

MISCELLANEOUS.

INDUSTRIES.

(Misc.)

C.S.

19 40.

No. 22/40.

22/40

Secretary of State.

SUBJECT.

19 39.

30th November.

FISHING RESOURCES OF ~~THE COLONIAL EMPIRE.~~

Includes F. Is. Sea Fish.
Also Trout - new only

Previous Paper.

See 0392 (Trout in F. Is -
introduction of)

See 396/29; 5/7/40; 135/43.

MINUTES.

① S. of S. Circ. (2) resp. of 30/11/39.

Submitted The Agric. Dept
took in hand the question
of fish supply in Stanley
but so far as I understand
this was upset on the
outbreak of war owing to
shortage of labour. In
some reason fishery has not
been a paying proposition here,
due to some extent to the
absence of variety and to the
fact that there are no cold
storage facilities.

MCH
14. 2. 40

Subsequent Paper.

0112
135/43

Refr please to SW

Govt: Naturalist

Referred please.

MCH
CJ
15. 2. 40

Hon Col. Sec.

With apologies for delay.

2/ Ref. para 9 (Ref 1) & fear little can be done to develop the almost non-existent local fisheries beyond permitting as wide as possible use of jetties and similar facilities to those engaged in fishing, but I know of only one, the (O.A.) Bert Ravcliffe.

? a little propaganda on fish as food might help, but this would naturally be the S.H.O. department.

3/ A note on the fish of the 7. 2. 40 is att^d.

J. Hamilton
J. H.

2-5.

19. IV. 40

Y.E.

I am sure this note will interest you, especially in view of your memo. on possible minor industries.

So far I have seen nothing of the burns in the Colony, but brown & rainbow trout should succeed if over ^{well} provided from New Zealand, provided there is a proper food-supply. There seem to be multitudes of goats - but I know nothing of their life-history here. What do the snakes feed on?

This is a question that interests me immensely & I hope one day with Hamilton's help to find time to study it.

Y.E.
23/IV/40

H.C.S.

I am very glad to know that you are personally interested in this question. As far as I can judge fishing is the only secondary industry which can offer at present any reasonable chance of successful development.

2. There are ^{two} three aspects of commercial fishing which are *prima facie* possible :-

(1.) Trawling for lake and *munida* for export

We shall shortly have two Admiralty vessels for *munida* sweeping and enormous indications that they should be employed in an *ad hoc* manner in trawling -

Govt. supplying fuel and nets.

Attached Discovery Report shows a heavy concentration of *munida* in the immediate vicinity. I understand that the Crustacean is a table delicacy.

(2.) Trawling for fresh water fish on a commercial scale. Research

geographical

good results are achieved by smoking
the mullet - not far from haddock in
quality. The Govt. Naturalist does
not mention the pack on which used
to be exported and find a market at
four times the price of the mullet.

3. It would be a great pity if the
war postponed introduction of trout
I cannot see why we should not fish
them from the Coast.

~~TTTT~~ 24/4/40

B.V. 24.5.40

Govt. Naturalist.

To see H.E.'s mind & any remarks.

AD 23/4/40

Further observation on in preparation
ytd

ACF.

Imp observations here with please 6-15.
with Mr. Goodall's communications

Hamilton.

7. Nov.

17. VII. 40

(15 removed bodily to
0392 Introduction of
trout to the F. Is)

Y.E.

6-15 note I know interest you. I wish not let
this matter drop, & on return of the O.M.P. will go into
note to the.

AD 18/4/40

Good

~~TTTT~~ 15/7

First Shipping Advice of 26. 8. 40. (21)

Govt. Naturalist, (22)

To note.
 C.S.
 A.C.S.
 9/10/40.

A.C.S.

(23)
 notes please
 J.S.
 S.N.
 9.10.40

Govt. Naturalist, (24)

To withdraw Second Shipping Advice.

C.S.
 A.C.S.
 31/12/40.

A.C.S.

(25)
 Withdrawn please J.S. 2-1-41

Minute to Govt. Naturalist of 29. 9. 42. 22.

Circular Despatch from S. of S. of 19. 11. 43. 26. P.A.

Your Excellency, (27)

It is evident that fisheries research and development is to receive a great deal more attention than in the past. Colonies were urged to take action as long ago as 1939 (See para: 3 of (1)) and now this is repeated in para: 6 of this despatch. I feel, as you know, that we should try to make a real start here while Dr. Hamilton is still available. A scheme was submitted to you in 135/43 attached. Since then :

- (a) a possible export market for herrings has appeared;
- (b) I have had a thorough survey of the Penguin carried out and definitely established that she cannot be operated with the present boiler;
- (c) various other local alternatives have been investigated, but the only possibilities are putting the Penguin under sail until after the war (cost about £250) or the purchase of the vessel Penelope. This is a 17 metre diesel-engined ketch lying at Weddell Island. She is the property of J. Hamilton and is not being used. She is a sea-going vessel built on the lines of a North Sea fishing boat and came out from Hambourg to Terra del Fuego under her own power. A preliminary report is that she is in good condition, that her engine is sound and with adequate spare-parts, and that her sails and running gear are in reasonable condition. Mr. Hamilton might well be prepared to sell her.

2. I have little doubt myself that fisheries research and development on a small scale is justified both for dietetic and export trade purposes. If, in the light of this despatch, Your Excellency agrees with this in principle, it remains to decide whether we can make a start now or need wait until after the war.

3. The scheme already submitted is self contained, though I would change it to the extent of reducing the annual grant asked for by the amount of Revenue estimated. It has, however, the drawback that a new Diesel/

Govt. Naturalist.

Can you prepare a scheme with possible sites & approx. costs? If these latter are reasonable, I should like to include an item in the 1941 estimates, but in that case I should want the figures not later than August 10.

[Signature] 19/11/40

- 16. Circular Despatch from S. of S. of 6.6.40.
- 17. Minute from Govt. Naturalist of 17/8/40.
- 18. Telegram to S of S. No. 83 of 19.8.40.

Govt. Naturalist;

W.P. returned.

[Signature]
C.S.O.
19/8/40

- 19. Telegram No. 88 from S. of S. of 30.8.40.
G. Nat^l To see *[Signature]* 3/11/40

A.C.S.

Thank you, I am enquiring as to the possibility of R.F.W.D. making a frame for a somewhat different type of small trawlers do not suggest that any further action need be taken at present.

[Signature]
S. Nat^l
5.12.40

A.C.S.

Telegraph to that effect. *[Signature]* 6/11/40

- 20. Telegram No. 92 to S. of S. of 6.9.40,

Diesel engine may not be obtainable and would be extremely expensive - a factor which might delay the start for a long time.

4. As an alternative we might consider ^{the possibility of} negotiating for the purchase of the Penelope from the Georgia Fund and limiting our application for assistance to buildings and gear.

5. Para: 7 of the despatch calls for information regarding our fisheries. This is set out in Section II of the scheme already submitted, but I think it should be supplemented by concrete proposals.

6. Would Your Excellency care to discuss the whole question with myself and Dr. Hamilton?

KB
6th April, 1944.

28. Letter from Sub/ient. G.H. Ingham of 14. 4. 44.

G.N.

(29)

I should be glad of your comments on 28. I believe you are going to send a sample of smoked fish to Montevideo?

KB
26. 4. 44

30. Letter to Sub/ient. G.H. Ingham of 26. 4. 44.

(32)

N.S.
Comments received please. (31)

3 - Yes. *J.H.N. 2. 5. 44*

33. Despatch, No. 34 from S. of S. of 18. 9. 44.

(34)

Goat-Lab.

To see (33). Your views on future development on account of the fisheries are set out in (1) on 155/43 h/w. Do you wish to alter or add anything in the light of Ingham's report, your enquiries in Montevideo, or the reduction of the salmon?

N.S. (35)

KB
6.12.44

Thank you.

2. Additional observations or Res (36) please.

3. I have added a few minor embellishments to the Draft in 155/43.

J.H.N. 7. 11

(37)

G.F.

In (33) we are asked for a report on the fisheries & our suggestions for their development. The draft application for C.W.S.D. Act. assistance is at (1) on 135/43 & Co. Subsequent information & comment are at (28), (31) & (36) hereon. The report asked for is included in the application. As regards suggestions I agree with the G.N. that research into the various fisheries might be well worth while & that probably the "Penguin" is the best method. Details of the financial side may require some revision.

KB.

6.12.44

(38)

No ship; No men; No market.
The above three factors control the whole matter.

[Signature] 7/11/44

Despatch, No. 14 to S. of S. of 6. 2. 45. 39.
(40)

G.N.

To see (39).

KB.

17.2.45

[Signature] 19-11-45

[Signature]

Circular Despatch from S. of S. of 9. 12. 44. H1.
(42)

G.N.

You will be interested in (41). Please returned by next week as the file must be submitted to H.E.

Alb.

Thank you. Most interesting. *[Signature]* 20.11.45.
KB, 6/6/45

BW 25/6/45

G.F. (44)

KB 28/3/45

45. Circular Despatch from S. of S. of 21.5.45.

by Nat. (46)

Do note (45), p.

W.S. (47)

Thank you

for CS. 24/9/45.

Have been

in speciality -

24-ix-45

48. Despatch No. 11 from S. of S. of 1.5.46.

49.

§ 4 of (48) with (38) as the sub of the

note. P.A.

A.B.L.
1.6.46

50. Letter from Dr n.a mackintosh of 28.11.46.

51. D.O. letter to Dr mackintosh of 20.12.46

52. Extracts from H.E's Conf'd Despatch to
S. of S. of 22.1.47

53

~~G.N.~~

Min. J.P.

Refer this case to G.N. as
then not reaching in the mail
about local fisheries?

A.B.L.

54. Despatch No. 5 from S. of S. of 6.2.47

Extracted to 0112
(Sea Fisheries.)

R. G.N.
A.B.L.
30.1
24/2/47
24/3/47
24/4/47

G.M.

I. y. o. on (54), R - copy of Dr. Hart's report (wh. you may retain - another copy is held in this office) is attached., R.

J.B.
J.C.S.
12/3/47

H.C.S.

Very interesting and encouraging.

Dr. Hart's
paper withdrawn
J.B.D.

0112

2/ Comment on Dr. Hart's published report is needed in view of Red (54) 2. but the centolla paper is most interesting (54a). This animal is caught in shallow water in the Magellan area during a few weeks of the summer. It would not be caught in trawls, I should expect, but perhaps in set nets of v. large mesh such as are used for langoustine.

3/ Dr. Hart is in slight error in calling his beast "centolla-crab" its proper name is merely "CENTOLLA" ⊙ It is not a crab at all although it looks like an enormous spider-crab ⊙ If we eventually came to market them we might have to call them centolla crabs revolting as that may be to the purists ⊙

4/ There is another m.p. with a longish memorandum from the S. N. on the inshore fisheries, of which H.E. seems to take an encouraging view. It may be one of those listed on my jacket.

5/ ? The title of his m.p. would be rather misleading in view of the fact that most of the contents deal with the colony.

6/ ? May I have his ^{back} and the m.p. with my memorandum in order to review the suggestions already put forward.

J.B.D. S. N.
14-iii-47.

This matter has been dealt with in 135/43

this file may be P.A.

ABE
2-77

0112
complete
none



Downing Street,

30th November, 1939.

Sir,

I have the honour to inform you that I have for some time been considering the question of the fuller development of the fishing resources of the Colonial Empire and had decided, shortly before the outbreak of war, that, as a first step, it was essential that I should have available a body of experts who would study the problem in its broadest aspect and whose advice could be obtained on particular fishery questions referred to me by Colonial Governments. Accordingly, on my recommendation, the Prime Minister appointed, on the 1st of August, 1939, a Standing Committee of the Economic Advisory Council, to be known as the Committee on Colonial Fisheries, with the following terms of reference:-

- (a) To undertake a survey of the fishery resources, both fresh water and sea water, of the Colonial Empire, and to submit recommendations for their development.
- (b) To advise on particular fishing problems in the Colonial Empire as they arise.

The Committee was constituted as follows:-

The Most Honourable The Marquis of Dufferin and Ava, Parliamentary Under-Secretary of State for the Colonies, Chairman.

Mr. E. Barnard, D.S.O., Director of Food Investigation, Department of Scientific and Industrial Research.

The Officer Administering
the Government of

Sir Joseph Byrne, G.C.M.G., formerly Governor of Kenya.

Mr. A. T. A. Dobson, C.B., C.V.O., C.B.E., Secretary, Fisheries Department, Ministry of Agriculture and Fisheries.

Vice-Admiral J. A. Edgell, C.B., O.B.E., Hydrographer of the Navy.

Mr. J. Hornell, late Department of Fisheries, Madras.

Major C. S. Jarvis, C.M.G., O.B.E., formerly Governor of Sinai.

Sir Henry Moore, K.C.M.G., Assistant Under-Secretary of State, Colonial Office.

Mr. Morley Neale, Member of the firm of Messrs. Neale and West.

Mr. J. R. Norman, Assistant Keeper of Fishes, British Museum (Natural History).

Dr. C. F. A. Pantin, Sc.D., F.R.S., Reader in Invertebrate Zoology, Cambridge.

Dr. B. S. Platt, M.Sc., Ph.D., in charge of investigations into nutrition in the Colonial Empire under the Medical Research Council.

Dr. E. S. Russell, O.B.E., D.Sc., F.R.S., Director of Fishery Investigations, Ministry of Agriculture and Fisheries.

Mr. F. S. Russell, D.S.C., D.F.C., F.R.S., Marine Biological Station, Plymouth.

Mr. J. Thomson, Chief Inspector of Fisheries, Ministry of Agriculture and Fisheries.

Dr. E. B. Worthington, D.Sc., Freshwater Biological Association, Ambleside.

Mr. D. H. F. Rickett,
Assistant Secretary,
Economic Advisory Council

Mr. E. Melville,
Colonial Office.

} Joint secretaries
to the Committee.

2. Unfortunately, the Committee was not able to meet before the outbreak of war, and it has now been decided, for various reasons, that it will not be able to function during the period of hostilities. It is hoped, however, that it will be possible to reconstitute the Committee after the war.

3. Meanwhile, in view of the urgency and importance of increasing the local supply of essential foodstuffs for local consumption, I would urge you to take all possible steps to encourage and develop local fishing industries, both fresh water and sea water. I shall be glad to give all possible assistance, and to obtain expert advice, where necessary, in regard to any difficulties which may arise in connection with the promotion of these industries during the war.

I have the honour to be,

Sir,

Your most obedient, humble servant,

Malcolm Macdonald

A NOTE ON THE FISH OF THE FALKLAND ISLANDS.

I. SEA.

The edible sea-fish of importance are two in number.

The so-called "smelt" (Basilichthys) and "mullet" Eleginus; ^{the latter} is by far the commoner and grows to a very much larger size. Both are readily captured by seining in the numerous creeks and small bays of the Colony; Eleginus is easily caught with the hook, baited with mutton, and Basilichthys has been taken with fly but it is a difficult fish for the angler.

The quantities caught by netting naturally vary but in favourable localities may run into hundred weights at a time.

A structure locally called a "fish wall" is to be found in narrow creeks near many settlements. This is a rough stone wall stretching across a creek, of a height such that the top is not usually covered at high water, and interrupted for a few feet in the middle.

The use of this fish trap is extremely simple since it consists of closing the gap with loose stones at high water. As the tide falls the water runs out between the stones and any fish which may be inside are retained by the wall and becoming stranded are easily picked up.

Unless a fish wall is properly handled it is liable to be wasteful since more fish may be caught than can be used and the unwanted residue dies if it is not at once returned to the sea.

The resulting pollution of the creek is said to deter the entry of more fish, as is highly probable on the face of it. Both Eleginus and Basilichthys are taken in this manner.

A species of eel is occasionally found between tides but is seldom eaten.

Various members of the Nototheniidae which haunt the rocks and kelp beds are very well flavoured and easily caught with the hook but their small average size makes fishing for them an unprofitable business except for one's own use. I have found that a fish trap of Norwegian pattern produced a small but steady supply of these fish. The average size of Falkland Island Nototheniids is much less than that of the South Georgia forms.

At an early date in the history of the Colony 80 tons of salt fish were exported to Brazil, but later, in 1842, salt mullet exported to that country did not find much favour.

Recent experiment on a small scale shows that Eleginus is easily salted and in my personal view is improved by the process.

So far as the camp is concerned all the settlements are on the sea and can readily catch Eleginus when required but Stanley is dependent on the intermittent exertions of two or three men who do a little seining as a spare time occupation. Certain rather discouraging difficulties are experienced by them. There is a strong tendency, if one man has made a good catch, for others who can get hold of a net to go out and bring in still more fish, the market thus becoming overstocked. There is besides a regrettable tendency on the part of some to buy fish on credit and forget to pay for them. On the other hand it does not seem to be clearly understood by the fishermen that Eleginus in particular must be cleaned immediately it is caught; it therefore often happens that fish offered for sale are not in their best condition. Some fishermen increase the price if the fish are cleaned by them.

Of late one man has spent a great deal of time fishing and although no details are available his catches appear to have been satisfactory.

The Discovery Committee has reported that during its trawling survey in the region of the Falklands a species of Hake was found in quantities adequate to justify commercial exploitation. It was stated that "a trawl fishing based on Stanley should not experience difficulty as to the supply of fish: and since the South American States import considerable supplies of dry salted, wet salted and tinned fish, it seems likely that markets could be found".

The Crustacean Munida is of delicate flavour and eatable size in the adult state and judging from the abundance of the free swimming immature stages ^{* W} is probably common but there is no fishery for it and little if any thing is known as to the density of population or favourite haunts except that it was taken by R.R.S. "Discovery" in a trawl off the north coast of the Colony.

* locally called "whale food"

A clam and a mussel are common but only occasionally collected, as delicacies.

II. FRESH WATER.

Only two fish are known from the fresh waters of the Falkland Islands Haplochiton the so-called "trout" and the "minnow" -- Galaxias. The second reaches a length of about 3 inches and cannot be of any economic importance.

In favourable circumstances Haplochiton may attain a weight of 1½ lbs but ½ lb may be taken as a good average fish and one of eatable size. The fish may be sexually mature at this size. This fish is abundant in many of the streams but reports suggest that a number of the better known waters have been badly over fished. This may well be due to the pernicious local practice of judging catches

solely/

solely by numbers. I have recently been told by a member of the party that less than 10 years ago three anglers caught the astonishing number of 65 dozen in only 5 hours and that almost all these fish were of eatable size. It seems inevitable that so large a catch, from quite a small stream, should have seriously damaged the stock. Haplochiton is an inferior food fish on account of its small average size and soft and rather flavourless flesh.

It is well known that Northern trout have been long naturalized in New Zealand, and have flourished there, but it may be mentioned that equal success has accompanied introduction in Southern South America and recently in Tierra del Fuego.

Preliminary investigations with reference to the introduction of salmonids were begun shortly before the outbreak of war but had to be abandoned. From what was done it was considered that a hatchery, to function as a distributing centre, could probably be established near Stanley and that in some streams there is a substantial invertebrate fauna. More detailed investigation is of course necessary with regard to the choice of site and much more extensive limnological surveys are essential since little was accomplished.

As a result of consultations with a well known fish breeder in England I formed the opinion that the transport in cold storage of live ova from the United Kingdom should present no serious difficulty: it is of course not feasible at present owing to the dislocation of time tables.

I suggest that when the appropriate time comes serious consideration should be given to the subject of introducing trout ^{with a view} ~~in order~~ to increase the quantity, quality and variety of the available supply of fish in the Falkland Islands.

Since the streams of the Falklands form a number of discrete systems it ~~should~~ be easy to make reserves for the native fish.

Rio Grande, April 10th. 1940 de 194

Dear Mr. Hamilton,

Your letter of March 4th. was received a few days ago.

As you state in your letter peat-coloured water does not seem to do any harm to trout in fact from my experience of the rivers of Tierra del Fuego we have proved that our largest trout have been caught in this class of water.

We released the first fry in November and December of 1935. Last December (1939) I caught a Brown trout (*Salmo Fario*) weighing 5 lbs. 2 oz. and several between 3 and 4 lbs., also this past fishing season I have noted a few small Brown trout, proving that there is no difficulty over the spawning.

The trout that seem to multiply at a quicker pace are the (*Salvelinus Fontinalis*) American Brook trout, and the (*Salmo Irideos*) Rainbow trout. Four years after the introduction of these two last named trout young of these 4 year old fish, that is fish two years of age are being caught (Rainbow up to 1 lb. and the *Fontinalis* up to and over 2 lbs. in weight. In the river from which we take the *Fontinalis* we did not put Rainbow in until 1937 and some of these are being caught weighing 1,1/2 lbs. I am enclosing you a photo of a creel of trout caught in this river, the three species seem to get on very well together; for instance, fishing a small part of this river, with three consecutive casts I caught a Rainbow, Brown and *Fontinalis*, although generally we find that each class seem to keep to separate pools of the river.

I would suggest that you get in communication with the Chilean Government, they can supply Ova of Rainbow and Brown trout. We got large quantities from them, they cost \$ 26.00 m/c per 1.000. They usually pack 80.000 Ova in a box, they also charge about \$ 90.00 for the box and railing to Puerto Montt. There is a regular sailing of boats from Puerto Montt to Punta Arenas. The Ova requires slight attention on the way down such as putting small quantities of ice on top of the trays. From one shipment of 240.000 Brown trout ova in the year 1937 we hatched and released 221.327 fry which equals about 92 %. But from a consignment of 160.000 Rainbow ova the same year but a few months later we only hatched and released 27.598 fry which represents only about 17 %. I think that the poor results of this shipment of Rainbow ova was due to inattention on board the coastal steamer.

The total number of trout fry released in the rivers and streams of Tierra del Fuego in the years 1935, 1936 and 1937 are the following. Brown trout 288.081, Rainbow 135.177 and Fontinalis 13.396, a total of 436.656. We have also introduced 10.180 fry of the Landlocked Salmon, up to now we cannot say if the results will be favourable.

You cannot get either the Salmon or Fontinalis ova from Chile, for this ova you would have to treat with the Argentine Government. I am sorry we cannot let you have ova from here as the nearest river from here in which we have put trout is about 30 miles and at spawning time the roads are usually in a frightful condition. Also there are the difficulties of shipping.

Personally I think that the best time to introduce the fry is just before they commence to feed, that is 5 to 6 weeks after hatching. We used to take the fry out in a large soup cauldrons holding about 10 gallons of water, in each of these we would put about 10.000 fry and they travelled splendidly with practically no loss whatsoever.

The longest trip in a lorry was 8 hours; on this trip we took two spare cauldrons with water to make up losses from spilling over. As long as the lorry is kept moving the water appears to keep well aerated. I have taken up to 1,500 fry in an ordinary slop pail holding about 1,1/2 gallons of water and this for a trip of over two hours in the car without adding any water on the trip and on arrival at the stream side we did not see a single dead alevin, I think this is due to the cold climate and the cold water. The temperature of the water on leaving was 41°F. and on arrival at destination had only risen up to 48°F. I expect your streams are very like ours regarding food etc. some of our streams are full of shrimps and snails and I have never seen trout with flesh so pink as the trout from this class of stream, even redder than Salmon. If you wish I will send you sketches of hatching tanks which we have made here. One of these tanks or troughs will hatch out and rear up to feeding or releasing stage 30,000 ova and is about 12 feet long 14 inches wide and 8 inches deep fitted with 7 trays each holding 4,500 ova. These troughs we have installed in series of 6, enough for at least 180,000 ova and only require 5 gallons to 6 gallons of water per minute, the water falling from one box to the other through the said series of 6 troughs.

The so-called trout you have in the Falklands (Galaxias) is probably the same native fish we have here which is absolutely useless as a sporting fish; we also have another species here which no doubt is of the Salmon family, I have only caught three species, one when fishing for the Galaxias, baiting with small pieces of meat and before we had introduced the trout here so they cannot by any chance be a cross with any of the trout. The other two I caught last year on fly when fishing for Brown trout; they were all about 8 inches long, same shape as a trout and with adipose fin barred like a Salmon Parr but no visible scales. We have had a visit from Professor Osgood of the United States this summer and as I had preserved these fish he has

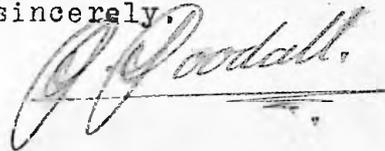
promised to have them examined in the States and will advise me as to exactly what they are, when he saw them he at once thought them to be a cross until I told him they were here before we introduced trout.

I should say that the only way you could introduce trout into the Falklands would be by importing the Eyed ova. Please bear in mind that it is hardly likely to get the Brown trout and Rainbow ova by the same shipment, as the Brown trout spawn earlier than the Rainbow; you may expect to get Brown trout from end of June to end of August, and Rainbow in September or October. The Chilean experts have told me that some years they are earlier than others for both species, some years it may fit in to get one shipment of both, that is late of Brown spawn and early spawn of the Rainbow.

I am enclosing you a translation of some information regarding the introduction of Trout and Salmon into the Streams and Rivers of Tierra del Fuego, which some time ago I sent to the Argentine Government in Buenos Aires.

Trusting the above information will be of interest to you and should you require any other information I will be very pleased to help you in any way.

Yours sincerely,



ACCOUNT OF THE PLACING OF SALMON, RAINBOW TROUT, SALMO FARIO AND FONTINALIS, IN THE RIVERS AND STREAMS OF TIERRA DEL FUEGO.

F O N T I N A L I S

* for Minnows read Alevins (newly hatched trout)

YEAR	1935	7.465	Minnows placed in the river Ewan
"	1936	<u>5.931</u>	" " " " " and tributaries
		13.396	Fontinalis in all.

SALMON (LAND LOCKED SALMON)

YEAR	1936	4.441	Minnows placed in lake Yhuin (The river Clara flows from this lake into lake Fagnano)
"	1937	5.739	Minnows placed in the river Menéndez, which flows into the river Grande.

10.180 Salmon in all.

RAINBOW TROUT

YEAR	1935	38.000	Minnows placed in rivers tributaries of the river Grande.
		8.000	Minnows placed in the river Fuego
		10.000	" " " " " Ewan
		3.089	" " " " " Cullen
		<u>2.000</u>	" " " lake Yhuin
		61.089	Rainbow Trout in all
YEAR	1936	38.490	Minnows placed in the river Chico
		<u>8.000</u>	" " " various streams
		46.490	Minnows in all
YEAR	1937	15.598	Minnows placed in the river Herminia and Menéndez which flow into the river Grande.
		9.000	Minnows placed in the stream Sykorr which flows into the river Ewan, North arm.
		<u>3.000</u>	Minnows placed in various streams
		27.598	Minnows placed in the year 1937.
		135.177	Grand total of Rainbow Trout

SALMO FARIO (*Brown trout*)

YEAR	1935	14.200	Minnows placed in the river Candelaria and McLenan which flow into the river Grande.
		17.138	Minnows placed in the river Fuego
		26.210	" " " " " Ewan
		2.670	" " " " " Cullen
		<u>2.500</u>	" " " lake Yhuin
		62.718	Total Minnows placed in 1935.

SALMO FARIO

YEAR	1937	46.000	Minnows placed in the river Fuego and streams which flow into the river Fuego.
		74.060	Minnows placed in the rivers Candelaris, McLenan, Menéndez, Rasmussen and Herminia, all these rivers flow into the river Grande.
		38,100	Minnows placed in the river Ewan and streams that flow into the river Ewan.
		10.500	Minnows placed in the river Turbio which flows into lake Fagnano.
		10.000	Minnows placed in the river Chico
		10.000	" " " " " Cullen
		<u>32.703</u>	" " " various streams

221.363 Total Salmo Fario placed during 1937 season.

284.081 Grand total of Salmo Fario placed in the rivers and streams of Tierra del Fuego.

All the Minnows placed were 6 weeks old and were in splendid condition and, although transportation took 7 hours, it is believed that no more than 20 Minnows were lost in the operation of placing them, owing to the climate and the cold water, in each case the temperature of the water in the tanks used for transportation was lower than that of the water into which the Minnows were placed.

PROGRESS OF THE FISH DURING GROWTH

RIVER McLENAN; RAINBOW TROUT: In the months of November and December of 1937, the undersigned caught 27 Rainbow Trout, which measured on an average 33 cm., but they were not weighed. All the Trout were replaced in the water without having been damaged, as they were caught with artificial fly, these Trout corresponded to the Minnows placed in December of 1935, and from various of them (the males) a milk like (Milk) fluid squirted when they were taken off the hook. Also I was able to note that some of the females had recently spawned, which proves that the Rainbow Trout can reproduce at the age of 2 years.

Fishing again in the same river, in the months of November and December of 1938, I caught 13 Rainbow Trout which measured an average of 38 cm. in length, they had grown only 5 cm. in one year, at the same time I caught 12 Trout of one year which measured an average of 24 cm. in length, this proved once again that the Rainbow Trout reproduces at 2 years.

RIVER McLENAN; SALMO FARIO: In the months of November and December of 1937, 19 Salmo Fario were caught which measured on an average 25, 1/2 cm. they showed no sign of having spawned, the scales were not examined with a Microscope so as not to damage the fish, they were replaced in the water without having suffered any damage.

In the months of November and December of 1938, 22 Trout were caught, which measured on an average 32, 1/2 cm. they had grown 7 cm. in a period of one year. It was easy to note that the fish had spawned.

COMPARISON OF THE TWO SPECIES; RAINBOW AND SALMO FARIO

I am of the opinion that the Salmo Fario resists these waters better than the Rainbow Trout, and that in time it will be possible to find large and heavy fish when these species have reached the age of four years, probably because the cold water is more appropriate for the Salmo Fario.

On the 15th. of September of the current year, a two year old Rainbow Trout was caught with a net in the estuary of the river Grande, it measured 27 cm. in length, this leads to the supposition that in time we will have a specie of "Steelhead Trout" in these rivers.

RIVER EWAN: SALMO FARIO: In the months of November and December of 1937, 21 Salmo Fario were caught, they measured on an average 25,1/2 cm., this measurement is exactly the same as that of the Trout caught in the river McLenan in 1937.

Unfortunately it was not possible to catch any Salmo Fario in 1938, because we were unable to get to this river very often, owing to the bad state of the roads.

RIVER EWAN: SALVELINOS FONTINALIS: During the months of November and December of 1937, 5 Fontinalis were caught, which measured on an average 36 cm. Again in the month of December of 1938, 3 Fontinalis were caught, one of which measured 43 cm. in length, 30cm. in circumference and weighed 1 kilo 360 gmos. The other two weighed 800 and 900 gmos respectively. This means to say that the fish most appropriate for these rivers is the Fontinalis, as it has better resistance and is bigger and heavier in proportion to the Rainbow Trout and Salmo Fario.

ARTIFICIAL FLYS WHICH WERE UDED TO CATCH THE FOLLOWING SPECIES:

<u>F L Y S</u>	<u>FONTINALIS</u>	<u>RAINBOW TROUT</u>	<u>SALMO FARIO</u>
Prince Charlie	4	18	60
Alexandras	1	24	13
Red Tag		22	2
Wickhams Fancy		9	
Peter Ross	1	4	2
Kill Devil Spider		2	4
Silver Sedge		2	1
Butcher			3
Professor			5
March Brown		3	1
Cardinal	2		
Black Spider			1
Parmachenee Bille			1

Rio Grande, September 30th. 1939.

JG/hrh.

Note.- Minnows should read Alevins.



See fish. Inshore.

A research directed towards the elucidation of the life history of Meginus should be initiated since it is only by such a method that one might expect to be able to evaluate the prospects of an all the year round fishery. On that knowledge a policy of either providing a steady supply of fresh fish or of preserving part of the peak catch would be decided.

All that is known at present is that the fish come into shallow water in summer and probably spawn in the autumn. I am inclined to believe that the accomplishment of spawning may have a connection with the disappearance of the species from waters where the seine net can be used.

2. Set nets, lines variously baited and traps might be used in the earlier stages of the investigation with a view to ascertaining the distribution of the mullet and naturally a series of specimens would be required for examination in order to throw light on the growth, food and reproduction of the species. It might and very probably would be possible to conduct research on the smelt simultaneously although this fish is more irregular in its appearance than the mullet. It may be added that the apparatus mentioned above might provide a supply of rock cod.

3. In order to ~~xxx~~ investigate Munida a series of dredgings or trawlings in the same locality for about a year should be carried out in a selected locality and these should be supplemented by more widespread operations designed to identify the most productive areas. It is to be presumed that Munida would be exported in a tinned state.

4. In view of the lack of the complete results of the trawling survey I hesitate to give an opinion as to prospects regarding it and incline to the view that such extensive operations might well be postponed for the present.

5. The apparatus required for these investigations might in part be provided by the Discovery Investigations. Namely, dredges (heavy) 8-foot beam trawls and nets for both as well as one-metre plankton nets.

Nets suitable for setting and ~~xxxx~~ lines or their component parts for the same purpose could probably be procured from Monte Video and I would suggest that enquiries may be made as to the cost and dimensions of nets having meshes varying from $\frac{1}{2}$ to 4 inches measured along the side of the mesh, of fishing lines of various thickness ~~xxxxxx~~ hooks of various sizes and floats for use

with nets

6. I should like to add that the S.M.O.'s proposal for the erection of a small freezing plant in Stanley advances an idea ~~xxxxxxxx~~ of which the materialisation would greatly assist the development of local fish supplies. I would, however, incline to believe that something rather larger would cost, proportionately, little more but would be very much more useful. The size suggested would, if full hold only about 16 tons of 35 cubic feet each and it would naturally be necessary to leave working space and presumably it is desirable to keep fish and meat separate.

7. I would suggest that the prospect of the most immediate ~~ix~~ results ~~xxxxxxxxxxxx~~ are presented by the proposal to investigate the mullet since it is known that this fish occurs in quantities which are considerable from the point of view of local consumption at least and that, on the available evidence, encouraging prospects attend the proposal to introduce trout.

J. D. Hamilton.
S. Nat.

DECODE.

TELEGRAM.

(18.)

From His Excellency the Governor,

To Secretary of State for the Colonies.

Despatched : 19th August, 19 40. *Time* : ...

Received : 19 ... *Time* : ...

No. 83. Following for Secretary Discovery Committee begins.

Grateful if Committee could forward 2 eight feet beams
trawls 2 heavy dredges 3 2 metre horizontal tow nets and
3 1 metre horizontal tow nets with bridles for all as
requisite and spare nets for each type as available.

Please communicate with Crown Agents for early shipment.

ends.

GOVERNOR.

H.C.S.

(17.)

The gear to which I referred yesterday, verbally, for which I suggested a telegram might be sent to the Discovery Committee is—two eight foot beam trawls, two heavy dredges three two metre horizontal tow nets and three one metre horizontal tow nets, with bridles for all as requisite and spare nets for each ~~XK~~ type as available. I am enquiring locally with reference to towing wires.

J.E. Hamilton
S. West.
(J.E. Hamilton)

17.viii.40

DECODE.

492

TELEGRAM.

From.....SECRETARY OF STATE.....

To.....H. E. THE GOVERNOR.....

Despatched : 19 Time :
Received : 30th August 19 40 Time : 01.40

No 88.

With reference to your telegram No 83 following from the Secretary of Discovery Committee begins.

Following are being despatched from Discovery Stores:-

- (1) 1 heavy dredge, 1 one metres spare net, 1 stream lined lead.
(2) 3 of each of the following:-

two metres ring two metres ~~of~~ net two metre bucket and clamp, one metre ring and net one metre bucket and clamp.

The other items do not appear to be available from our stores but it should be possible to make the bridle for the two metre net locally. Do you wish the outstanding items to be specially obtained.

ends.

G. T. C.

19.

Rec'd

DECODE.

20

TELEGRAM.

From His Excellency the Governor,

To Secretary of State for the Colonies.

Despatched : 6th September, 19 40. *Time* : ...

Received : 19 ... *Time* : ...

No. 92. Your telegram No. 88 following for Secretary
Discovery Committee begins. Government grateful for
stores being despatched. No further action need be
taken with regard to outstanding items ends.

GOVERNOR.

FIRST SHIPPING ADVICE.

The Crown Agents for the Colonies have to report the undermentioned shipment: —

21

CLOSURES:—

Bill of Lading
Suppliers Invoice *Will follow.*
Packing particulars—as detailed below.

26th August, 1940.

Reference *Su/4683*

Indent No.

Special A/c. *Discovery Committee.*

Dept.

Consignee

Marked { Reqn. *Su/4683*
C↑A
O.H.M.S.
O.A.C.
PORT STANLEY.

Nos. CASES. BALES. GROSS WEIGHT. DESCRIPTION OF STORES.

HC.5901/3 2 1 G. 1. 16. Nets, etc.
and 3 Loose Iron Dredge Rings

Steamer *Lafonia*
From Dock *Liverpool*

Cost of packing and delivery f.o.b. ^{HC.} 5902/ 17.9 Super: feet at 11d per foot £ s. d.
Description of packing 5903 Waterproof Paper & Wood 16 3
£ 16 3

Nos.	CASES.	BALES.	
HC.5901	-	1	3 one metre nets on rings.
" 5902	1	-	3 T Y P Nets, 1 one metre net and 6 Buckets and clamps.
" 5903	1	-	1 Heavy dredge and one streamlined lead
			3 Loose Iron Dredge Rings.
			<u>Measurements.</u> <u>Gross Weight.</u>
HC 5901			3/7 3/6 0/8 0. 5. 26.
HC 5902			3/1 2/5 2/- 1. 3. 24.
HC 5903			5/7 1/9 1/1 2. 1. 22.
			<u>Rings</u> 6/7 6/7 3" 1. 0. 0. each.

All packages should be weighed immediately on receipt and before a receipt is given to the Shipping Coy., and, if the weight of any package differs to any appreciable extent from the weight marked on the outside of the package and given in these packing particulars, the Bill should be endorsed to that effect.

Sir,

I, Sub. Lt. (E). G. H. Ingham, R.N.V.R., have been asked by Dr. Hamilton to comment on the proposed scheme with regard to developing the fishing in the Falkland Islands waters.

Previous to the commencement of hostilities, I was employed for a number of years in the fish trade in Fleetwood. I have a fair knowledge of inshore, deep-sea, western ocean, and far northern fishing and I beg to submit my views on the project.

- (1.) I agree that the supply of fish to the local people is very irregular. I beg to suggest that, given a regular supply of fresh fish, the population would need little encouragement to purchase same, with a view to varying the menu, and supplying the vitamins that fish alone can give. (At present, the staple diet seems to be mutton and potatoes).
- (2.) I agree that there is an abundance of fish to be caught, and that there would be no doubt whatever of supplying, not only enough, but enough to provide for salting, smoking, with a view to export it to a suitable market.
- (3.) Up to the present there seems to have been very little trawl fishing carried out in these waters, and I agree that until this type of fishing is tried, that only two types of fish (mullet and smelt), are available in any quantity. I beg to suggest that trawl fishing would result in a larger variety of fish, and there would be no difficulty in inducing the local people to consume same.
- (4.) At present there is, as far as I know, no suitable vessel to carry out this work. Therefore, until such a vessel is acquired, the fishing must be confined to creeks and shallows within easy reach of Port Stanley. I am confident that, should such a vessel be acquired, that more varieties of fish, and larger quantities would be available.
- (5.) I beg to suggest that the type of vessel required would be a 60 foot decked type, with a diesel engine of approx 44 H.P. with accommodation for about six hands. Hold space of sufficient size to take two tons of fish. Wheelhouse to be decked in. Water pumps for washing and cleaning the fish. (At present the fish on sale is as it was caught, that is, unwashed and containing guts. I beg to suggest that all fish caught should be gutted and washed before it enters the hold. I also would suggest that if the fish were filleted, there would be a greater sale locally.
- (6.) In conclusion, I beg to suggest that there is every possibility in the scheme and that every effort should be made to acquire a suitable vessel with a view to building up an export trade in the future. Until such a vessel is forthcoming, nothing further can be done to develop the scheme.

Transport
to Market?

I remain,
Yours respectfully,

G. H. Ingham

S/L(E). R.N.V.R.
Base Engineer Officer,
Falkland Islands Naval Base.

CIRCULAR.



Downing Street,

19th November, 1943. (26)

Sir,

✓ [Signature]

I have the honour to refer to Mr. Malcolm MacDonald's circular (2) despatch of the 30th of November, 1939, notifying the appointment of a Standing Committee of the Economic Advisory Council to be known as the Committee on Colonial Fisheries, and intimating that it would not be possible for the Committee to function during the period of hostilities.

2. The subject of fisheries research was recently considered by the Colonial Research Committee. The Committee were of the opinion that it offered a most promising field for scientific investigation involving continuous work for many years in various parts of the Colonial Empire. Such investigation would provide a basis for administrative action with a view to the control and development of Colonial fisheries, and the Committee hoped that it would also lead to an increase in the consumption of fish in the Colonial Empire, in view of its dietetic value. The Committee realised that owing to the scarcity of qualified staff it would not be possible to adopt any comprehensive measures for the development of Colonial fisheries until after the war. They suggested, however, that early steps should be taken to draw up plans for the post-war period, and to this end they recommended that I should appoint a Fisheries Adviser and an Advisory Committee, on the lines of the Committee referred to in the first paragraph of this despatch, who would collaborate with him in advising me on all matters connected with Colonial Fisheries.

3. I have accordingly appointed Dr. E.S. Russell, O.B.E., D.Sc., F.L.S., Director of Fishery Investigations, Ministry of Agriculture and Fisheries, to be my Fisheries Adviser on a part time basis, and have arranged for the disbandment of the Colonial Fisheries Committee of the Economic Advisory Council and appointed in its place a Colonial Fisheries Advisory Committee. The Colonial Fisheries Advisory Committee is constituted as follows:-

Chairman: The Duke of Devonshire, K.G., Parliamentary Under-Secretary of State for the Colonies.

Vice-Chairman: Mr. G.L.M. Clauson, C.M.G., O.B.E., Colonial Office.
Mr. C.N. Hooper, Clerk of the Fishmongers' Company.
Dr. S. Kemp, Sc.D., F.R.S., Director, Marine Biological Association of the United Kingdom.

Mr. Morley Neale, Member of the firm of Messrs. Neale and West, Steam Trawler Owners, Cardiff.

Mr. J.R. Norman, Deputy Keeper, Department of Zoology, British Museum (Natural History).

Dr. C.F.A. Pantin, Sc.D., F.R.S., Reader in Invertebrate Zoology, Cambridge University.

Dr. B.S. Platt, M.Sc., Ph.D., in charge of investigations into nutrition in the Colonial Empire under the Medical Research Council.

Dr. G.A. Reay, Director, Torry Research Institute, (Department of Scientific and Industrial Research), Aberdeen.

The Officer Administering
the Government of

Dr. E.S. Russell

FALKLAND ISLANDS

Dr. E.S. Russell, O.B.E., D.Sc., Fisheries Adviser to the
Secretary of State for the Colonies.
Mr. J. Thomson, O.B.E., Chief Inspector of Fisheries, Ministry
of Agriculture and Fisheries.
Mr. R.S. Wimpenny, Naturalist, Ministry of Agriculture and
Fisheries.
Dr. E.B. Worthington, Ph.D., Director, Freshwater Biological
Association of the British Empire.
Mr. R.H. Burt, Colonial Office (Secretary).

4. The Committee held their first meeting on the 20th of October, and decided upon a general programme of work. They propose after reviewing the general position in the Colonial Empire to direct their particular attention first to the question of a comprehensive programme of research into Colonial fisheries and the staff required for that purpose and for general administrative duties, and secondly to specific problems regarding particular Colonial fishing industries which are awaiting their attention. I shall of course address you specially on any matter under the consideration of the Committee which relates to the territory or territories with which you are concerned.

5. The formulation of a long term fishery policy for the various Colonial Dependencies involves research into the life, history and habits of the fish populations concerned, and Colonial Governments will not be able to reach final decisions on such matters, until considerable progress has been made with this research. It is clear that the programme of research can best be framed by viewing the Colonial Empire as a whole; and accordingly the Committee are considering what research stations are required, and where they can best be situated, in order to meet these requirements. I will inform you of their proposals and invite your comments on them in due course, but you will appreciate that there is no prospect of putting such a comprehensive scheme into effect until qualified marine biologists are released from war service and new entrants into the profession have completed courses at the Universities and fisheries institutions in this country. Meanwhile a certain amount of preliminary work is being done in various areas, for example the West Indies and West Africa, where experts are already available.

6. The practical development of fisheries to meet the special needs for food created by the war is however an urgent matter, and it is not necessary or desirable that it should wait for the initiation of the full research scheme, though no doubt it will not be as effective as it would have been, if fuller knowledge were available. Any action taken now can be reviewed in due course, when such fuller knowledge becomes available. The matter has already received the attention of a number of Colonial Governments, but the creation of the Committee and the appointment of Dr. Russell puts me in a position to give more help in this matter to Colonial Governments than has been possible hitherto. In particular if Colonial Governments desire to pursue this question and are in a position to assign a suitable officer

or

26th April, 1944.

Dear Ingham,

I am most grateful for your note on the subject of establishing a fishing industry here. They will be most useful to us.

Yours sincerely,

Reference. Red 28.

- 1 and 2. Support what has been frequently stated by myself.
3. Correct as far reference to sparcity of trawling goes.
4. That is so, even the fishing close inshore is extremely restricted without a decked vessel.
Certainly larger quantities.
5. This type of vessel would be admirable for fishing work.
In most of the work I foresee, so large a crew would not be necessary but extra accomodation would be useful on occasion.

This is a very useful contribution to the literature of the subject and strengthens the thesis that a decked vessel is necessary in order to exploit our fish resources. We can not say what would be the production of trawling until it is tried, except that Munida would almost certainly figure largely in the catch.

James H. Miller

37

Colonial Office,
Downing Street,
S.W.1.

18th September, 1944.



FALKLAND ISLANDS

NO. 34

Sir,

I have the honour to inform you that on the 19th of November, 1943, I addressed a circular despatch to the Officers Administering the Governments of the Colonies, including the Falkland Islands, notifying them of the appointment of Dr. E.S. Russell as my Fisheries Adviser and also of the appointment of a Colonial Fisheries Advisory Committee to advise me on questions connected with the development of Colonial Fisheries. I enclose a copy of the despatch in case the copy sent to you has been destroyed in the recent fire in the Colony.

2. I should be obliged if you would furnish me with any available information regarding the fisheries of the Falkland Islands, other than the whale and seal fisheries, together with any suggestions which you may have for the development of the local fisheries.

I have the honour to be,
Sir,
Your most obedient
humble servant,

(Sgd) OLIVER STANLEY.

GOVERNOR,
SIR ALAN CARDINALL, K.B.E., C.M.G.,

ADDITIONAL OBSERVATIONS.

The fisheries of ~~our~~ area may be properly divided into off-shore and in-shore.

These may be conveniently defined as being outside and within territorial waters respectively.

1. Off-shore fisheries.

Investigated by the "Discovery" Committee (R.R.S. William Scoresby").

A survey was made with a commercial otter trawl &c. in the area of comparatively shallow water forming a triangle between the Falklands, Cape Horn and the Gulf of St. George.

The final report is probably now in the press but has not yet arrived here. Brief statements made from time to time suggest that fish, especially hake, may occur in commercially paying quantities.

This fishing could only be worked by a steam (? or motor) trawler, and its development would require a considerable capital from the beginning.

2. In-shore fisheries.

No adequate investigation of these have ever been made *here*.

It is therefore proposed that investigations should be initiated with the object of examining the inshore fish resources and developing them (a) for local consumption and (b) for export if possible. I think (a) is adequately dealt with in this memorandum.

As for (b), as a result of tentative enquiries in Montevideo I have had requests for samples of salt herring and of dried smoked mullet both with a view to trade. In this connection it should be said that research into methods of curing would be carried on pari passu with active fishing.

It will be observed from Lt. Ingham's letter Red. (28) that he takes a very favourable view of the possibilities of a fishery in the Falklands and suggests a larger vessel than the Penguin.

I feel however that he does not attach sufficient importance to the use of seine and set nets, this is perhaps natural as he is pre-eminently a trawler man.

My paragraphical comments are at Red (31).

The scheme of which the draft is attached is based on re-engining and rigging the Penguin. Mr. Ingham suggests a vessel of 60 ft. and this would indeed provide more accommodation but I consider that the use of the Penguin would permit a much earlier start. It would reduce the initial cost by the substantial sum which would have to be spent in bringing another vessel from Europe.

It might however be possible to buy a suitable hull in Montevideo or Punta Arenas if a larger vessel were decided on. Builders in Punta Arenas have a reputation for stout craft.

The schooner "Porvenir" is reputed to have cost £500 there (second hand). She was of course sailed across.

The garrison has been greatly reduced since September 1943. At present strength a consumption of 1 cwt. per week might be estimated. This is less than 1 lb. per head per week but the garrison has a desultory source of supply in one of the local spare-time amateurs.

J. S. Ingham
7-XII-44

39

GOVERNMENT HOUSE,
STANLEY,
6th February, 1945.

FALKLAND ISLANDS.
No. 14.

Sir,

Red 33

With reference to your despatch, No. 34 of the 18th December, 1944, I have the honour to submit the following concerning the possibilities of the local fisheries of the Falkland Islands.

2. Offshore fishing has been reported on very fully by the late Mr. E. R. Gunther of the "William Scoresby". I have no copy and I understand the Discovery Committee hold it together with all details. It has not yet been published.

3. As regards inshore fishing the population here is so scanty (the only available market is at Port Stanley with a population of less than 1500) that even a single boat could not be made payable. It must be remembered that apart from professional fishing there is the amateur who would compete in that market.

4. In these circumstances I would not feel justified in advising any expenditure from the Colony's Funds in the extensive research which would be necessary to ascertain the extent of the fish supplies and the possibilities of their exploitation. Should, however, such research be considered worth-while from an Imperial point of view merely in order to increase

THE RIGHT HONOURABLE
G. F. C. SCURLEY, P.O., M.P.,
SECRETARY OF STATE FOR THE COLONIES.

37

increase the knowledge of the fish resources of the Empire any undertaking would appear to be more suitable for organization and financing either by the Imperial Government.

I have the honour to be,
Sir,
Your most obedient,
humble servant,

(Sgd) A. W. CARDNALL