C. S. O.

0520

0520

(Formerly)

SUBJECT :

REPORTS ON GUANO DEPOSITS IN THE FALKLAND ISLANDS.

CONNECTED FILES.

NUMBER AND YEAR.	

88334/47

Saving.

From the Secretary of State for the Colonies.

To the Officer Administering the Government of FALKLAND ISLANDS.

Date 8th October, 1947.

No. 8 Saving.

I enclose three copies of Mr. Joyce's report on Guano deposits on Lively Island.

2. I have been informed by Mr. Joyce that the lime deposit is higher than that stated in the report, and in places is as much as 55-60 per cent. There is just a possibility that it comes from a crag, and it is suggested that it may be worth searching in the area.

SECER.

CN To Jw

Hartford Cottage,
Stokenchurch,
BUCKS.

Sept.,16th.,1947.

Dear Mr.Harrison,

Mr.R.G.Warren,the chemist at Rothamsted has kindly done partial analyses of the two guano samples handed to me by Mr.Brown on your behalf.As I suspected the samples are highly leached,and thus conform with the analyses of other samples on the files of the Department of Agriculture.If my memory serves me correctly however yours are somewhat better. The Peruvian guanos,which were exhausted in 1868,are those which are most closely analogous with the samples you submitted. I have therefore added for comparison a summary of these guanos.

LIVELY ISLAND GUANO.

Sample 26A is taken from the surface of the deposit while I was not informed at what depth sample 26B was taken.The results are expressed as percentages in the as received.

Sample No.	26A	26B
Total Nitrogen	0.8	0.8
Total Phosphoric Acid	9.3	8.2
Lime as Ca CO_3	37.6	49.4
Ash corrected for CO_2 lost by ignition	80.6)	87.8)
Water	6.3) 100%	5.3) 100%
Organic matter by difference	13.1)	6.9)

****

PERUVIAN GUANO.

The percentages quoted below show the range of composition in analyses of Peruvian guanos from a variety of localities.

	Percentages from	to
Water	18.06	24.44
Organic matter	29,50	40.36
Phosphoric Acid	9.74	16.35
Lime as CaO	9.21	13,08
Magnesia & alkalies	8.64	11.92
Siliceous matter	1.08	12.55

This translated into plain language means

	for your samples		for Peruvian Guano
Nitrogen	0.8%	as	7.07% - 11.43%
Phosphoric acid	8.2% - 9.3%	against	9.74% - 16.35%
lime ($CaCO_3$)	37.6% -49.4%		(CaO) 9.21% - 13.08%

Your samples are deficient in Nitrogen and rich in lime,which does not make them so useless as at first sight. In spite of the phosphoric acid being rather low they still might be of local use.They could of course never compete

/with

compete/

with the Algerian and other phosphate supplies which have at least four times the Phosphoric acid content. The difference between the Peruvian and Lively Island deposits is entirely due to the rainfall in the Falkland Islands for this leaches out soluble material and liberates ammonia. Those places where guano is worked commercially have extremely dry climates, and there is consequently no leaching action. However I believe that this difficulty can in part be overcome as you will see in the succeeding paragraphs.

Most of the ######## Nitrogen in damp guano escapes in the form of ammonia so that it is essential to air-dry samples as soon as they are taken. For instance the samples 26A and 26B when handed to me were damp and escaping ammonia had entirely rotted the bags. Before rebagging them I had them air-dried and the only signs of attack that the bags showed on arrival in the U.K. were a few dark stains. What Nitrogen was lost through this of course we cannot say. When discussing this with Mr. Warren, he suggested that dried peat, which absorbs ten times its own weight of moisture might be spread on the rookeries and so produce a useful compost. The acid in the peat helps to "fix" the soluble material. Super-phosphate would further increase this fixing action. This would have to be the subject of further investigation as little is known of its action in the field. Mr. Warren's suggestion brings to my mind the fact that Jackass Penguin rookeries might be worth looking at as I believe they burrow into peat, and, since this cannot be waterlogged, it may be dry enough to "fix" some, at least, of the ammonia.

You should see the holes after rain.

A second idea put forward by me to Dr. Hamilton is based on the guano tables operated a few miles to the north of Walvis Bay in Damara Land, South West Africa. Here of course the climate is extremely arid. The tables are crude timber platforms situated a foot or so above high water mark. The birds nest and rest on them, and once a year the droppings and nests are cleaned-up and sold as organic manure. My idea as first made to Dr. Hamilton was to put a simple tray on the rookery to see just how much was produced in say a year. Since my return to the U.K. I have examined the question more closely and discussed it with Dr. Hey of the British Museum and Mr. Warren. Together we have evolved the scheme outlined in the attached drawing.

The general idea is that the excessive rainfall, which at present leaches and disperses the guano, will wash the droppings into the oil drum, where they will concentrate in the form of a slurry. At the worst there will then be a concentrate of insoluble Phosphates, but we will be very interested to see how much (if any) ammonia and solubles are trapped. The scheme is not so uneconomic when you remember that the price of these phosphates is at present £40 per ton and that an oil drum of well-consolidated slurry will produce about 300lbs when dried. With the economic situation and the world shortage of phosphates it is unlikely that the price will drop below £20 for many years. In the U.K. hen manure which I am told is not quite so rich as that from sea birds finds a ready sale at these prices.

the

As for suitable sites, modification of design etc, Dr Hamilton would be the best person to advise you. Mr. Warren and I are also very interested and will be pleased to give you any advice or help we can.

Yours Faithfully,

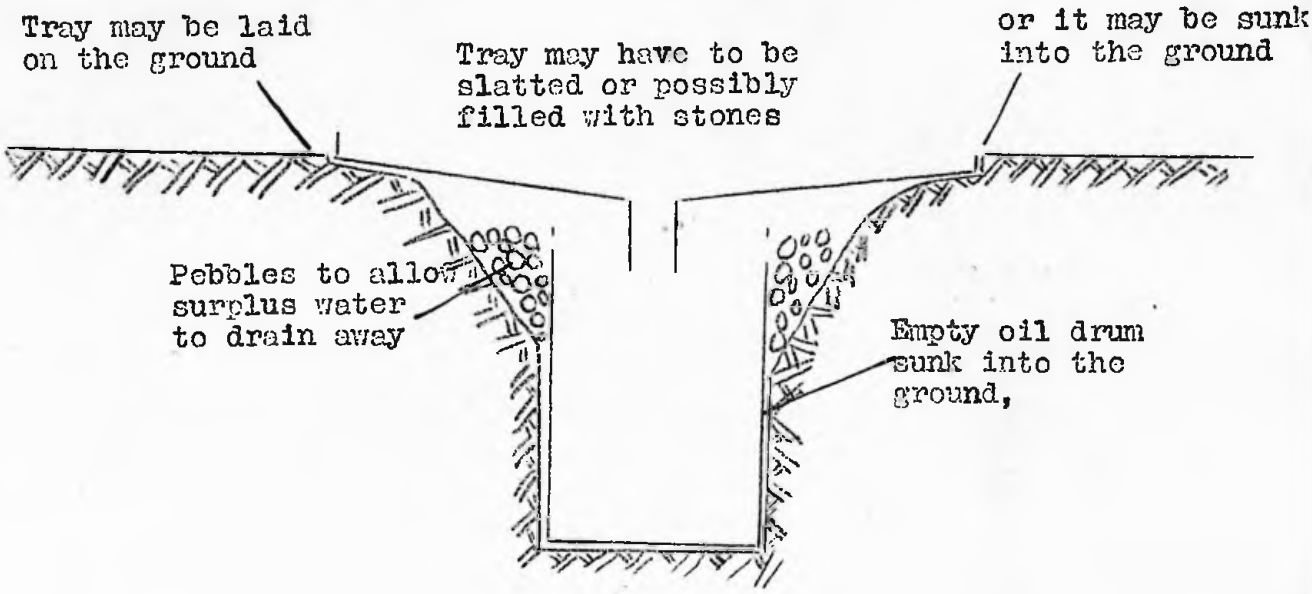
Geologist

Mr. Harrison,
Schooner PORVENIR,
Port Stanley.

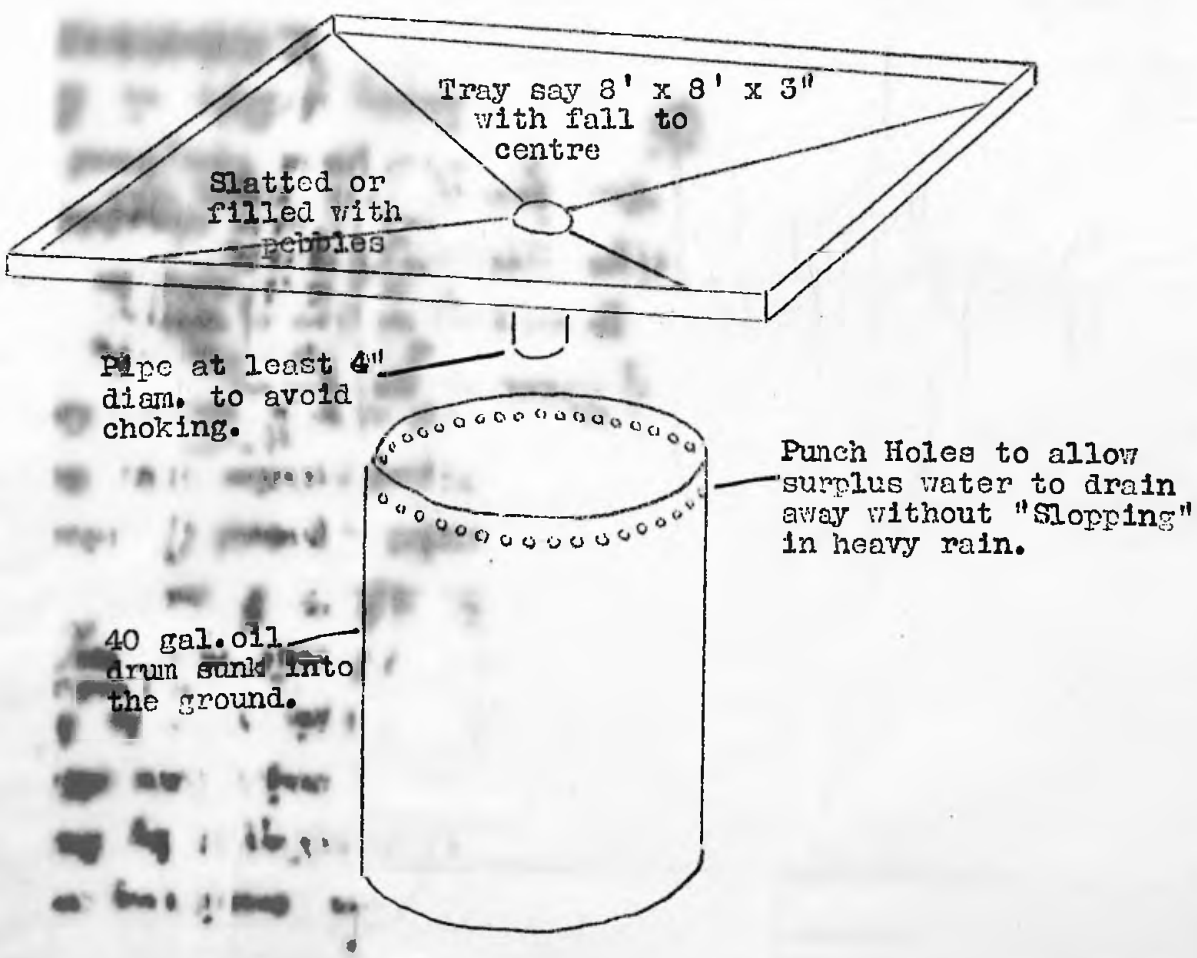
Copy to Mr. Harrison
Dr. Hamilton

Dept. of Agriculture.

ELEVATION



ISOMETRIC PLAN.



5

A.

G.H.: J. 1. P. S. (?)

B.

H.C.S.

? B.U. when the MFV arrives.

I shall try to find out more about ~~of~~ the site from Mr. Harrison.

If we go on like this the rookeries will have as good sanitation as many camp houses.

J.E.D. S.V.
3-XI-47

C

New York Herald 1853

The Discovery of Guano at the Falkland Islands.

JAMES G. BENNETT, Esq. —

Sir—Allow me to correct an error which appeared in the daily papers, on the receipt of the news by the Atlantic steamer, relating to the name of the Governor of the Falklands, and the announcement that guano had just been discovered there. I am personally aware of the fact that guano was first found in these islands by George Rennie, the present able and much respected Governor, many years ago, while taking a cruise round the Western islands, for the purpose of selecting a suitable place to land cattle from the Eastern islands, in order to propagate them. To him, therefore, and not to Mr. Charles E. Lawrence, as previously stated, the honor is due. Before the arrival of Governor Rennie, the colony had languished, and been wanting in prosperity. He organized the Falkland Island Agricultural and General Improvement Association, which has proved to be a source of much benefit to the inhabitants. The lands have been properly cultivated, cattle farms established, and provision made, by his direction, for any vessel that might come in and require those supplies which it had heretofore been impossible to obtain. In addition to those proofs of his energy and determination to exhibit the advantages and capabilities of the settlement, he has created many other substantial improvements.

The principal deposit of guano, I will merely add, is at New, or the easternmost island. There are, doubtless, other deposits of considerable extent on many of the smaller islands comprising the group, which are still the resort of myriads of sea-fowl.

I have been informed that a work has been written, and will shortly be published, upon the origin, progress, climate, &c., of the Falklands, by a gentleman of high literary attainments, and for a long period a resident there. The many opportunities he has had to examine the products of the islands, and the notes he has made of the customs and characteristics of the people, will render it at the present time both instructive and valuable.

B.

[redacted]

D

G.N.

?

ABC 11.11

2E

E

H.C.S.

There is a very large mixed rookery of Rockhopper penguins, mollymauks and shags(?) on New Island. It would naturally be thought of as a source of guano, but all our guano is probably too much leached to be of value for export, although possibly of some use locally if it could be marketed cheaply.

ABC

J.E.D. S.V. 13-XII-47

B.U. 31.1.48
ABC 16.1

B.U. 31.1.48
1513/8

C.S.O. No.....

6

Inside Minute Paper.

Sheet No.....

B.O. next Summer. G.N. may then
be asked to report on it.

4.5.

7

Cp

Mr. Davis was telling me this morning that there is (or may be) a considerable quantity of guano at Sheep Cove (Shag Cove area) in the West Falkland. I think that Bay next time Philomel goes in that direction this should be investigated.

Does G.N. know anything of this?

H.C. 8/xi

A.

G. K.

(4) pc ?

(B.

+w C.

9.11.48

B

H.S.

Shag Cove is 7-8 miles South along the coast from Port Howard area.

There is a rookery of "King" shags, i.e. Phalacrocorax albiventer on the rocks at the entrance. My information is that the guano, if any, is under and around these nests. It seems probable that there can only be enough [illegible] for a private person to dig for his own use. And from what I remember of the place the taking away would not be too easy.

J.E.H. S.N.

10-XI-48

C

Re 7-8 Let 'Reconnaissance' take it - unless Opportunity?

5 Did Mr Davies mention

No. him, perhaps? [illegible]

12/11

Mc. 12/XI

G.N. seen. J.E.H. S.N. 17·XI-48

H.M.

To see please.

16.11

H.C.S. Seen

E.F.B. 20/XI/48.

9

A.

A.M.

To remind (8c para: 1) pl.

D.M. Jones
30/6

Hq/CS.

Who will carry out this investigation - I can possibly
fit in his requirements with other duties of Philomel

CJS 11.7.49.

A.O.

How will you do this?

K.L.
13/7.

H.C.S.

Will endeavour to do so by sailing on Philomel on Monday 18/VII/49
& returning on same. John P. Cleves.
D.O. 14/VII/49

D.O.
1/10 K.L.
18/7

REPORT ON GUANO AT SHAG COVE NEAR PORT HOWARD .

10

27 JUL 1949

I landed on the Southern side of the entrance on 22/7/49.

The rocks forming the entrance to the narrows of the shallow almost sand filled inner-harbour were the congregating place of the shags.

The rocks have an inclination to the West-wards and are steep and precipitous to the sea on the North.

Most of the birds droppings fall into the sea as they rest on the ledges of the rocks and only in one place except for odd nests on ledges and the like was there a deposit of Guano on the ground, this was on a steep slope N to S on the Western side of a steep craig. I estimated it to contain conservatively 10 cubic yards.

In appearance the deposit was very strong being covered and intermixed with small pebbles which the birds had regurgitated after using as ballast. Upon cutting into the deposit about 2 inches down the stones were found to be set in a white cheesy matrix which continued to a depth of 9 to 12 inches when it was interspersed with and finally gave way to a more putrid form which was dark and of a slightly ochery tinge.

Samples at various depths were taken all containing a fair proportion of stones and having a high moisture content and a constituency somewhere between soft putty and cream cheese. These I am at present air drying, after which I will make a simple examination and report later.

Very few Shags were seen on the rookery site. 2 screes ~~acres~~ of ballast stones on the Northern side of the narrows were noticed in an even more inaccessable area than that which I examined.

No shags had been seen on the Northern side for the last 20 years.

It is the general consensus of opinion all over the Falklands that of recent years both shag and penguin rookeries have become much reduced in population probably this is due to increased depredation of seals which being protected and not killed off for several years have doubtless greatly increased but in the wanton destruction of swimming birds I gather the fur seal is the most pernitious.

If/

If any Guano was mingled with those stones it could not amount to more than about 20 to 30 tons including stones.

These deposits of small extent would be difficult to work it all having to be bagged and carried down the rocks and taken away by rowing boat which could only approach in calm weather besides which the proportion of stone and smallness of the deposits make them of no commercial value.

There are said to be more extensive deposits on West Swan Island where unfortunately the "Philomel" was unable to call due to a gale and a fair sea running.

On Kidney and Cochon Islands there are more considerable amounts of Penguin Guano without pebbles from which samples were taken and examined at the Imperial Institute, South Kensington, London in 1913. The results of these Examinations are published in the 1914 Gazette pages 127 to 129. They indicate a low commercial value and point that the only way to make them commercial would be to cheaply reduce the water content from 70-80 % to about 20 % prior to shipping.

John P. Ellis

A.O.

26/VII/49

12

U.H.
f.i. pl. Not a commercial proposition.
K.L.
30/7.

C.S.
Seen. t.y. [signature] 31/7/44.

PA K.L.
4/8

0520

13

GUANO SAMPLES FROM SHAG COVE.

No. 1. Taken at 6 inch depth contained 25 % ballast stones.

No. 2. Taken off surface contained 63 % ballast stones.

No. 3. Taken at 9 inches down contained 35 % ballast stones.

No. 4. Taken at 12 inches down contained 14% ballast stones.

When examined after air drying for 21 days.

The material divorced of its stone content was found to loose on drying at 104c.

Sample No. 1. 3.4%

" " 2. 2.4%

" " 3. 4.0%

" " 4. 3.0%

and the total loss on ignation.	Ash left.
No. 1. 37%	63%
No. 2. 37%	63%
No. 3. 58%	42%
No. 4. 43%	57%

But the ash contained quite an appreciable proportion of course sand or small rock particles. Ignoring this, the varying percentages of stone, loss on ignation and ash left other than the larger stone in samples were as follows:-

Sample ~~XXXX~~	Stone %.	Loss on Ignation%.	% Ash other than stone.
No. 1.	25	28	47
" 2.	63	14	23
" 3.	35	38	27
" 4.	14	37	49

John P. Clinch

FA K.L. 21/8

FA K.L. 14/8

EXTRACT FROM MINUTES OF THE MEETING OF THE NATURAL RESOURCES COMMITTEE

HELD ON THE 18th JULY 1966

(c) Guano

Mr Miller mentioned that there was a large area of Gentoo guano near Roy Cove. He intended to cart some of this and use it as fertiliser.