a country walk and bridle path. Next to the walk a viewing gallery is to be built, and the old byre is being converted into a tea room. Great awareness of the environment is necessary because of proximity to the village. However, this results in a lot of vandalism with cars being dumped on the railway line. A pond has been created on the farm and more trees have been planted.

Opencast coal mining is starting soon, and John has been granted a neighbouring farm to compensate.

Silage winners panel

Mungo Clark, Newmains, Kirkbean, the winner of the Dairy Class and the overall champion, emphasised that his success in the Competition and in his farm silage operation resulted from a team effort with David McCormick and other farm staff. Newmains is at sea level and consists of two farms totalling 202 ha. Until recently 69 ha were in grain but this has been reduced to 28 ha, the remainder being given over to a golf course. Fodder beet covering 22 ha sees the cattle through difficult years due to its capacity to overcome dry weather and grow on - a dependable feed.

There are 125 cows and 80 sucklers on rented sand land. The stock have been outwintered and straw yarded since 1980 and look contented. As much as possible of the manure is put on the fodder beet land.

Silage is direct cut and Maxgrass is applied using a 1000 l container on a trailer. This is the most expensive additive, but it seemed to do a good job in 1992 resulting in no waste. The flexible simple system employed was started in 1986. The outside pit was built on a gravel bed with sleepers and has stood for 12 years.

Alastair McWilliam, Colfin, Lochans, Stranraer, who was the third prizewinner in the Dairy Class, has a completely opposite system growing as much grass as possible on his farm. Each year 8 ha is reseeded under barley. A first crop on 44 ha is cut by a contractor in 2 days, and this silage had the additive Ecosyl applied in 1992. The dairy herd consists of 130 Ayrshires, and all young stock are kept and crossed with Limousin and Simmental when 3 years old. The calves are fattened at home with as much silage as possible and very little concentrate and barley. The cows are housed in cubicles with rubber mats.

Harold McKeever, Hillhead, Tarbolton, the winner of the Beef/Sheep Class, has a small farm of 30 ha. He buys in 100 store cattle in summer and 80 in winter. 15 ha are cut for silage, and plenty of grass is grown and conserved as well as possible. Virtually zero waste is achieved in the silo by the use of tyres, sheeting and sand bags. Although the quality of the silage was almost the same in 1992 as in the previous year, the beef cattle did not do so well on it. This was probably due to the hard weather experienced up to May. An additive is used on the first-cut silage because it is important that this silage is as perfect as possible to get the cattle away on the grass.

The vote of thanks was proposed by John Watson. He thanked John McCluskey for judging the Silage Competition and for his interesting commments. Thanks were also offered to the Bank of Scotland for once again generously sponsoring the Competition Night through their Castle Douglas Branch. Sponsorship by way of prizes was also gratefully received from Plasti-Covers Ltd and from Forum Feeds.

G E D Tiley

SOUTH WEST SCOTLAND GRASSLAND SOCIETY

21th ANNUAL SILAGE COMPETITION 1993-94

The Annual Silage Competition of the South West Society will be run again this year. The pre-judging system will be applied as in the last three Competitions. Some changes in the marking system are being introduced to give more weight to dry matter content and to include the new Intake Factor on the SAC Silage Reports. To allow for these changes, the marks previously allocated to ammonia nitrogen will be reduced from 15 to 5. Entry to the Competition will again be free, though there will of course be a fee for the analysis. Details of the method of entry and the new marking system will be circulated later in the year. Free entry considerably increased the numbers in the Competition last year, and it is hoped that this continues in 1993.

GRASSLAND ENVIRONMENTAL COMPETITION

SOUTH WEST SCOTLAND 1992

The results of the SWSGS 1992 Grassland Environmental Competition were announced at the Competition Night held at the Hotel Embassy, Dumfries on 14 January 1993. The judges were Andrew Gladstone, Craichlaw Mains, Kirkcowan, who was the winner in 1991, and Marion Hughes, Scottish National Heritage, Dalbeattie. Winner of the first prize and recipient of the Forum Feeds Environmental Trophy was Dr D Webster, SAC, Crichton Royal Farm, Dumfries. The second prize was awarded to J Jamieson, Roundbush, Annan, and the third to M & J G Dunlop, Bishopton, Kirkcudbright.

The judges first listed the points they studied when visiting a farm. Marion Hughes said that she considered three aspects of nature conservation :

(1) The wildlife interest already present on the farm.

(2) Methods of maintaining this wildlife.

(3) The scope available to extend and encourage the wildlife interest.

Andrew Gladstone also looked at three aspects:

(1) Control of effluent. Here all three farms had taken positive steps resulting in minimum pollution.

(2) Positive steps to improve the environment, eg. planting of hedges, which would also bring about a long-term improvement of the landscape. Farmers must leave something behind for the next generation. They could plant small woodlands, or, in some cases, just leave things alone.

(3) The impact of the farming systems on the environment must be considered. Farmers have been brought up to aim for maximum production, but this philosophy must now be radically reassessed, e.g. farmers should be using more clover and less nitrogen. Everyone should be thinking of more sustainable farming. It would be an encouragement to farmers if they could be in an ESA and receive the incentive of conservation grants.

A summary of the judges' comments on each of the three farms follows.

Bishopton

This farm stands on very high ground, but has considerable nature conservation interest, e.g. barn owls.. The landscape is diverse with a range of interest - hedgerows, trees and rough areas. The judges suggested that this farm would benefit from guidance from a FWAG adviser, and also from some further long-term thought and sympathy toward the integration of available habitats and wildlife interest.

Roundbush

In contrast, this farm had very little existing wildlife habitats, but the farmer, Mr Jamieson, demonstrated a high level of enthusiasm for developing the conservation interest. Much of this was embodied in his own personal efforts, e.g. by growing his own tree plants from seed, and carrying out woodland management. Progress in nature conservation measures was again hampered by lack of consultation with outside advisers.

Crichton Royal Farm

Marion Hughes paid tribute to the farm manager, Dave Webster, for his well planned conservation efforts. He had sought advice from a range of people, taken their advice, and carefully assessed the wildlife interest before embarking on new measures. Trees had been well planted, hedges were cut wide and full, and an area of wetland had been managed as a wildlife area, which was now a conspicuous haven for song birds. It might have been argued that the woodland could have benefited from a greater range of tree species and the presence of more dead trees. The judges were very impressed with the approach to wildlife conservation and enhancement. Sympathy for the environment was one of the cardinal points being emphasised in the Society's Competition, and the prizes were awarded to recognise this.

In accepting the first prize Dave Webster stressed that only items on the commercial part of Crichton Royal Farm were entered in the Competition. The clover and wildflower pastures were formal trial areas and so were excluded. The conservation measures taken were the result of Dave's own policy and efforts, and were financed out of profits from the commercial farming operations, with grants where appropriate. An article by Dave Roberts describing the conservation efforts at Crichton Royal Farm is included in this Journal (p. 42). **G E D Tiley**

CONSERVATION AT SAC CRICHTON ROYAL FARM

D M Webster SAC, Crichton Royal Farm, Dumfries

Adapted from an article in Grass Farmer

Background

With the increasing pressures on the farming industry from outside bodies together with an awareness of the need to conserve areas of land for habitat in which wildlife could thrive, a policy of farm conservation was instigated in the autumn on 1985 at Crichton Royal Farm. Many of the mature trees, mainly Beech, Elm, Ash and Oak were planted more than 100 years ago and an increasing number had become diseased and wind blown.

Policy

The policy has been to replace hedgerow trees, manage and improve the existing hedgerows, create a wetland area, and adopt a more sympathetic approach to headland areas. However, the farm, which extends to 250 ha and carries 350 milking cows together with 300 youngstock and beef cattle, is managed as an intensive dairy grassland farm with a priority for maximum profitability from the farming business. The effects on the farming operations and business has been taken into account during the planning of all conservation projects which have been undertaken. It should be mentioned that in spite of the general attitude of farmers towards interference from outside conservation bodies, most of the work was carried out in consultation with the local FWAG advisor, Scottish Natural Heritage and the Forestry Authority, all of whose advice and assistance was both positive and sympathetic.

Tree planting

The conservation work carried out to date commenced in 1985 with the planting of Ash hedgerow trees to replace the existing trees, some of which had become diseased. The initial protection around the trees in the form of timber fencing was not sufficient to prevent the dairy cows browsing the tops off. As a result, in the following summer a double strand mains electric fence was erected 1 m out from the tree line. An additional benefit from this fence has been the creation of dense vegetation at the base of the Hawthorn hedge alongside the trees, leading

to an ideal habitat for many invertebrate species. Other tree planting in 1985 included screening of a beef shed and slurry collection area with a mixture of Norway Maple, Silver Birch, Beech and Alder. Screening of other buildings has been carried out at the Acrehead steading to improve the variety of habitat, to provide shelter and to enhance the landscape near the buildings, which were erected on a green field site in 1979.

An original plantation of mature Japanese Larch dating from 1929 was felled in 1986 as mature timber under a felling licence. This area of 0.6 ha was planted for timber production with Beech, Sycamore and Oak as the main species under the then Broadleaved Woodlands Grants Scheme. In addition, a perimeter area was planted with minor species of Rowan, Field Maple and Bird and Wild Cherry. A further area of 1.8 ha of previously rough grazing on the site of an old sandstone quarry was also planted with the same species under the Broadleaved Scheme adjacent to an area of natural regeneration.

Wetland

A conservation wetland site was established in 1987 on an area of land felled for timber production in 1978 and replanted with Norway and Sitka Spruce. Little in the way of management was done in the intervening years and many of the trees were killed out. The area was left to regenerate naturally, mainly with Silver Birch. In addtion, two ponds were created which retain water adequately during the high rainfall winter months, but tend to dry out during the summer. However, the area remains a wetland site throughout the year and has been left to develop naturally. It provides a varety of habitats including trees, shrubs and scrub such as Bramble in which songbirds are conspicuous.

Hedgerows

Hedgerow management has received more attention on the farm in recent years. Hedge trimming is delayed until late January each year in order to retain fruits and berries as a food source. Cutting is less severe to allow the hedgerows to attain a greater height and density.

With grant aid from the Countryside Commission for Scotland (now Scottish Natural Heritage) a new hedgerow 220 m in length was planted in 1992. The aims of this new hedgerow were to act as a wildlife corridor between hedgerows and woodland and to improve the visual appearance of the landscape. The main species planted were Hawthorn and

Blackthorn with minor species of Hazel, Oak, Dog Rose, Field Maple and Holly. Hedgerow trees were also included. The hedge was fenced on both sided with rylock and rabbit netting with a distance of 2 m between fences. In addition, a 120 m length of existing over-mature hedge was laid to encourage denser bottom growth. The Cumberland style was used as the method of laying.

Other areas

Conservation improvements have also been made on rough grassland on bankings and roadside verges. Where these areas were previously either sprayed or mown to give a "tidy appearance", they are now left to provide suitable wildlife habitat.

Funded research studies on extensive pasture management and grass/clover systems help to complete the overall conservation picture at Crichton Royal Farm.

SOUTH WEST SCOTLAND GRASSLAND SOCIETY

IDEAS COMPETITION 1993-94

The Ideas Competition could not be held last year because of a lack of entries. The Executive Committee wish to continue the Competition if suitable subjects can be found. These should be original ideas or innovations which have been developed and used by individuals on their own farms. The prize for the winner is a tankard donated by Kemira Fertilisers. Local winners may go forward to the national BGS Grassland Innovations Competition which is held every 3 years. Entry is free and a form will be circulated later in the year.

REFLECTIONS ON A VISIT TO NEW ZEALAND

John Frame

The author visited New Zealand in February, 1993 mainly to participate in the 17th International Grassland Congress at Palmerston North and then Christchurch. At the Congress he presented four papers based on his and colleagues' research work at SAC Auchincruive and Crichton Royal. He also chaired a session on grassland in winter cold zones of the world. While in New Zealand he viewed the farming scene in several parts of the country, visited some research institutes, and sampled several touristic gems in the process. Editor.

New Zealand advertises itself as the 'clean green' land , a justified description given the vast areas of grassland, forests and native bush allied to the small population - 3.5 million - in a country of similar size to the United Kingdom, which has 56 million inhabitants. Agriculture and horticulture account for 60% of New Zealand's merchandise export earnings, and the products are competitive in world markets *inter alia* because of a combination of several factors. First, because of the equable climate, ruminant livestock are not housed during the winter and are fed almost entirely on grass which grows throughout most of the year - at least at low altitudes. Other factors are low labour input systems, low capitalization on farms and shrewd marketing strategies, including tremendous cooperative policies among producers.

The oceanic climate ensures adequate rainfall for grass growth, mostly 600 to 1500 mm annually, but with some extremes lower and higher. In Westland, South Island the rainfall is measured in fathoms! - 6 fathoms (11,000 mm) there versus ½ fathom (914 mm) 80 kilometres eastwards on the Canterbury plains. However, vigorous airflows which disperse cloud cover ensure annual sunshine totals of 1800 to 2000 hours compared with 1200 to 1400 in the west of Scotland. The natural fertility of the New Zealand soil is inherently low, particularly in phosphorous, which, therefore, makes up the bulk of fertilizers used on farms. Since white clover with its capacity for nitrogen fixation - about a million tonnes annually - is the cornerstone of the pastures, fertilizer nitrogen is not widely used. Only about 15,000 tonnes is applied annually to grassland compared with 750,000 tonnes used on UK grassland.

The role of agricultural research and development is worth stressing. Farmers are more aware of the findings and incorporate them more rapidly than their UK counterparts, possibly because farming tradition does not go so far back, and in recent decades many more open-minded newcomers have entered the agricultural industry. Similarly, farmers have been quick to grasp diversification opportunities such as large scale deer farming, mainly red deer for meat, or goats for fibre. There are now about 750,000 deer and 1.5 million goats on New Zealand farms. Opportunities in tourism have also been grasped. Horticulturists have adopted many new crops including flowers. The kiwi fruit industry is an outstanding example, although it is currently having to reorganise and restrict production to meet intense competition from countries such as Italy, which is now the world's largest producer, and France and Chile.

In addition to many 'scientific' investigations, agricultural researchers are tackling a number of pressing practical problems. One success story is the development of drought resistant pastures based on the use of cocksfoot, tall fescue and phalaris grasses sown with white clover and the deep-rooting herb chicory. Considerable effort is put into evaluating and matching pasture species and varieties for specific soil fertilities, temperatures, rainfall and management environments of the various lowland and hill situations and enterprises. Another interesting development concerns an endophyte fungus often present in perennial ryegrass. While the fungus confers plant resistance to the Argentine stem weevil and other pasture pests which can kill ryegrass, it also causes an adverse metabolic condition in livestock. This is known as ryegrass staggers, but is unrelated to the staggers caused by hypomagnesaemia in stock. However, a safe strain of the endophyte has been identified, and when this is incorporated into ryegrass seed the ensuing sward is still resistant to the weevil pest but does not cause ryegrass staggers. The role of the endophyte fungi is also under investigation in the UK.

As elsewhere, genetic engineering or gene manipulation is all the rage in plant breeding, and exciting new developments can be expected in a few years, e.g. non-bloating white clover, hybrid forage legumes, genetically engineered resistance to pests and diseases of grasses and clovers - the potential list is lengthy.

Several new white clover varieties have been developed and have begun to supersede Grasslands Huia, the most widely used variety in the world, for specific situations such as sheep grazed pasture on marginal land or for rotationally grazed dairy pastures. White clover was surprisingly

scarce on the hill land swards. A marsh birdsfoot trefoil has been developed which is suitable for acid wetland pastures, for stabilization of steep slopes, for soils low in phosphorous and in agroforestry situations. A number of drought resistant, mineral rich forage herbs such as chicory, yarrow and ribwort plantain are under selection with the end objective of named varieties for use in low input pastures along with white clover. (One of the main reasons for my visit was to present recent SAC research work on the use of herbs and wildflower species in extensive pastures, which Gordon Tiley and I initiated at Auchincruive and Crichton Royal back in 1987. Aspects of this now topical work have also been presented at conferences in Czechoslovakia and Finland. This work was pioneered many years ago by farmers such as R H Elliott of Clifton Park, Kelso who in the late 19th century advocated the inclusion of a number of herbs and legumes in grassland seeds mixtures.)

As elsewhere, there is considerable emphasis on developing environmentally friendlier, low input systems of production. For example, judging inputs more critically than before; working with the existing environment more closely rather than seeking to modify it drastically and perhaps wrongly; developing biological control methods of pest and weed control in place of agrochemical methods, e.g. to date, insects have been released and are being assessed for their impact on the control of gorse, whins, ragwort and a number of other weeds. There was a complete removal of all subsidies to New Zealand farmers a few years ago. However, government support is available for the control of an 'explosion' in the number of rabbits in the high country tussock grasslands of South Island which support Merino sheep enterprises. Another such problem is the spread of the mat-forming mouse-ear hawkweed *(Hieracium pilosella)* which is turning the high country pastures into unproductive desert-like land cover. No adequate control measure is so far in sight. A more insidious long term and serious problem is the extent of soil erosion on the slopes of hill land, serious because New Zealand is essentially hilly and mountainous with only 12% of the total land surface ploughable.

Grassland utilization is at a high level of efficiency especially on the highly stocked lowland dairy, beef and sheep units. An average dairy farm of about 70 ha will be stocked at 2.5 dairy cows per ha with no bought-in supplementary feed. Great emphasis is placed on matching animal requirements and current pasture growth closely, i.e. the correct grazing pressure. Farmers typically use a 'feed budgeting' approach and regularly check the amount of herbage available, but they also estimate future

growth potential for forward planning of stock movements. Eye appraisal of pasture is a common method of assessing pasture production, and on pastures dominated by perennial ryegrass and botanically less complex than UK pastures this method is fairly accurate. The rising plate meter which uses sward height and density to give production values, is also used and there is an interesting electronic capacitance probe in use too.

Turning to the Congress itself, this is a 4-yearly gathering of grasslanders, mainly scientists, from all corners of the globe. An estimated 1300 delegates registered, many from developing countries. An innovation was that after the first core sessions covering a host of topics at Palmerston North, delegates split up into three groups - (1) intensive agriculture (at the Waikato region, the heart of the New Zealand dairy country); (2) rangelands and seed production (the Canterbury region); and (3) climate change and molecular biology (at Palmerston North). Thereafter some delegates went on to study tropical and subtropical grassland systems at Rockhampton, Queensland, Australia. Some idea of the range of topics may be gained from the contrasting titles of some of the sixty-one sessions : Grasslands for Sustainable Ecosystems; Plant Growth; Plant Improvement; Foraging Strategies; Socio-economic Factors and Pastoral Systems; Soil Characteristics and Processes in Dry and in Wet Temperate Environments; Integration of Pastoral and Non-Pastoral Uses; Achieving Potential Herbage; Seed Yields; Climate Change - Predicting the Effects; Adapting the Systems and the Grassland Role. Within the sessions there were dozens of presentations often of detailed isolated pieces of research work.

Obviously I was unable to attend every session since one had to choose from the three concurrent sessions each day at Palmerston North and then choose one of the three following venues. However, I have scanned all the summary presentations and offer selected findings or thoughts which the reader can hopefully relate to his own conditions in Scotland.

A number of papers endorsed the increased emphasis on sustainable low input systems of farming with legume-based pastures becoming more important. I could dwell on the management of grass/white clover swards especially with reference to New Zealand authors, but suffice to say previous work at Auchincruive, and current work by John Bax with dairy cow systems at Crichton Royal is equal in calibre and comprehensiveness to anything I saw. Similarly, the role of white clover in sheep and cattle systems is handled competently at SAC Edinburgh and Aberdeen respectively.

A political 'hot potato' was the adverse effects of increased human pressures on grasslands in some developing countries due to burgeoning populations. In the long term this country might not be immune to such pressures despite current over production of agricultural products. This could arise not from a rapidly increasing population in the UK but from a rapidly decreasing land area per head of population due to the building of houses, factories and roads. There is always the clamour for green field sites.

The reviewer of gene technology was in no doubt that genetic transfer systems were in place for a number of legumes and for species of the more difficult grasses. Pest and disease resistance features strongly as well as improved nutritional quality. A controversial public debate entitled "God, Gene Jockeys and Society" was held and this brought out ethical and social issues associated with gene manipulation vis-a-vis what constraints should be placed and what are the risks of creating plant (or animal) monstrosities.

Another controversial paper alleged that the grassland scientific profession was talking to itself and, while strong on biophysical research, it had neglected economic and social dimensions. A study of forty thousand published papers from around the world from 3 selected years in the last 10 found that only a quarter were directly orientated towards problem solving. In addition, if the judging criteria were narrowed to include the solving of socio-economic problems, the proportion dropped to one tenth. I would not agree that Scottish grassland research fails in such tests, partly because the close relationship between farmers and SAC acts as a two-way bridge.

In a forum led by New Zealand farmers various viewpoints and perspectives were put forward. With the complete removal of all subsidies there had been a painfull economic downturn, and to maintain viability non-production costs were slashed to the bone, family labour input was upped and seasonal labour used in place of permanent labour in many instances. As already indicated, diversification was a key strategy. On mainly sheep farms the cattle to sheep ratio has been increased to offset currently low wool prices. Increasing proportions of lamb and beef animals were also being finished rather than sold off the farm as stores. However, the general rundown in rural servicing and increasing isolation is creating new challenges. Among other things, the opportunity for young people to build up equity via low cost investment in farming has become more restricted.

Farm efficiency and profitability in New Zealand are mainly measured on a per hectare and whole farm basis rather than on an individual animal basis. However, the emphasis on pasture feed supply may change to more attention on calving or lambing date and spread, stocking rate, stock quality and a better matching of animal requirements with the seasonality of pasture growth. For example, dairy cow production of 3000 l milk per year could be improved. At present there is underfeeding at some times of the year, which results in the supply of milk to processing plants (or meat animals) being highly seasonal. Strategic supplementation of pasture may well be practised in future if suitable low cost feeds can be identified. There is, of course, not the range of arable and industrial feed byproducts available in the UK. If this strategy is introduced care must be taken to avoid detracting from the low cost input farming for which New Zealand is rightly famous.

Cooperative marketing of quality products will always remain a key objective, and exports are moving from an emphasis on preserved products, e.g. frozen meat, to higher value fresher products, e.g. chilled meat. Meeting market requirements features ever more strongly in farming systems. Like other developed countries, New Zealand is in the process of reducing the environmental impact of farm inputs. However, these are already at a low level, so the country is well placed to sell its products internationally as 'natural' and 'green', more so than many of its competitors. A registered slogan seen on TV advertisements for instance is 'The New Zealand Way'.

All in all a fascinating, instructive and well worthwhile return visit to a land where I had a golden opportunity to undertake postgraduate study for nearly 2 years back in the '50's. I acknowledge the various people and papers from which much of the above material was obtained and also the South West Scotland Grassland Society for some financial assistance towards my trip.

AGRICULTURAL POLICY IN EUROPE

Alex Smith, MEP, South of Scotland

A meeting of the SWSGS in the Judge's Keep Hotel, Glenluce on 16 February 1993

At this meeting in Glenluce the Society was honoured to have as its speaker Mr Alex Smith who is the Member of the European Parliament for South Scotland. In thanking the Society for inviting him to speak, Mr Smith said that he had been asked to deal with key aspects of agricultural policy in Europe and how the policy might affect the future of farming in South West Scotland. He also thanked Scottish Pride Quality Dairy Foods who sponsored the meeting.

Given the importance of farming to the South of Scotland Mr Smith had been involved in a number of meetings on this topic in the various airts and pairts of his constituency. Meetings with NFU branches, specialist interest groups like SWSGS, broadly based groups such as South West Forum, local authorities, etc.. Indeed he thought he recognised a few faces from previous meetings.

Mr Smith was previously an industrial shop steward, and probably not from the same political background as the majority of the audience. Being trained and experienced as a shop steward does, however, imbue you with at least two extremely useful qualities as a politician; one is the knack of asking awkward questions, and the other is the ability to recognise an injustice when you see it. These traits have proved useful during the round of discussions and lobbying exercises which have characterised the whole process of reform of the Community's Common Agricultural Policy.

The impact of the original reform proposals, as put forward by former Commissioner Ray MacSharry, would have had a very severe economic impact in Scotland. Here in the South West, Dumfries & Galloway Regional Council commissioned reports in 1992 which projected loss to this region alone in the order of £7 million if the initial CAP reform package had proceeded unamended. The indirect economic impact, with projected cuts in wages and the loss of significant numbers of jobs, was seen to present a crisis. There was extensive and effective lobbying. Following the amendments adopted later in the year, the general net financial impact

on the Region was projected to be fairly neutral. However, there are still some doubts about this. Like many of the best plans of the Commission, the effect may be quite different from the intention.

Added to this, and not surprisingly perhaps, a new budget is being forecast by 1995 because of continued high levels of spending in the dairy, beef and, to a lesser extent, cereal sectors. Add to that new expenditure on crop and livestock compensation, set-aside payments, and enviromnmental measures, and there is a prospect of what some have called "the nightmare of CAP Reform Mark II". Further we have yet to be clear on the impact on the whole situation in the future that will be made by the countries of Eastern Europe, though it will certainly be significant. (Bulgaria concluded a "Europe Agreement" on concessions for agricutural products at the end of 1992, and Romania signed a similar deal in early February 1993).

In analysing the effect of the reform package it is also essential to note that much of its impact will be determined by those elements which the Governments of the Member States have in their control - their "discretionary support". An example of this in recent times is shown by the outcry over the Government's decision to cut the level of subsidy paid for breeding sheep under the Hill Livestock Compensation Allowances (HCLAs). An agricultural debate on this very issue at Westminster coincided with this meeting.

The reduction in HLCAs will erode the compensation available to Severely Disadvantaged Area (SDA) producers and, since a greater proportion (98%) of the Less Favoured Area flock in Scotland is situated in the SDA than in England, Wales or Northern Ireland, the overall impact of these cuts will be greater in Scotland. In seeking support for their campaign at Westminster, hill farmers point out that other areas for cutback are likely to follow.

Continuing on the issue of HCLAs, Borders NFU have just produced an excellent report on the implications of such cutbacks in the Borders - with similar implications for the South West. The report is particularly useful in the section on the potential threat to local services and facilities - which are essential for viable rural communities and which depend on support measures. The familiar cycle of terminal decline; downward cycle - school shuts - then post office - then pub - soon nothing left.

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The future of farming in South West Scotland, the United Kingdom, and indeed throughout the entire Community, is dependent on the GATT agreement (the General Agreement on Trade and Tariffs) which includes agriculture for the first time. Although some luminaries in the field - such as the Secretary of State for Scotland in a speech last month to farmers in Wigtownshire - may believe that the outcome of discussions is likely to have little impact on farming communities here, it is still too early to give categoric assurances. Indeed the European Parliament has been specifically pursuing resolutions on the draft arrangement between the EC and the USA on agricultural produce in the context of the GATT negotiations.

At the moment, the issue of most concern is whether the final GATT agreement will be compatible with the CAP Reform package. In Parliamentary resolutions, members have made it plain that Parliament's postion is conditional on a full GATT agreement being arrived at - not just in areas of agricultural policy. The Commission is being pressed for a detailed assessment of the impact of the arrangement and its consistency with the CAP Reform. Indeed, the position is that any arrangement reached must be provisional until such an examination has taken place. Issues requiring particular attention have been highlighted - such as products not covered by the reform package, the non-aggregation of aid for dairy products, and the lack of clarity in certain areas.

Incidentally, the new Agricultural Commissioner, Rene Steichen's first battle may be over whether he can hold on to his predecessor's role in the GATT negotiations. In the restructuring of the Commission which is ongoing, there is discussion on whether the division concerned with international affairs relating to agriculture should be moved outwith the agricultural directorate. It is Sir Leon Brittan who has responsibility for GATT negotiations at this point.

Perhaps a few words on the new Commissioner would be appropriate here. Rene Steichen was Luxembourg's Farm Minister - elected on the Social Christian Party list. He took up his post on 6 January continuing, as the publication *AgraEurop* points out : "the tradition of reserving the sensitive agriculture portfolio for representatives of smaller EC countries"! A solicitor by training, Steichen was made Luxembourg's Secretary of State for Agriculture in July 1984, and became Minister after the 1989 elections. His first hand experience of EC agriculture decision making consists in large part of having chaired the EC Farm Council during his

country's tenure on the EC Presidency in the first half of 1991. An interesting point about his new chef de cabinet, Jim Cloos; he is credited with having drafted the Maastricht Treaty almost single handedly!

Another essential factor to consider at this point is the turbulence in currency markets and the impact this has had on the whole agricultural situation. It has introduced a very strong degree of uncertainty.

This month in Parliament members were faced with European Commission proposals to introduce special measures to compensate Irish farmers for the recent upheavals in the monetary market. These proposals involve the recalculation of the single premium paid on sheep in the island of Ireland (Eire and Northern Ireland) and would distort the competitive position of sheep producers on the mainland of Great Britain. Mr Smith and colleagues have been pushing the new Agricultural Commissioner for a survey on the competitive position of producers throughout the Community.

Given this background and position, members of the Parliament were surprised to discover that no objections had been lodged by the United Kingdom Government. Indeed it would appear that our own Agricultural Minister, John Selwyn Gummer, supported the proposals at the December Agriculture Council which he chaired. However, because these meetings are not open it is hard to be sure of exactly what happens and, whilst other areas such as foreign policy are being opened up now to further public scrutiny, the EC's Council of Agricultural Ministers have vetoed proposals to open agricultural debates to the TV cameras.

On a related tack, one other remit the speaker was set for this meeting was to give an indication of the various workings of the Community.

The main institutions of the European Community are the Council of Ministers, the European Commission, the Parliament and the Court of Justice. Briefly, the Council of Ministers which consists of Ministers from the Member State governments makes the real decisions on Community policy. The European Commission is a sort of Executive administration. Rene Steichen is one of the seventeen Commissioners, each designated their own specific remit. There are two British Commissioners: Sir Leon Brittan and Bruce Millan. Then there is the Parliament which is a junior partner in the decision making process, and the Court of Justice which is the referee - the supreme arbiter.

The European Parliament holds its sessions in Strasbourg, with a general secretariat based in Luxembourg. Its nineteen committees, which meet mainly in Brussels, cover areas ranging from Agriculture, Fisheries & Rural Development, Economic, Monetary & Industrial policy, through to Women's Rights and the Petition's Committee. To be clear, the Parliament has no power to initiate legislation and can only recommend amendments to legislation proposed by the Commission. This usually takes the form of Regulations or Directives. Regulations automatically become part of national legislation once they have been enacted by the Council of Ministers. Directives on the other hand are instructions to national governments to pass legislation as laid down by the Directive. If a Member State does not comply with the Directive it can be taken to the European Court.

Parliament participates in the formulation of Directives, Regulations and Community decisions by commenting on Commission proposals - the Commission is asked to amend its proposals to take account of the Parliament's position. The Parliament can, therefore, alter the "joint position" of the Council on a Commission proposal. If the Commission makes provision for the Parliament's amendments, the Council, which is obliged to act within a period of 3 to 4 months, can set these amendments aside only on the basis of a unanimous decision. Unanimity is also required if the Council wishes to impose its viewpoint in cases where Parliament has rejected the Council's joint position. It can, incidentally, be some time before a proposal progresses from being merely a glimmer in a Commissioner's or Commission official's eye, till it appears before Parliament as a proposal from Commission to Council.

Another of the Parliament's powers is the right to veto applications for membership of the Community and certain trade agreements with third countries.

Under mechanisms called Cooperation Procedures, Parliament's influence and margin for political manoeuvre has been widened. For example, within the framework, the Council and the Parliament can negotiate to try and approximate their respective points of view on proposals - with important financial consequences.

Another important fuction is the decision whether or not to adopt the proposed Community budget. If the decision is to reject it - which has indeed happened - the budgetary procedure has to be restarted. The Parliament also has the power to overthrow the Commission by adopting

a motion of censure by a two-thirds majority - this power has not been exercised. In this whole scenario, written questions tabled to Ministers and Commissioners have an important part to play in the working of a Euro MP.

Another body whose opinion is regularly sought before a Commission proposal is adopted by the Council is the Community's Economic and Social Committee - ECOSOC. This is a consultative body which represents employers, trade unions and other interested bodies such as farmers and consumers.

Mr Smith remarked that he had not yet mentioned Maastricht, and that it would be very remiss of him to speak to any group of constituents at this stage without referring to the Treaty of European Union. It is impossible to give a full summary of the Treaty's implications in a short address, but some of the main points will be covered.

The preamble, which was agreed by all twelve Member States, talks about : "creating an even closer union among the peoples of Europe ... promoting economic and social progress ... the strengthening of economic and social cohesion" and of establishing "economic and monetary union, ultimately including a single currency". It goes on to describe a common Foreign and Security policy "including the eventual framing of a common defence policy, which might in time lead to a common defence" and to the objective of "the introduction of a citizenship of the union".

The Treaty encourages co-operation between Member States in various fields such as education, training and industry. It also establishes new Community competencies in consumer protection, public health and culture - although these are mainly to supplement policies pursued by Member States. The Treaty itself confers limited additional powers to the European Parliament - which can now, as already indicated, reject a position taken by the Council of Ministers in certain circumstances.

The most contentious parts of the Treaty are the Economic and Monetary Union Chapter and the Social Chapter - from which the UK have opted out. In the economic field the Treaty envisages the setting up of a European Central Bank which would be completely independent of democratic accountability. It would not be able to request or receive instructions from any Community or Member State institution and its primary objective would be the maintenance of price stability - over-riding all other considerations. This chapter also lays down the limits to be imposed on government spending in Member States.

In the view of the European Parliament, the Treaty "fails to provide any economic policy authority with adequate democratic legitimacy to counterbalance the autonomous monetary policy of the Central European Bank".

The other bone of contention is the Social Chapter. This deals with improving conditions for workers, equality of treatment, information and consultation, etc. Although it would undoubtedly represent a step forward for us in the UK, it is limited in its scope. It does not, for example, apply to pay, the right of association, the right to strike, or the right to impose lock-outs. Quoting again from the report prepared on the Treaty by the European Parliament, the Social Chapter "provides for only a limited increase in the scope of Community action in the field of social policy". In spite of these and some further equally grave reservations, the European Parliament eventually recommended the ratification of the Maastricht Treaty.

Mr Smith's own personal reservations fall principally on the need to opt on to the Social Chapter and, more fundamentally, with concern as to the power the Treaty confers on bankers and judges. He believes that it would have been interesting if the European Parliament had chosen not to recommend the Treaty's ratification because of its defects. We might then have been in a position to put before the peoples of the Community an amended Treaty which could have laid the basis for an economic recovery programme and an attack on poverty and unemployment. The speaker welcomed member's views on this topic.

The powers of the European Parliament are limited in comparison with those of the European Commission or the Council of Ministers. The real strength of an MEP comes from constituents. Success has often been the product of cooperative effort by communities, pressure groups, local authorities and other organisations. Meetings in the constituency with senior EC officials and farmers, and meetings like them held elsewhere appear to have had a significant influence in moderating the effects of the initial CAP proposals.

Finally, the most effective way of using an MEP is for the purposes of getting information and in putting questions to the Commission. Mr Smith concluded by saying that he and his staff were at the constituents disposal in this regard.

CSGS SILAGE COMPETITION 1992-93

A meeting of the CSGS on 9 February 1993

Judge: Ian Kerr, Kirklands, Dunsyre

The prizegiving for the HF Seeds Silage Competition was originally scheduled for January but had to be cancelled because of snow. The Judge, Ian Kerr, had enjoyed visiting the farms on the short list, and had found something of interest on all of them - from an asphalt-covered pit to a rottweiler sitting on his toes for several minutes.

The winners had a 4.6 m deep outside pit with no surface or shoulder waste. Some of the cattle were housed in a sloped stepped shed built by their grandfather 60 years ago. The cattle were all stored and weighed regularly on a weighing machine which had once graced Hamilton Market. Only silage and minerals were fed to the cattle, which had a good liveweight gain thus utilizing the high quality silage.

The marks for the top entrants are shown in Table 1. The Judge announced the prizewinners and the prizes were presented by Mr Thomson of HF Seeds. The overall winners were P Clemson & Sons, Skellyton Farm, Larkhall, who were presented with the HF Seeds Cup and the Hamilton Reco Salver for the best Beef and Sheep silage. G Orr, Kaemuir, Avonbridge won the second prize for the third year in succession. The third prize went to G Lyon, Auchenvouliag, Rothesay, and the fourth to R & M Young, St John's Kirk, Symington, Biggar. Ben Challum, Woodburn, Crieff again won the prize for the Best Big Bale, and the prize for the best new entrant was awarded to M Lyle, Mid Cambushinnie, Dunblane.

C McCombie

Table 1. Final marks for analysis and for placing by the judge.

	Marks		
	Analyses (35)	Inspection (65)	Total (100)
P Clemson & Sons, Skellyton Farm, Larkhall	27.25	58.5	85.75
G Orr, Kaemuir, Avonbridge	24.81	60.0	84.81
G Lyon, Auchenvouliag, Rothesay	27.26	56.5	83.76
Ben Challum, Woodburn, Crieff	25.68	57.5	83.18
R & M Young, St John's Kirk, Symington	26.96	56.0	82.96
M Lyle, Mid Cambushinnie, Dunblane	26.24	56.5	82.74
W K Carruthers, Auchenheath, Lanark	21.92	59.0	80.92
L Watson, Midhill, Elsrick, Biggar	24.50	56.0	80.50
R Millar, Newlands, Uddingston	19.60	59.0	78.60
C Murray, Inchbelle, Kirkintilloch	22.61	54.5	77.11

CSGS PANEL EVENING

A meeting of the CSGS at Newhouse Hotel on 9 February 1993

The three farmers on the panel at this meeting of the Central Society were Jim Brown of Gaindykehead, George Corsair of Macaulay Land Use Research Institute (MLURI) at Hartwood, and John Lyon of Quothquar Mills.

Jim Brown

Jim claimed to be a redraining and reseeding fanatic. He direct drills HF11 grass seeds at a seeding rate 30% higher than normal using a Fiona drill with the aim of establishing a dense sward giving maximum production. Many grazing systems have been tried at Gaindykehead including 12 hour, 7 day and 21 day paddocks. The present system is set stocking. Until recently nitrogen use was 440 kg/ha but it has now been reduced to about 330 kg/ha. The first fertilizer dressing is applied by the beginning of April.

Grass and arable silages are made, the latter being undersown with HF11 grass seeds. Silage making starts about 23 May using a JF mower conditioner. Jim believes that the dry matter of silage is more important than its D value, and that only bad silage makers use additives. Silage is cut from 10 am to 7 pm, but 3-4 pm is the time when sugar levels are at their highest. The silage-making team consists of four (including Mrs Brown), and a Jaguar 62 chopper was used up to 1992, but in 1993 this will be replaced by a Jaguar 75. One of the team is a hired man with tractor and trailer. The silage target is 8 ha per day, and buckraking is done by the Brown's son John. The silage pit was extended in 1985.

Sheep are grazed from the end of October until the end of February, and the dairy herd which consists of 100-110 cows is divided into high and low yielders. Milking cows were cleared of brucellosis in 1971 and the herd is now Holstein and has an average lactation yield of 7,400 l with a concentrate use of 0.28 kg/l . The cows are housed in cubicles with dutch comfort mats. Four months slurry is stored above ground.

Originally the cows were on self feed silage, but a complete diet system has now been adopted based on a Keenan Feeder Wagon. Youngstock are fed by a fine end loader from the Keenan. Both high and low yielders

receive a home mix in the proportion - 1.5 wheat: 0.6 maize gluten: 0.75 soya: 0.15 molasses: 0.05 minerals.

Ryder Mains was obtained on a long-term lease in 1986 and had a Masstock shed. The farm has all been reseeded. Other enterprises which have been tried at Gaindykehead are - for 2 years 100 heifers were kept in cubicles on top of slats: calves were suckled for 2 years with no resulting profit: and bullocks and heifers were fed maize gluten and silage.

George Corsair

George spent 2 years in Canada persuading dairy farmers to use beef bulls to produce suckler cows. He returned to Scotland to manage a 500 cow milking herd near Edinburgh.

In the 1970's Hartwood was farmed by the patients and had a dairy herd. Dairying ended in the late '70's and eventually MLURI took over the farm. MLURI does work for a variety of organisations. There is direct work for the Government, EEC and private feed companies. Among tasks was to invent methods of keeping hill and livestock farms in business, and even studying cashmere goats and llamas as additional livestock enterprises.

Hartwood covers 364 ha with an elevation of 274 m at the top end of the farm, and "enjoys" the worst weather from east and west. Only grass is grown with rape as an entry, although some barley was grown in the past.

The 200 cow suckler herd consists of Hereford/Friesians and Blue Grays. The Hereford/Friesians are being changed for Simmental/Friesians which will be compared with the Blue Grays in a scientific study. There are three calving dates and three stockmen, soon to be reduced to two. The cows are fed silage only unless body condition becomes unsatisfactory. The calves are creep fed.

A flock of 900 greyface ewes are put to a Texel tup, and all the lambs were sold fat last year to Lothian Lamb. It is planned to try the electronic auction in 1993. There is also a herd of Sourhope Merino cross Cheviot ewes which have a very good fleece, but the lambs sold for £14 less per head than the grey face cross lambs. Stocking has been reduced to five ewes per ha but seven per ha would probably be better. It has been found that grazing with suckled calves prior to lambs has resulted in an additional 2 kg of lamb weight.

Reducing costs has been important at Hartwood and is likely to remain so. Fixed costs have been reduced by decreasing the staff by three over the last 5 years and using more casual labour. Machinery costs have been reduced by making more use of contractors. Nitrogen application rates have been lowered, and although a silage yield of 25 t/ha is obtained, rushes and buttercups are becoming very numerous.

A project on short-term coppicing of Willows has been running for 4 years, and the results have been most spectacular.

John Lyon

According to John, Quothquar Mills is "an ordinary set up, but every farmer does something different". The farm runs from 200-300 m and is exposed from the south west. In the 1960's the dairy herd consisted of Ayrshires but now there are 120 pedigree Canadian Holsteins. All the calves are reared, the males for bull beef being sold at Carlisle, while the females are used for replacements or sold after calving.

John has a basic philosophy of producing as much feed as possible at home, and only purchases required top-up feeds. To this end there is a moist grain tower to store home-grown feed barley.

Two systems of grass production are practised, the first relying on the nitrogen from clover and the second on bag nitrogen. The systems do not mix well, but newer varieties of clover act at lower temperatures, while new varieties of ryegrass work better with clover in the sward. Nitrogen is applied at a rate of 88 kg/ha in March, and the 32 ha of grass/clover sward for silage receive 753 kg/ha of 0:20:30 and give a yield of 65-75% of the conventional system.

After trying several different systems of grazing control, set stocking has now been adopted. Silage is available to the cows all summer, which may be the reason no serious bloat problem has occurred despite the very clover-rich pastures. In winter the cows are fed *ad lib* silage in a central feed passage, and receive 4 kg moist barley and 0.5 kg soya with the high yielders getting more. Margin over concentrate is 17.5 p per litre.

As already mentioned, the farm is very exposed to winds from the south west, and there was no shelter in the 1970's. Trees and hedges are slow to grow, but they are providing long-term beneficial effects from an

amenity and shelter viewpoint. In addition, they certainly improve farming's image to the public eye, which is essential for the future. FWAG advice was sought and was very useful with two rare habitats being identified on the farm.

C McCombie

IMPROVED GRASSLAND MANAGEMENT

A new book by John Frame

Published by Farming Press Books, Ipswich, 1992

This beautifully printed and illustrated book on grassland management was written by John Frame who is a Founder Member, former Secretary and Honorary Vice-President of the South West Society. John retired recently from the post of Chairman of the Agricultural Division, SAC, Auchincruive, and he was also Leader of Grassland Studies at SAC.

This is an essential purchase for all grassland enthusiasts - farmer, scientist, adviser and student, being written in the reader-friendly, advisory style so typical of all John's papers and articles. In his usual fashion, the chapters are introduced by quotations ranging from the Bible and Shakespeare through to modern literature.

The book opens with an overview of the types of British grassland, followed by chapters on the establishment of grassland and the maintenance of the sward. The feeding value of grass is dealt with in detail with sections on the chemical composition of grass, digestibility and metabolisable energy. Sward growth and development are also described. Possibly the most valuable chapters are those on the utilization of herbage by grazing, silage and hay making. These contain three excellent tables entitled "Golden rules for clamp silage"; "Golden rules for big bale silage"; and "Key points in hay making".

Colour illustrations covering twenty-four pages are of extremely high quality, and originate in many countries. The many useful Appendices include one on the identification of vegetative grasses, and another giving metric conversions.

D Reid

ISLE OF MAN HIGHLIGHTS

John Harris
Secretary, Manx Grassland Society

Autumn Tour of Aberdeenshire, 1992

In September 1992 the Manx Society visited five farms in the north of Scotland, the first being Drumduan, Aldearn. Here Hugh Innes farms a total of 526 ha in two dairy units of 160 and 100 cows respectively, both yielding 8,000 l. Cropping is 81 ha of winter wheat, which is fed at a rate of 1 t per cow in a complete diet. This also contains beet pulp, maize germ, soya bean meal, draff and silage, and cake is fed in the parlour.

Dean Anderson's farm of Mayne at Elgin was next. This covers 100 ha and has a herd of 180 cows milked three times daily with an average yield of 9,370 l. Another herd on 547 ha at Easterton yields 7,100 l with twice-daily milking. Because of a light free-draining soil the cows can graze kale and swedes throughout the winter and are turned onto grass in early April. Full winter rations of silage and draff are fed until late May with cows calving all winter. Average cake use is 2 tonnes per cow.

Cowfords at Fochabers is farmed traditionally with cereal cropping and cattle finishing. Willie Marwick's farm has an area of 80 ha, and carries 200 cattle, which are over-wintered and finished, and 400 lambs bought as hoggs for finishing on swedes. The cattle are to be replaced with a 200-sow outdoor unit in 1993, using the cattle building for finishing weaners. Cropping consists of oil seed rape, spring and winter barley, winter wheat, swedes and 16 ha of grass cut twice for silage.

The next farm was an excellent example of a well-run small family business. Alister Watt farms 80 ha of arable and 16 ha of rough grazing at Coldholme, Keith. He has a dairy herd of 80 Holstein/Friesian cows averaging 6,400 l of milk. The basic ration is a complete diet of silage, draff and barley. Bull calves are finished entire at 12 months on a concentrate ration.

The final visit of the tour was to Harry Emslie & Son at Brae of Coynach, Mintlaw. This farm has a total area of 730 ha, and has been built up from 60 ha when Harry Senior retired from auctioneering 20 years ago.

Stocking consisted of 350 suckler cows, 1,200 finishing cattle, 1,00 crossbred ewes, 120 Suffolk ewes, 20 Texel ewes and 20 Blue de Maine, all in excellent condition.

Spring Tour of Tyne Valley 1993

The Manx Society made an extensive tour in the north of England in May 1993 visiting a large number of farms of which only brief notes can be given here. The tour started at Maurice Davidson's Crindledykes Farm, Bardon Mill which has an area of 190 ha at 244 m in a less favoured area. It is stocked with suckler cows and North Country Cheviots, and is an all-grass farm. The fields are very large and fairly flat, but with ravines and rock outcrops. The suckler cows are mostly Limousin x Friesians calving in August/September. Reseeding is only done when necessary. An area of rape is grown if conditions are favourable, and this is reseeded the following year.

At Buildings Farm, Crawcrook farmed by W & M Thompson Ltd, the members met Billy, who is one of the biggest lime quarry operators in the north of England, and his father and cowman. The company farms 172 ha, with the 100 ha home farm carrying a dairy herd of 165 American Holsteins, and growing 26 to 36 ha of barley on which the slurry is spread. The soil is very sandy so the cows are kept tight in the spring, and the biggest first crop of silage as possible is cut. This is usually done about 1 June at 65D with a sulphuric acid additive.

Robert Graham of Wylam Hills, Wylam organised the visit for the Manx Society, and his 122 ha valley farm is based on a milk retail round of 1.6 million l. The 140 cow herd was on a complete diet feeding system consisting of silage plus byproducts and caustic-treated wheat. All replacements are reared, and a beef bull was being used on 80% of the herd. Cows are buffer fed in the summer with silage, beet pulp, caustic barley, soya and potato waste (made from thick peelings). Milk for the retail round comes from Robert's own herd plus a supply on 5 days per week from Billy Thompson.

Fallowfield Farm at Wall, Hexham is probably one of the biggest farms the Society has ever visited - 1012 ha. The 446 ha Waterside farm is contract farmed, with 180 dairy cows on 81 ha plus 365 ha in cereals. The contract is renewed every 5 years with the agreement including 10% of the profits after a 'rent' figure goes to the owner, Kit Dunning, who signs all the cheques. New Biggin Farm covers 122 ha and has a herd

of 140 Dutch Holsteins calving in January to March. The cows are fed a complete diet of beet pulp, molasses and maize gluten with silage on offer all summer. The home farm at Fallowfield is an upland unit at 230 m with a suckler herd of 150 cows calving in May. Most of the cows are Hereford crosses with some Limousins crossed to Charolais bulls. The cows are wintered on wheat straw and pot ale syrup.

Albert Robson farms the all-grass 44 ha Heddon Steads Farm at Heddon-on-the-Wall together with an additional 40 ha of grass keep. The dairy herd of 95 Holsteins averages 7,500 l on twice-daily milking, calves in June and July and is wintered on self-fed silage. Albert is a member of the Tyne Valley Dairy Group, and feeds about 2 t of high energy 18% concentrate per cow. He also runs a pedigree Suffolk flock selling 100 rams per year.

The final visit of the tour was to Foster Holmes at Whitburn Moor Farm, Sunderland. This 215 ha unit (with 89 ha near Morpeth for cereals and young stock) has been in the family since 1810. The farm is on founded clay close to the coast in a chilly situation, and has no hedges for shelter. Rainfall averages 610 mm. This is another dairy retail unit, and includes yoghurt in its sales. At the time of the visit skimmed milk sales were so good that there was a surplus of cream. The dairy herd consisted of 210 pedigree Holsteins with an average of 8200 l on twice-daily milking. There is also a barley beef unit for the Holstein bulls.

Visit to Upper Billown Farm, Ballasalla, IOM

In March 1993 the Manx Society visited the bull beef unit of Messrs. Taggart Bros. who were winners of the 1992 Meat from Grass Award. This beef/dairy heifer unit was built at Upper Billown in the early 1970's and has been annually costed ever since. The majority of the stock are produced from the dairy herd on the farm, which is one of the top black and white dairy herds on the Island.

The aim of the beef unit is to produce a 280-300 kg D.W. bull at 17-18 months with the animals housed in the unit for 14-15 months. In that time each bull consumes about 6 t of silage and 1.5 t of concentrate - a barley/soya mix fed at a maximum of 3.5 kg per day. The last 78 cattle sold averaged £521, and the net profit was £426 from 31 ha.

GRASS MACHINERY FIRMS

G E D Tiley, C McCombie & D Reid

Following the article on grass seeds firms in *Greensward* No.35, it was decided to feature grass machinery firms this year. Accordingly, questionnaires were sent to machinery firms in the counties covered by the South West and Central Societies. The response was unfortunately limited, but the information provided by the companies who did reply to our enquiries is summarized here. Although the information is believed to be correct at the time of going to press, this Journal cannot accept responsibility for any inaccuracy. In addition, it must be stressed that inclusion of a company's name does not connote any form of commercial approval of its products nor does exclusion denote disapproval.

Carrs Agriculture Ltd was founded by Oliver & Snowden, and purchased by Carrs Milling Industries to form the present firm in 1989. Manufacturers to which the firm is linked are Fiatagri, JF, Krone, PZ, Yamaha, Twose, Kverneland, Hi-spec, Griffiths-Marston and Teagle. Grass and silage machinery dealt with include foragers, mowers, balers, tedders, rakes and bale wrappers. Carrs supply a complete spares and service facility, and everything else a farmer needs from feeds, fertilizers, wellies to weed killers. The philosophy of the firm is - growth through service and customer satisfaction.

Hamilton Bros (Eng) Ltd This company was founded in 1936, and has grown to five depots with a turnover in excess of £12 million. Hamilton Bros are main agents for Massey Ferguson, Kubato, Taarup, Kidd, Kuhn, Lely and Westmal Products, and deal in all types of grass, silage, haymaking and setaside machinery. A complete parts and breakdown service is provided on a 7-days per week basis. Ground care equipment is a particular speciality.

Hamilton of Larkhall Ltd was founded in 1953 as George Hamilton & Co and was renamed Hamilton of Larkhall in 1978. The main manufacturers to which the firm is linked are Case IH, Fraser, Permastore, Yamaha, Claas and JF, dealing in the grass and silage machinery of the last two companies named. All types of spares are carried, and a 7-days per week service is provided in the grass-cutting season. Hamilton's particular speciality is engine conversion for pulled-type foragers. They try to keep abreast of new technology, and are very aware of the importance of grassland management. The company is keen to be associated with any new type of grass machinery and with new management ideas.

Directory of grass machinery firms

Company	Telephone	Fax	Personnel
Carrs Agriculture Ltd Old Wollen Mill Sydney Place Lockerbie	0576 203415	203497	A R Beaumont (Manager) R Copland (Sales) D Jardine (Service)
Hamilton Bros (Eng) Ltd 1 Montgomerie Street Tarbolton KA5 5PR	0292 541445	541798	G Harvie R Baird A Riddet J Campbell
Hamilton of Larkhall Ltd No.1 Canderside Industrial Estate Larkhall	0698 886515	882123	R Meikle (Parts) S Hamilton (Sales) I Meikle (Service)
Lloyd Ltd Newbridge Industrial Estate Glasgow Road Dumfries	0387 720461	721230	J Weir (Manager) A Mitchell S McClintock P Graham (Sales) J Naish (Workshop) J Dalton (Stores) A Pennie (Ground care)
Reid McKie Ltd Bridgemill Glenluce DG8 0AE	05813 471/3	474	K McKie J Waugh
Rickerby Ltd Carnegie Street Dumfries DG1 1PG	0387 53328	59355	W Williamson (Manager) A Ross G Fraser S McKean (Sales)

Lloyd Ltd is a family firm started by Mr R Lloyd, which has now expanded to run five agricultural depots and two car depots. Ford, New Holland, Manitou, Fraser, Star, Reco, Honda, Westmac and McHale are some of the manufacturers to which the company is linked. Types of grass and silage machinery dealt with include mowers, rakes, foragers, round balers, loaders, wrappers and trailers. A comprehensive stock of spares is carried and a back-up service provided by a fully equipped workshop staffed with trained engineers. Specialities include servicing of tractor diesel engines, ATV bikes, lawn and grass care machinery and industrial handlers. Lloyd's philosophy is to keep up with the changes in agriculture, and keep their present customers happy with services and spares. They aim to have the best franchises with companies who will adapt to changes, and to make a reasonable profit to allow for expansion of the business and to provide even better service to the customer.

Reid McKie Ltd This agricultural engineering firm was founded in 1954 when it was called Allan W Reid. The change to Reid McKie Ltd took place in 1972. The firm's base at Glenluce is central to the Machars and the Rhinns of Wigtownshire. Valmet, Same and Zetor are the main manufacturers to which they are linked, and the types of grass and silage machinery dealt with are Krone mowers, balers and chopping and rowing-up machinery. Reid McKie carry a comprehensive stock of spares for the above machines and for tractors, as well as Vapormatic. The Matbro 4WD Telescopic Farm Handler is a particular speciality. The company deals in new and second-hand sales.

Rickerby Ltd is a family business founded in Cumbria in 1880 with a branch in Dumfries. The firm is linked to the manufacturers Case IH, Claas, Matbro, Kidd, Kuhn, Marshall Trailers, Abbey, McConnell and Suzuki. All types of grass and silage machinery manufactured by Claas, Kuhn, Kidd and Marshall Trailers are dealt with. There are modern stores facilities and a workshop providing complete services. Rickerby's philosophy is to give an even better service to their customers in the future, and to improve the value and quality of the company.

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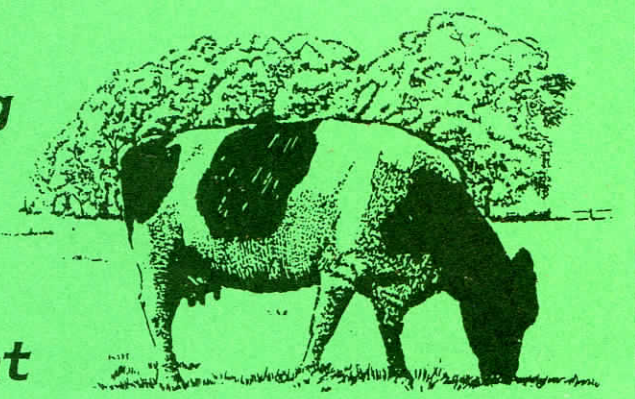
Champion Mungo Clark holding the SWSGS Silver Rosebowl at the presentation ceremony for the 20th Silage Competition.
left to right: Jim Forrest (Chairman), Mungo Clark, Newmains, John McCluskey (Silage Judge)

SAC

SAC leading the way to good grassland management



- Use the SAC Milk Manager Scheme for recording and expert analysis
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- Use the SAC Grass Varieties Recommended List
- Consult SAC for details of education and training facilities available

For further advice on grassland management contact your nearest SAC Advisory Office, telephone number in the local phone book

For information on education and training call:

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