

C. S.

Public Works

(Peat)  
Live stock  
(Reports)

1945.

No. 129/45.

Secretary of State.

SUBJECT.

1945.

22nd September

Previous Paper.

REPORT BY T. BEATY, ESQ. ON VISITS TO PEAT CENTRES  
IN SCOTLAND.

## MINUTES.

1. Staff Despatch no. 8 from S. of S. of 22. 9. 45

(2)

4/6.

H. G. C.

(3)

Pass to D. of A. for his information & return  
through you to me 31/1/46. or day after

✓ *[Signature]* 21/1/46

"Fitzroy" returns from  
P.A.

*[Signature]*

(4)

D. of A.

Passed to you in accordance with  
H.C.'s minute at (3) pl.

*[Signature]*  
21/1/46.

(5)

H. G. C.

A very good objective report which ties in well  
with our knowledge here. Has payment of  
Beaty's expenses been made. I understand  
that he did not receive them in Britain

*[Signature]*

27/1/46

(6)

Subsequent Paper.

Ref. (5) Voucher passed 25. 10. 45.

*[Signature]* 5/2/46



ACS

7

Please keep this handy & Rev. in  
10 days for D: Gibbs's report, to which  
it will form an Appendix

ABL  
19/6

BL  
20/6/46

Rev. from Ag. Dep. 27/7/46

ACS.

8

On further reflection, this may be P.A.  
D: Gibbs's report is (as stated to) complete  
in itself as a record of the work of the  
Ag. Dept. since 1937. It does not need  
the Report by Mr. Beatty in this file as  
an Appendix.

2. Before in P.A. however, for see that  
O/c Ag. Dept. has a record of this Report  
in his files: for the new D.A. should see  
it i. d. c.

ABL  
4.9.46

(9)

O/c Ag. Dept.  
as in para: 2 of 8 pl.

Bl. Fore. S.  
4/9/46

A. B. S.

10

Thank you. A copy now made & filed.

A. B. E.  
O. I. C.  
13-9-46

PA  
13/9/46

11

1<sup>a</sup> passed to Printer 20/6/50.

12.  
Returned 21/8/50  
D. L. M.



As

You will be interested to

See att. files (129/45 ~ 132/<sup>45</sup>~~8~~)P  
5/8.

14

H.C.S.

seen: Chandan.

E.T.T. A/O. 8/8/55.

15 Extracts from minutes from &amp; to the O.A. G.

bap 12/8  
see 15

①

STAFF. FALKLAND ISLANDS.

Date 22 SEP 1945.

DESPATCH  
NO. 8.

Transmitted with the Compliments of the Secretary of State, for  
the Governor's information.

Reference:-

Governor's

Telegram No. 240.

*Red 60 of P/230*

of 7/9/45.

Date.

Nature of Communication.

16. 7.45

Report on visits to centres of peat and hill  
reclamation.





copy (1911)

(12)

Report on Visits to Centres of Peat and Hill Reclamation, and  
its application to Falkland Island Condition.

The work of the Macaulay Institute at Carnwath Lanarkshire  
and the Isle of Lewis.

Correspondence with Dr. Ogg, and Dr. Fraser brought forward the information that the Institute is not at present under-taking any peat reclamation work. The area in Lewis where reclamation was attempted has been let to a tenant and the area at Carnwath, Lanarkshire, is being farmed by the Department of Agriculture for Scotland. I was shown over Woodend Farm, Carnwath, by one of the Department's inspectors Mr. Sinclair. Dr. Ogg advised that a visit to Lewis was not worth while.

Types of Peat.

129/45  
The Lewis experiment was on a highly Colloidal peat of the Scirpus type, varying in depth from 1 to 15 ft. and averaging 3 or 4 ft. Lewis is covered with Blanket moss peat of this type formed as a result of the prevailing climatic conditions - high rainfall, humid atmosphere, cool summers and mild winters. This peat is plastic and almost impermeable to the passage of water, making drainage very difficult, and this problem has not been satisfactorily solved. It is also difficult to obtain a satisfactory tilth for a seed bed.

The Carnwath area is on a raised moss formed from an oligotrophic (acid) low moor. The peat is 15 - 25 ft. deep, is local in origin formed in a large basin owing to continuous water logged conditions. The situation is 700 ft. above sea level but the climate is better than Lewis, the summers being warmer and less humid, and the moss is surrounded by good cropping arable land. This is a fibrous Sphagnum-erophorum peat derived from sphagnum moss with cotton grass and some heather, the present vegetation is chiefly heather. It is easier to drain and does not require much cultivation to form a satisfactory seed bed. The Carnwath peat is practically useless as fuel, while the Lewis type makes excellent fuel. Both types are extremely low in lime, phosphate, potash and available nitrogen.

Method of Reclamation at Carnwath.

(a) Drainage. Drainage was the first step towards reclamation and a system was laid down consisting of collecting ditched 6ft. deep and 200 yards apart discharging into natural water courses, with subsidiaries 4 ft. deep and 20 yards apart running into these. The ditches were dug out and left for a year or two during which time the peat shrank considerably. They were then cleaned out and deepened to the original depth, wooden box drains were laid in the subsidiaries and these covered over. The wooden drains were made of 4" x  $\frac{1}{2}$ " planks nailed together to form a continuous channel throughout with the top slightly raised on small strips of wood to allow water to enter.

(b) Cultivation. The ground was first burned over, which left it absolutely bare of vegetation except for a few sticks of heather. It was then limed and cultivated with a Fishleigh rotary cultivator behind a Fowler crawler tractor. Phosphatic, potassic and nitrogenous manures were then applied before cross cultivating with the Fishleigh to a depth of 4 - 6 inches. It was then heavily harrowed to level the ground and prepare a seed bed, and, after sowing the seeds, was given a light harrowing to cover the seed. Finally it was rolled with a heavy water-filled roller weighing one ton per yard.

(c) Liming and Manuring. Lime was applied at the rate of 2 tons CaO per acre, either in the form of ground lime or as a waste lime. Other manures applied were 9 cwt. per acre of a high grade high-soluble basic slag, 4 cwt per acre of 30% potash salts and 1 - 1 $\frac{1}{2}$  cwt per acre of nitro chalk.



(d) seeds. The following two seeds mixtures were used per acre. The usual time of sowing being May, but excellent takes have resulted from sowing as late as September.

A.

20 lbs Perrenial ryegrass  
8 lbs Cocksfoot  
4 lbs Timothy  
 $\frac{1}{2}$  lb Rough stalked Meadow  
Grass  
1 lb Crested Dogstail  
 $1\frac{1}{2}$  lbs late flowering Red  
Clover.  
2 lbs Alsike  
1 lb Wild White Clover.  

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38 lbs.

B.

7 lbs Perrenial ryegrass  
20 lbs Timothy.  
1 lb Rough stalked Meadow  
Grass  
 $1\frac{1}{2}$  lbs Late flowering red  
Clover  
2 lbs Alsike  
1 lb Wild White Clover.  

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32 $\frac{1}{2}$  lbs.

Results.

The method outlined above was that followed at Carnwath but similar methods as well as others were tried at Lewis. Dr. Ogg advised that although "not exactly a failure" the results there would not justify a visit. I was told by the farm manager at Carnwath, who had also been in charge at Lewis, the the peat reclamation there was for all practical purposes a failure, the whole experimental area including a new house and steading is now let to a tenant at an annual rental which would yeild a very low rate of interest on the cost of the house.

At Carnwath the results have been very satisfactory, and 250 acres have been reclaimed from practically useless moss to useful grazing. The moss in its original state is not used at all, and all the productivity of the improved part represents clear gain. These 250 acres are now carrying approximately the following stock per acre;

In winter 1 ewe.

In summer {  $1\frac{1}{2}$  ewes and their lambs.  
 $\frac{1}{4}$  2 year old heifer.

During the first year or two the grass tended to get ahead of this stocking and the mowing machine had to be used, but now after 8 years productivity is less and the stock can cope with it easily.

Ryegrass and cocksfoot have decreased considerably and fog is on the increase. The dominant grass is now crested dogs tail, and there is a fair amount of timothy with wild white clover well distributed throughout. Rushes have appeared and are said to have spread rapidly during the last two years. It would appear that the area will soon need reseeding if it is to be maintained as a really productive pasture. Perhaps if a proportion of the grazing strains of ryegrass and cocksfoot had been included in the seeds mixture and if some attention had been given to further liming and slagging the pastures could have been made to last longer, but as the drains are still in perfect working order it will not be very costly to reseed a second time. The effects from draining can now be clearly seen in the undulations of the land, which was flat when seeded down. The ground has sunk by about 18 inches over the drains and progressively less away from them. The best grass is now that over the drains, and the danger of over-draining may have been overestimated; possibly every drains 10 yards instead of every 20 would have been an improvement.

Manurial Trial. A small manurial trial with plots receiving lime, slag and potash salts, at the rates used over the main areas, alone and in combination with each other proved very instructive. The complete treatment plot showed an excellent award of grasses and clover, the lime plus slag plot was reasonably good but not nearly as good as the complete and contained considerably less clover, the lime alone plot contained a proportion of sown grasses and all others had reverted to the original vegetation.



(16.)

Economics. The scheme has been an economic success, in 7 or 8 years the additional revenue derived from the farm due to the reclamation work has probably equalled the total cost of reclamation.

The cost of the work is estimated at £22 per acre but this does take into account depreciation on implements which might add on another £3 per acre. Of this amount about £13 per acre was spent on drainage work.

Implements. The chief implements used were the crawler tractor and the Fishleigh cultivator and the heavy roller along with ordinary farm implements such as heavy and light harrows, manure and seed sowers. Lime was hauled on to the land on a large sledge behind the tractor and was spread from this with shovels. A draining plough had been used to cut part of the drains, but this was not at hand to be seen.

The value of a really heavy roller for this type of land was stressed.

The Fishleigh rotary cultivator with its dozens of knives revolving on an axle driven by the power take off of the tractor had no difficulty in tearing this land up and obtaining a reasonable tilth in two operations. On a really tough grassy turf it is not very effective.

The crawler tractor used was a Fowler 30 H.P. and although the engine was described as perfect and giving absolutely no trouble, the general performance of the tractor was not considered good, as there was a very heavy cost for spares and renewals. The cost of the tractor was about £500 and it was stated that another £500 worth of spares had been necessary. The tractor is certainly worth no more than half its cost price today, so that depreciation and running repairs on the tractor alone work out at £3 per acre for the 250 acres.

#### Application to Falkland Islands.

The peat of the Falklands is more of the Lewis type than the Carnwath type, being climatic in origin and not local. It is colloidal and plastic and makes excellent fuel when dry as does the Lewis peat and it is difficult to drain.

It would appear to be best to avoid deep peat in any reclamation work in the Falklands as at best it is likely to prove an expensive business. This view coincides with that of Dr. Ogg who writes "My own feeling is that you would do well to concentrate in the Falklands on areas where drainage is likely to be easy, e.g. the peat of the thinner type on slopes, or peat of a fibrous nature". Fibrous peat of the Carnworth type does not occur to any extent in the Falklands, but there are considerable areas covered by thin peat. The whole of the Falklands might be regarded as covered by 'Blanket' moss type of peat owing to the climatic conditions prevailing, but there are areas where because the natural drainage is good and the rainfall not excessive, the drying summer winds result in land ceasing to be water logged for fairly long periods during the summer. Such areas are covered by a shallow layer of peat, or rather peaty soil containing a fair proportion of mineral matter. The vegetation usually consists of 'white' grass, small fern, Christmas bush and diddle dee.

It is these areas that offer most scope for land improvement and they can readily be compared with the nardus and bent pastures on the slopes of the mountains of England and Wales, where the rainfall is heavy, but where owing to good natural drainage the land lies fairly dry in summer.

There has been much interest in recent years regarding the possibility of improving these nardus pastures. Prof. Sir. Geo. Stapledon and his colleagues at Cahn Hill have done a great deal of pioneer work, and more recently, as a war measure, much has been done by various County War Agricultural Executive Committees, of which perhaps the most noteworthy is the Montgomeryshire Committee. Dr. Ogg advised visiting Dodwell, Cahn Hill, Montgomeryshire and other counties in the North of England where reclamation work has been done /orkney.



## Orkney.

Acting on a suggestion from Dr. Tempny that Orkney might be well worth a visit, having a climate similar to that of the Falklands, I got in touch with Mr. A. R. Wannop, Director of County Agricultural Work, North of Scotland, giving him an account of Falkland Island conditions and stating that we were particularly interested in reclaiming hill or peat land for pasture establishment, and also in finding a variety of oats suitable for ripening in the Falklands. Mr. Wannop replied as follows:-

"While the Orkney Islands are very interesting, I doubt if you would learn very much by visiting them. The cultivated areas are not hilly in the accepted sense, but really gentle slopes. The amount of peat on them is very slight. It is a very thin layer and is dry. Areas of deeper and wetter peat in Orkney have been left alone. As a matter of fact Orkney has had prominence in the last 30 or 40 years for doing what the rest of the country did a hundred or more years ago. They have not any special technique for bringing the land into cultivation. Most of it was done in the old fashioned way with horse ploughs, and of course they always take a rotation of crops. They have no difficulty in getting suitable varieties of oats, though they concentrate mainly on the straw varieties because they need these for fodder. They ripen quite well. Bere, the local form of barley, also does extremely well with them. It has a shorter growing season than oats. The oat varieties favoured are the various strains of potato oats, and also Bell and R.30 both of which are Scottish productions. There is a grey awned oat known as Grey Murtle which is peculiar to Orkney, but this is only used on certain light soils full of shell sand and which are alkaline. Improved oats will not grow on these soils.

I take it that you would be attempting first the thin layers of peat mixed with mineral soil, and for this I am convinced that the standard methods of cultivation are suitable."

On the strength of this reply I did not consider a visit to Orkney would justify the expense. The oat varieties mentioned should be worth a trial, although earlier ripening varieties than potato oats have already been tried without success. The barley variety may also have possibilities though generally oats will suit Falkland Island soils better than barley. The Murtle Oats requiring an alkaline soil would hardly suit the Falklands.

## Cahn Hill, Dodwell, and the work of the Montgomeryshire and other W.A.E. Committee.

Visits to Cahn Hill, Dodwell, and Montgomeryshire were arranged through Mr. Moses Griffith, Grassland Officer for Wales; Mr. Wm. Davies, Assistant to Sir Geo. Stapledon at Dodwell; and Dr. Ellison Chief Technical Officer to the Mont. W.A.E.C. Regrassing of old rough hill grazing was also seen in Cumberland, Westmorland and the West Riding of Yorkshire.

## Scope of the work in the areas visited.

At Cahn Hill some 250 acres of hilly, stoney, high-lying rough pasture have been reseeded.

At Dodwell, the Ministry of Agriculture's Grassland research station, over 2,000 acres have been reclaimed from derelict scrub to grow crops and grass. This is a heavy clay lowland soil, and as such is not similar to Falkland soil, nevertheless the cost of reclaiming this scrub land are of interest as are the various strains of grasses to be seen in the pastures.

The Mont. W. A. E. C. have ploughed up 6,000 acres of rough hill grazing and of this some 4,000 acres have been sown down to grass. Some of this is on better soil than is available in the Falklands, but the higher lying nardus and molinia grazings tackled are quite comparable to some in the Falklands. All this land is between 1,000 and 1,700 ft. above sea level. In other Counties several hundreds of acres of rough grazing land which have been reseeded were visited.

## /Cultivations.



## Cultivations.

(10)

The technique employed in the cultivation of these areas has become fairly standardised, and involves the use of the plough. Other methods using surface cultivation only, either by disc harrow or rotary cultivator are not practiced to any extent. To prepare a satisfactory seed bed with disc harrows the ground requires repeated discings (as many as 8 or 9 may be necessary) and the cultivation costs may in the end be heavier than if the plough had been employed. The disc harrow does not destroy existing vegetation completely and the resulting pasture is not as good as that obtained by using the plough.

Where there is any tough surface mat, as there usually is on the type of land being dealt with, the rotary cultivator does not work at all satisfactorily.

The sowing of seeds without any surface cultivation is only of value in exceptional cases, any improvement is very slow in appearing and in most cases it is considered better to plough.

The essential points in the cultivation technique for reseeding rough grazings are:-

- 1) To plough deep enough to cover the old turf and to enable a sufficiently deep fine seed bed to be prepared;
- 2) To plough as flat as possible;
- 3) To consolidate thoroughly by the use of heavy rollers;
- 4) To prepare a good tilth by the use of heavy disc harrows followed by spike harrows;
- and 5) To make sure that the ground is consolidated.

This technique is that now adopted throughout the United Kingdom the ground is ploughed, rolled, disced as many times as necessary, lime and fertilizer being applied before the final discing, harrowed, harrowed again lightly after seeding, and rolled until sufficiently consolidated.

## Machinery.

Tractors. For really rough work a crawler tractor is essential. At Dodwell and Cahn Hill Caterpillar D 2s. (25 h.p.) were in use and were considered very satisfactory. The Mont. W.A.E.C. had the following tractors in use:-

3	Allis Chalmers H.D.7.	(54 h.p.)
2	International T.D.9.	(40 h.p.)
1	Caterpillar D.4.	(35 h.p.)
2	International T.D.6.	(30 h.p.)
2	Caterpillar D.2.	(25 h.p.)
1	Fordson with "roadless" tracks	(22 h.p.)

Several Fordson and Ford-Ferguson tractors for lighter work. All these tractors had done good work but the Fordson with "roadless" tracks was not considered a very good type of crawler tractor. Of the other crawlers the Caterpillar-Tractors were considered to have given best service, and it was recommended that the D.4. (35 h.p.) tractor was the most suitable for this kind of work, lighter tractors did not have that reserve power so often needed.

## Ploughs.

The essential features of ploughs for this work are weight and strength to enable them to stand the strain imposed, high clearance to avoid choking with trash, and a furrow slice wide enough to be turned over flat when ploughing to the depth of 10 inches. The most suitable ploughs are:-

Ransomes Jumbotrac and Junotrac	(3 furrows 16-18" wide)
Massey Harris No.3 Grub breaker	(1 furrow 20-24" wide)
Ransomes Solotrac	(1 furrow 20-24" wide)



The Caterpillar D.4. Tractor is capable of pulling the Jumbotrac and the D.2. tractor the Grub breaker with ease. It appears that a plough turning two furrows about 20" wide, and capable of being pulled by a 30-35 h.p. tractor would be a big advantage. For really rough ground the Grub breaker and Solotrac are the most suitable ploughs at present, and of these the Grub breaker is the better in that it has a longer body and turns a rather flatter furrow.

Lighter ploughs can do very good work where conditions are not so rough, but where the amount of surface mat and old grass roots make it essential to plough to the depth of 10" or so a good wide furrow is necessary.

No disc plough was seen but I was told that one had been tried and found unsuitable for the work as it could not completely bury the old turf.

Disc harrows. Heavy disc harrows, of the calibre of the Ransomes "Baron" are every where in use.

Rollers, harrows, seed and manure broadcasters. These implements are all of the ordinary type. Cambridge rollers are most suitable and these should have plenty of weight. On the hill land where rainfall is heavy seed is always broadcast but in drier areas it is found to be much safer to drill grass seeds. Usually this is done with an ordinary corn drill, cross drilling to ensure an even cover of the ground. At Dodwell a special seed drill with 3" drills has proved very useful.

Tractor trailers. All trailers seen working were mounted on pneumatic tyres. These were on the whole very satisfactory though occasionally the wheels were not strong enough for the loads carried. Extra heavy wheels and tyres are needed, such as those used on heavy transport lorries. One trailer was seen fitted with "Roadless" tracks to carry 4 tons; this trailer was stated to be unsatisfactory as the tracks kept coming off on hilly land and it was laid aside while wheeled trailers were in use.

Excavator. Some drainage work done by a Priestman Cub Excavator was seen, this had made an excellent ditch 3 ft. deep and it was stated that the machine was capable of doing 200 yards of such work per day.

#### Manures.

Almost always these rough grazings have been found to be deficient in lime, phosphates and available nitrogen. The requirements of these are determined by analysis, but in practise the dressings applied are usually  $1\frac{1}{2}$  - 2 tons per acre  $\text{CaO}$ , 10 cwt per acre high grade slag, and 1 -  $1\frac{1}{2}$  cwt . sulphate of ammonia or nitro chalk. Deep peat has been avoided and serious potash deficiencies have not been met with. The above scheme of manuring would I feel sure work very well in the Falkland Islands, but the rates are fairly heavy and in view of freight charges to the Falklands the position regarding smaller dressings needs attention. The following points summarise the opinions of people undertaking the reclamation of rough hill land:-

1. To reseed without phosphate, even where lime has been applied, is a waste of time and money.
2. Basic slag is the best form of Phosphate to use particularly where lime has not been applied.
3. Basic slag at the rate of 10 cwt. per acre and without lime has given results very little inferior to those obtained from slag plus lime in the first year, but there is a greater difference in favour of liming in subsequent years.
4. Where the lime status has been put right applications



of 5 cwt per acre basic slag have given quite satisfactory results and applications of as little as 3 cwt. per acre might be risked. In these cases however it is deemed advisable to give further application of slag as soon as possible.

5. Applications of slag less than 10 cwt per acre without lime have not been as successful.

6. Lime in England today is cheap and subsidised and the tendency is to put on all that is required. If slag is being used dressing of 1 ton per acre of lime will suffice and smaller dressings of 10 cwt. per acre might prove quite satisfactory.

7. Other forms of phosphate - super phosphate, triple super and ammonium phosphate- all give satisfactory results where the lime status has been put right, it would be risky to use these without the full application of lime and useless to use them with no lime at all. Triple super and ammonium phosphate being more concentrated have lower freight charges to bear per unit.

8. Some nitrogenous manure (preferably nitro chalk) should be applied at the time of sowing the seed.

#### Seeds mixtures.

In general the semi-permanent Cockle Bark type of seeds mixture is used but there is a tendency to use even simpler mixtures,

e.g. Rye grass for the most fertile land, cocksfoot for drier areas, a mixture of ryegrass and cocksfoot for land of intermediate type, timothy alone or with ryegrass for damp peaty land and of course with all of them wild white clover and probably also Montgomery red clover.

A proportion of the Aberystwyth pasture strains of grasses should be included in the mixture. These pasture strains are not as productive as the commercial type during the first years of a new ley, nor are they as early or as palatable, but they do not seed so freely and provide more even grazing throughout the summer, and they persist to cover the ground with their leafy growth when the commercial types disappear. The intermediate hay-pasture strains of grasses produced by the Aberystwyth Plant Breeding Station are particularly good, combining as they do high productivity with leafiness.

Crested dogstail is an extremely useful grass on this type of land and should be included in small quantities in all mixtures. The Aberystwyth red fescue S 59. is also well worth including in small amounts but the seed of this is unfortunately very scarce. As a bottom grass sown in a timothy mixture rough stalked meadow grass is very useful.

The time to sow the seed on these hills in England is April to July; to sow later than July is risky at high altitudes. It is often better to postpone seeding until July if it cannot be done by early May. In the Falklands the latter part of October and November would very often be too dry for sowing grass seeds while sowing later than mid-January would be running a risk.

Cover of nurse crops are not popular, the best nurse is 6 - 8 lbs per acre of Italian ryegrass with perhaps a light seeding of oats for grazing only.

#### Pioneer Crops.

Pioneer crops can play a very important part in the reseeded of rough grazing. By folding these off with sheep or cattle humus is added to the soil which makes for a better take of the following grass seeds. Various crops have been used, rape, marrow stem kale, turnips, rib grass, rye, and Italian rye grass; the ones most suited to Falkland Island conditions are probably winter rye and Italian rye grass. By sowing winter rye and Italian rye grass in January on land prepared for seeding too late to take the ordinary grass mixture a good deal of winter and early spring keep could be produced at the same time as the land was being

/improved.



improved. These pioneer crops of course need applications of lime, phosphates and nitrogen before seeding. Cultivations for the succeeding grass seeds consist of discing and harrowing, on no account should the old turf be ploughed up again.

### Some Results.

Results generally have been very good and the proportion of failures small. The chief cause of failure is undoubtedly lack of attention to manuring and limeing; this is an all-important factor. Other causes of failure have been sowing seeds at the wrong time, either too late in the year or when the ground was too dry, and the choosing of unsuitable land, difficult to plough on account of slope or rocks with the consequence that cultivation and consolidation could not be properly carried out.

In Montgomeryshire the W.A.E.C. has reseeded some 4,000 acres which originally carried about 3,000 ewes and their lambs in summer and nothing in winter. It is now carrying 2,000 ewes and their lambs all the year round and in addition 2,500 - 3,000 cattle during the summer. Individual hills have really startling production records, one block of 85 acres before treatment summered 80 ewes and lambs, rental value 3/- per acres, £12.15.0., the hill. After reseeded this hill carried 500 sheep and 80 cattle from July 24th. to October 10th. and the following year was let for £500 for 6 months (double its original capital value) This was admittedly one of the better areas and all hills have not given such good results, others on peatier ground are carrying  $\frac{1}{2}$  -  $\frac{3}{4}$  of a beast per acre in summer and are tending to go back to bent and rushes rather quickly.

Regarding pioneer crops one area of 25 acres Italian rye grass and 33 acres of rye sown at the end of June on peaty land fattened 50 bullocks from 1st September, to end of November.

Great stress is laid by the Montgomeryshire Executive Officers on choosing the right land for this reseeded. It should be as free as possible of rocks and the area should be of considerable size to allow ploughing and cultivating to be done economically. All really difficult and boggy places should be left and not attempted, even if in the middle of a patch to be ploughed.

### Costings.

As much information as possible was collected regarding the cost of reseeded hill land. Several W.A.E. Committees are undertaking the work for farmers on contract at an inclusive charge varying from £12 - £15 per acre, but it is generally admitted that there is an element of subsidy in these prices, especially when small areas are being tackled, and the actual costs are probably rather higher.

Mr. Willcock, Grassland Officer to the Mont. W.A.E. Committee estimates, the cost of reseeded to be between £14 and £15 per acres but this does not take into account depreciation on equipment which will amount to another £2 or £3 per acre, bringing the total cost to about £17.

As prices in Britain differ from prices in the Falklands the actual money cost in Britain does not give a really satisfactory estimate of what costs are likely to be in the Falklands.

The cost of reseeded can be divided into the costs of

1. Cultivations (including running costs and depreciation)
2. Manures
3. Seed

The cost of items 2 and 3 can be ascertained at any time and by adding on the freight charges the costs landed in the Falklands can be arrived at

The following information supplied by Mr. Willcock gives



some indication of what cultivation costs are likely to be.

Cost of reseeding 800 acres in Montgomeryshire.

Wages of 9 men for 11 months		£1,795. 16. 8.
7712 galls of Pool gas oil	@ 1/1 $\frac{1}{2}$	433. 13. 2.
2904 " of T.V.O.	@ 1/1 $\frac{1}{2}$	163. 6. 8.
1592 " of Petrol.	@ 2/1 $\frac{1}{2}$	84. 4. 1.
642 " of Oil and Grease	@ 5/-	160. 10. 0.
In addition contract work to value of		190. 12. 10.
		<u>£2,828. 3. 5.</u>

That is £3.10.8., per acre running costs.

In addition to the running costs given above repairs and replacements cost £622.17.7., but the tractors and implements were all new and needed comparatively little attention e.g. no new tracks were required ( a heavy item on crawlers) and normal repairs would be considerably higher, it is estimated by another £400.

On the basis of his experience over four years of this type of work covering some 5 to 6,000 acres Mr. Willcock gave it as his opinion that a medium crawler tractor (35 h.p.) and equipment would be capable of reseeding 125 acres of rough hill grazing per year; that the life of the outfit would be about 8 years; and the repair and replacement cost during that period would be approximately equal to the original cost of the outfit. In other words the depreciation and repair costs to be spread over a 1,000 acres would be twice the cost of the outfit. At present prices in Britain this would be equal to about £3 per acre bringing the total cultivation cost to over £6.10 per acre.

The above costs relate to 800 acres of land 1,300 to 1,700 feet above sea level, with the original herbage consisting of nardus, molinia, bracken and heather. The whole area was ploughed, rolled three times, disced four times, lime, slag and nitrogen sown, chain harrowed, and seeded in 11 months. The average number of tractors used was 7 medium-heavy crawlers and one Fordson.

I believe that one might reasonably expect the output per tractor in the Falklands to be similar to this, that is about 125 acres per year per crawler tractor. To obtain the cultivation costs in the Falklands the landed prices of the various items listed and of a tractor and implements would need to be known.

Other estimates of depreciation costs were obtained from Mr. J. Pearce, Machinery Officer at Dodwell and from Mr. Phillips Manager at Cahn Hill. Mr. Pearce stated that from his experiences at Dodwell he would estimate the life of a crawler tractor and equipment to be 10,000 hours, that is with normal every day use about 6 years, and in that period repairs to be equal to the original cost of the outfit. The area of land that could be directly reseeded during the life of the outfit he estimated at 1200 acres. These estimates are based on caterpillar D.2. tractors and indicate a higher output for a lighter tractor than that obtained in Montgomeryshire but conditions at Dodwell are easier.

The Caterpillar D.2. tractor at Cahn Hill is 12 years old and although still in working order is nearly finished and has been replaced. The amount of work this tractor has done is as follows:-

Reseeding at Cahn Hill 240 acres (some twice)	say 300 acres
" by contract for farmers	about 400 "
Other seasonal work on 70 acres of hay, tillage etc. say equivalent to reseeding	300 "
	<u>1,000 acres</u>

Mr. Phillips considered that repairs costs for the tractor during its life would equal one half the original cost, and repair costs for the implements would equal one quarter their original cost. He also estimated that the maximum output from a D.2. tractor would not exceed 150 acres reseeded per year.

(signed) T. Beaty.  
Agricultural Officer,  
Falkland Islands,  
16th July, 1945.



Extracts from Minutes in file 0375.

Y.H.

1a

..... I see little point in printing the attached reports, they were written in 1945 and 1946.

(Intld) S.G.T. 14/7/55

C.S.

I agree. Presumably they will be carefully filed as they are becoming somewhat tattered.

.....

A.G.D.T.  
21/7/55.