

<p>WHALING</p>
<p>No. 725/22</p>

1922

C.S.

Imperial Institute

SUBJECT.

192 2

4th August

Previous Paper.

Asks regarding sample of semi-fossilised whale bone

875/21

MINUTES.

Letter from Imperial Institute of 4th August 1922 — Encl (1)

Refers to M.P. 875/21 attached

15/8/22

[Signature]

Q.A. 27/1/22

Q.A. 27/4/22

Govt. Naturalist

Per report please

[Signature] 26/10/22

Hon. Col. Sec.

These bones are a sample of the residue from the pressure boilers in which bone has been cooked.

They have been treated in the same way as the specimens reported on in G.O. 384/20 (att²), and are the larger specimens asked for in that paper.

The Imperial Institute is under a misapprehension in thinking they may be fossilized.

*J.H. Hamilton.
Govt. Naturalist*

26/10/22

Subsequent Paper.

Letter to the Director, Imperial Institute of 30 Oct. 1922
Encl. (2)

Gen. Latham list

Mr. Bennett informed me that the
bone sample home had not been calcined

Vide his letter of 29/5/22
in ltr of 7/5/21. Can you ~~write~~ 1/11/22
say where the Imp. Institute
used the term "calcined" in
connection with bone that
had not been calcined (your
letter of 31/5/22 is also sent)?

Hon. Col. Sec.

The word "calcined" is applied
to a sample sent by Mr. Bennett
to the Imperial Institute in 1920,
in the report in G.O. 384/20 (att¹)

In it it is stated that the
sample was described as "No 34.
Calcined Whales' bones: exhaust
from pressure boilers". ~~That is~~

2. I would submit that material
which has been subjected to the
action of dry heat can alone be
considered to be calcined, a view
which is supported by some of
the dictionaries, and by the derivation.

3. It would not, I think, be reason-
able to apply the word "calcined" to
exhaust (= ? residue) from pressure
boilers, it seems therefore that the
original description of the sample
was incorrect if ^{it} had not
been

been subjected to calcination.

Or if ^{it} had been that no statement was made to the effect that a process additional to that in a pressure boiler had been applied.

4. The material available at South Hetland would not be calcined. The bone meal which might be manufactured by the Hector Co. would be made from dried press boiler residue.

J. H. Hamilton.

Govt. Naturalist

25/11/22.

Govt. Naturalist

The previous sample has been calcined I think by being thrown on the falling fire by Mr. Bennett after being taken out of the pressure boiler but no further action seems necessary

J. H. Hamilton 19/12/22

Hon. Col. Sec.

Thank you.

2. The analysis of the large specimen sent will in that case give a somewhat different result.

J. H. Hamilton.

Govt. Naturalist

29/12/22

Ltr from Director of Imperial
Institute 16 April 1923

(3)

Report on samples of whale
Bones sent from N.E.

(3a)

Y.O. Submitted.

APR 17/23

Di C/Secy

25 Jan 1924

- (1) The Director should be thanked
- (2) Copies of the report should be sent to the Norwegian Whaling Association and separately to Messrs Aswersen and Levers but Ant. to G. H. should see first

TTTTT

25 Jan. 24

Assistant Naturalist

To see

APR 17/23

Di C/Secy 25 Jan 1924

Dir C. / C.S.O.

A very interesting Report indeed.

It is difficult to give an estimate of the quantity cast overboard at S Shetlands alone each year, but it would run into thousands of tons, plus the mountain or drupation Id beach both boiled - as

Sample under review, and raw.
Australia & the Cape appear to be
hungry purchasers of fertilizers.
Providing freight would allow, these
Colonies might be glad to borrow
of such a source of supply

A. Bennett
and H. C. V.
23. 2. 24

hr. to Director Imperial Institute
14th March 1924 (4)

Letter to Whaling Cos of 11th March 1924. Encl. (5)

Mr. J. E. Hamilton.

For your personal
use
O. C. S. C.
12 March 1924

Hon. Col. Sec.

Thank you, there is a certain
amount of encouragement in the report
on the exhausted bone.

2. If the present practice of having
colliers go to South Shetland, whence
they may often return empty casks
might it not be possible for them
to fill up with bone and thus
reclaim the cost of freight.

3. As Mr. Bennett remarks there
is a large, one may say a very
large amount, of raw bone on
the beaches ~~at~~ Deception, and
at Frytoiken, S. Georgia also.

J. E. Hamilton
Govr. Naturalist

12/3/24

Y.P. Submitted
W.P. 07
O.P.S. 14
14 March 1924

no further action necessary

~~W.P.~~ 17 March 24

Letter from Association of Norwegian
whaling Cos of 28 July 1926 - Encl 6

Y.P. Submitted

To send a copy of Encl 6
to the Imperial Institute?

W.P. 07
for C.S.
1 Aug 1923

H.C.S.

Will you please let app. to Genl. Museum
see the letter in print enclosure in case he may
have any observations to offer.

W.P.
1 Aug 1924.

Cont. to G.W. Naturalist
Accounting
~~W.P.~~

2 Aug 24

Hon Col. Secy.

Enclosure (6) is misleading in that it conveys the idea that all residue bone is used up.

I cannot speak of S Georgia, but at S Shetlands, & formerly at S Orkneys only a very tiny proportion is used at all. Many tons are thrown overboard daily from all ship factories; none being made use of, while the two mountains running into the sea in front of the Deception Land Station speak for themselves, still at the latter much guano is made, most years,

Guano, & Bone meal requires a large plant, & the profits cannot be great.

To calcine & powder the bone might, I think, be accomplished in a smaller & cheaper way.

It is doubtful if more than £10 per Ton can be obtained for such material, while oil produces from £21 to £35 for the same weight, this is the probable explanation

R. G. Bennett
Asst. Secy.
6.8.24

Yrs.
Submitted that no further
action is necessary

~~H. H. H.~~ 14 Aug. 24

H. H. H. 14 August 24

Letter from Ch. Salween & Co, 9/7/24 Encl. ⑦

of Naturalist

for information

~~ttttt~~ 24 Oct. 24

Hon Col Sir

Notes Thank you

Approved
29/10/24

Letter from Imperial Institute of 3rd Dec: 1924 - Encl ⑧

Copies of ⑥ and ⑦ to the Imperial Institute

~~ttttt~~ 14 Jan. 25

Letter to Imperial Institute, 19/1/25. ⑨

Letter from Imperial Institute. of 9th March 1925 - Encl ⑩

G.B. Submitted for information
9/11/24
C. J. C. W.
2nd May 1925

No action necessary

M.
4 May 1925

1556



No. 3117/22
Correspondence to be addressed—
"THE DIRECTOR,
IMPERIAL INSTITUTE,
SOUTH KENSINGTON,
LONDON, S.W. 7."
and the above number quoted.
Each letter should be confined
to one subject.

IMPERIAL INSTITUTE
OF THE
UNITED KINGDOM, THE COLONIES AND INDIA.

SOUTH KENSINGTON, LONDON, S.W. 7.

4 August, 1922.

Sir,

The Imperial Institute recently received from the Falkland Islands per s.s. "Losada" a sample of about 50 lbs. of bone, apparently in a semi-fossilised condition.

No letter of advice regarding this sample has been received here, and I shall therefore be glad if you will kindly state the precise nature of the material and the action which you wish to be taken respecting it.

The parcel receipt forwarded by the Pacific Steam Navigation Co. bore the reference "3680/20", which is that of Imperial Institute Report dated 7th September 1920 on a sample of calcined whales' bones forwarded by Mr. A.G. Bennett through the Natural History Museum in London.

The Colonial Secretary,
FALKLAND ISLANDS.

London. In the last paragraph of the report it was suggested that if the calcined bones were likely to be available on a commercial scale a representative sample of about 14 lbs. should be forwarded for further investigation, and it is therefore possible that the present material has been forwarded in continuation of the previous investigation. It has however not been calcined and therefore differs from the sample previously received.

I am, Sir,

Your obedient Servant,

Harold Brown.

for the Director.

725/22.

30th October, 22.

Sir,

I am directed by the Governor of the Falkland Islands to acknowledge the receipt of your letter No. 3117/22 of the 4th of August on the subject of a sample of bone received from this Colony per s.s. "Losada".

2. I am to express His Excellency's regret that no letter of advice was sent with the bone which was a sample of the residue from the pressure boilers in which the whales' bones had been cooked. It was intended for a larger sample of the specimen analysed in your report No. 3680/20 of the 8th of September, 1920, but it had not been calcined.

I am,

Sir,

Your obedient servant,

H. Henniker-Heaton,

Colonial Secretary.

The Director,
Imperial Institute,
South Kensington,
London, S.W. 7.

Received under
cover of S of S.
Despatch No. 102
of 15th Nov - 1923



3

No. 181/23
Correspondence to be addressed—
"THE DIRECTOR,
IMPERIAL INSTITUTE,
SOUTH KENSINGTON,
LONDON, S.W. 7."
and the above number quoted.
Each letter should be confined
to one subject.

IMPERIAL INSTITUTE
OF THE
UNITED KINGDOM, THE COLONIES AND INDIA.

SOUTH KENSINGTON, LONDON, S.W. 7.

16 April, 1923.

Sir,

I have the honour to enclose a report on a sample of whales' bones from the Falkland Islands which was forwarded to the Imperial Institute by the Colonial Secretary, and is referred to in his letter No. 725/22 of the 30th October, 1922.

One of the firms consulted by the Imperial Institute in connection with the commercial value of the material enquired whether supplies of whale meat and whale guano were available for disposal. The Imperial Institute will be glad to receive information on this point for communication to the firm, and if supplies are available to learn the prices at which they could be offered in this country.

I have the honour to be,

Sir,

Your obedient servant,

His Excellency

The Governor,

FALKLAND ISLANDS.

W. Gordon R. Drummond

3a



No. 1076 '33
Correspondence to be addressed—
"THE DIRECTOR,
IMPERIAL INSTITUTE,
SOUTH KENSINGTON,
LONDON, S.W. 7."
and the above number quoted.

IMPERIAL INSTITUTE
OF THE
UNITED KINGDOM, THE COLONIES AND INDIA.

REPORT ON

WHALES' BONES FROM THE FALKLAND ISLANDS.

The sample of whales' bones ^{from the Falkland Islands} which is the subject of this report was forwarded to the Imperial Institute by the Colonial Secretary, and is referred to in his letter No. 725/22 of the 30th October, 1922.

The material was forwarded in continuation of the previous investigation of calcined whales' bones which was the subject of Imperial Institute report dated 8th September, 1920. It was stated to represent the residue from the pressure boilers in which the whales' bones had been cooked, but it had not been calcined.

Description of Sample.

The sample, which weighed 50 lb., consisted of pieces of bone ranging up to 7 lbs. in weight. The material, which showed a porous, cellular structure, was of a light buff colour, and possessed an unpleasant fishy odour.

Results of Examination.

The bones as received were found to contain the following constituents:-

(table)

			Per cent
<u>Soluble in water:-</u>			
Phosphoric anhydride	P_2O_5		0.06 ^(a)
Potash	K_2O		0.02
Soda	Na_2O		0.42
<u>Insoluble in water but soluble in hydrochloric acid:-</u>			
Phosphoric anhydride	P_2O_5		29.87 ^(b)
Lime	CaO		34.17
Potash	K_2O		0.16
Soda	Na_2O		0.86
Nitrogen	N		2.84
Moisture (on heating at 105°C)	H_2O		4.07
Additional loss on ignition			25.51
"Available" phosphoric anhydride (P_2O_5), i.e. amount soluble in 2 per cent citric acid solution			} 20.84 ^(c)
(a)	Equivalent to tricalcium phosphate ($Ca_3F_2O_8$)		0.13 per cent
(b)	" " " " " "		65.21 " "
(c)	" " " " " "		45.50 " "

The above analysis shows that the material consists very largely of tricalcium phosphate, of which a considerable proportion is "available" from a manurial point of view, as judged from its solubility in a 2 per cent solution of citric acid.

Calculation of the composition of the material after calcination on the basis of the above analysis gives the following results which are shown in comparison with those furnished by the sample of calcined bone reported on previously.

(table)

		Calculated composition of present sample after calcination.	Calcined whales' bone examined in 1920.
		per cent	per cent
<u>Soluble in water:-</u>			
Phosphoric anhydride	P_2O_5	0.09 (a)	trace
Potash	K_2O	0.03	0.08
Soda	Na_2O	0.60	0.80
<u>Insoluble in water but soluble in hydrochloric acid:-</u>			
Phosphoric anhydride	P_2O_5	42.42 (b)	39.82 (c)
Lime	CaO	48.52	50.90
Potash	K_2O	0.23	0.13
Soda	Na_2O	1.22	0.91
Insoluble residue		0.18	0.14
(a)	Equivalent to tricalcium phosphate ($Ca_3P_2O_8$)	0.18 per cent	
(b)	" " " " " "	92.60 " "	
(c)	" " " " " "	85.80 " "	

The present uncalcined bone compares very favourably in composition as a manure with the sample of calcined bone examined at the Imperial Institute in 1920. In addition to the constituents which were present in the calcined material, the uncalcined bone contains 2.84 per cent of nitrogen, whilst the "available" phosphoric anhydride amounts to 20.84 per cent as against 15.60 per cent in the calcined bone. Both these factors add considerably to the manurial value of the product.

On the other hand, the uncalcined bone shows a loss on calcination of nearly 30 per cent. The cost of freight on this material would therefore be relatively higher than if the bone were calcined before shipment. It is however possible that calcination would diminish the percentage of "available" phosphoric anhydride present

and

and thus lower the manurial value of the product.

Commercial Valuation.

The material was regarded in the trade as worth about £5 to £5 10s per ton in the United Kingdom, but it was pointed out that the price obtainable for consignments would depend on the state of the market for such materials at the time.

Remarks.

The results of the present investigation show that the uncalcined bone represented by the sample would be of considerable manurial value, but in view of the large supplies of similar products available the price obtainable in the United Kingdom would be somewhat low and it seems doubtful whether the shipment of the product from the Falkland Islands to this country would be remunerative. The firms consulted were however interested in the material, and definite information should therefore be furnished to the Imperial Institute as to the quantities which could be shipped annually and the price at which the product could be offered c.i.f. United Kingdom ports.

16 April, 1923.

725/23

4th March,

24

Sir,

I am directed by the Acting Governor of the Falkland Islands to acknowledge the receipt of your letter No. 1618/23 of the 16th of April, 1923, transmitted through the Colonial Office and to thank you for the report on the samples of whale bone sent to the Imperial Institute for examination. Copies of the report are being sent to the Whaling Companies likely to be interested in the material and on receipt of their replies information regarding the quantities of the material which could be shipped and the prices at which it could be offered will be furnished.

I am,

Sir,

Your obedient servant,

G. R. L. Brown.

for Colonial Secretary.

The Director,
 Imperial Institute,
 South Kensington,
 London, S.W. 7.

5

725/32

11th March,

24

Gentlemen,

I am directed by the Acting Governor of the Falkland Islands to transmit a copy of a report from the Imperial Institute on a sample of whales' bones sent to the Institute for examination.

I am to invite your observations regarding the possibility of utilizing this material for commercial purposes, and if the subject is one of interest to you, to enquire the quantities which could be shipped annually and the price at which the product could be offered c.i.f. United Kingdom Ports.

I am,

Gentlemen,

Your obedient servant,

The Association of
Norwegian Whaling Cos.,
Sandefjord, Norway

The Southern Whaling & Sealing Co.
118 Exchange Buildings,
Liverpool.

Messrs. Chr. Salvesen & Co.,
29, Bernard Street,
Leith.

G. R. L. Brown

for Colonial Secretary.

Den Norske Hvalfangerforening

THE ASSOCIATION OF NORWEGIAN WHALING COMPANIES

TELEGRAMADRESSE: FORENINGEN
TELEFON: N^o 358.

Landesfjord, den 28th May 1924.
NORGE

Sir,

We have to acknowledge receipt of your esteemed favour of 11th March last (No. 725/22) enclosing a copy of a report from the Imperial Institute on a sample of whales' bones sent to the Institute for examination.

With regard to your question whether this material might be used for commercial purposes we beg to inform that the bone of whales is used for the manufacture of fertilizers. At the landstations at South Georgia and South Shetland (Deception) the meat and bones are dried and mixed ($\frac{2}{3}$ meat and $\frac{1}{3}$ bone) and make an excellent guano, the average analyses of which is about 10% of Ammonia and about 20% Bone Phosphate of Lime. There is also manufactured a small quantity of bone meal, the average analyses of which is 5 to 6% Ammonia and about 50 % B.P.L.

The prices of Whale Guano and Bone Meal vary according to the season. The price a short time ago was 16/6 d. per unit Ammonia and 1/3 d. per unit of B.P.L. delivered cif. United Kingdom ports.

As regards quantity we understand that the Norwegian Whaling Companies operating shorestations at South Georgia and South Shetland expect a production of 5000 to 7000 tons of Whale Guano and a small quantity of Bone Meal during the coming season 1924/25.

We are,

Sir,

Your obedient Servants

Den Norske Hvalfangerforening

Johan Rasmussen.

The Colonial Secretary,
Port Stanley,
Falkland Islands.

CHR. SALVESEN & CO.,
ESTABLISHED 1846.

29 BERNARD STREET, LEITH.
82 GORDON STREET, GLASGOW.
CUSTOM HOUSE BUILDINGS, GRANTON.
TELEGRAPH ADDRESS, "SALVESEN, LEITH."
TELEPHONES, LEITH 450, 290 & 274.

Partners—

J. T. SALVESEN.
F. G. SALVESEN.
T. E. SALVESEN.

29 Bernard Street.

Leith

9th July. 1924.



Sir,

We have the honour to acknowledge receipt of your letter No. 725/22 dated 11th March enclosing copy of report from the Imperial Institute on a sample of whales bones.

At our shore station at South Georgia the bones are manufactured together with whale meat, after the oil has been extracted, into whale guano. Last season the production was about 700 tons and it is hoped to increase the quantity produced this year. The price varies according to the market ruling for similar fertilisers and the percentage of the Ammonia content. On last year's production the very poor price of 12/6d per unit of Ammonia and 1/- per unit of Tribasic Phosphates of Lime, delivered Glasgow, was realised. No satisfactory manner of utilising this material on board floating factories has yet been invented.

We have the honour to be,

Sir,

Your obedient Servants.
per pro Chr. SALVESEN & Co.
N. Salvesen

The Colonial Secretary,
Stanley,
Falkland Islands.

Tel. KENSINGTON { 3798
3799

ADDRESS CORRESPONDENCE TO
THE DIRECTOR.

REF. No. 5454-24

8

IMPERIAL INSTITUTE,
SOUTH KENSINGTON,
LONDON, S.W. 7.

3 December, 1924.

Sir,

With reference to your letter No. 725/22 of the 4th March last on the subject of whales' bones, I shall be glad to learn whether any further steps are being taken in the development of an export trade, and if so, whether there is any possibility of shipments being forwarded in the near future.

I am, Sir,

Your obedient Servant,

Ernest Goulding

for the Director.

The Colonial Secretary,
FALKLAND ISLANDS.

9

725/22.

19th January,

25

Sir,

With reference to your letter No. 5754/24 of the 3rd December, 1924, I am directed by the Governor to transmit copies of letters from Messrs Rasmussen and Company of Sandefjord and Messrs Salvesen and Company of Leith relative to the utilization of whales' bones from the Dependencies for the manufacture of guano.

I am,

Sir,

Your obedient servant,

H. Henniker-Heaton.

Colonial Secretary.

The Director,
Imperial Institute,
South Kensington,
London, S.W. 7.

Tel. KENSINGTON { 3798
3799

ADDRESS CORRESPONDENCE TO
DIRECTOR.

REF. No. 1202-25



10
9

IMPERIAL INSTITUTE,
SOUTH KENSINGTON,
LONDON, S.W. 7.

9, March, 1925.

Sir,

I am much obliged to you for your letter No. 725/22 of the 19th January on the subject of whales' bones, enclosing copies of letters from Messrs. Salvesen and Co. and Messrs. Rasmussen and Co. regarding the utilisation of the product for guano manufacture.

These particulars have been furnished to the firms who previously expressed interest in the bones, and it has been suggested that if they require supplies of whale guano or bone meal they should communicate with the producers.

I am, Sir,

Your obedient Servant,

Ernest Goulding
for the Director.

The Colonial Secretary,
Stanley,

FALKLAND ISLANDS.