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FALKLAND ISLANDS DEPENDENCIES SURVEY

PROGRAMME OF WORK

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PROGRAMME OF WORK 1960/61.

List of F.I.D.S. Bases

<u>Letter and Name</u>	<u>Locality</u>	<u>Occupied</u>	<u>Remarks</u>
A Port Lockroy Wiencke Island	Lat. $64^{\circ}50'S$ Long. $63^{\circ}31'W$	16 Feb'44 - 8 Apr'47 23 Jan'48 - 14 Feb'49 24 Jan'50 - 11 Feb'51 15 Dec'51 - onwards	Ionospheric Research
B Deception Island South Shetland Islands	Lat. $62^{\circ}59'S$ Long. $60^{\circ}34'W$	6 Feb'44 - onwards	Meteorological Station. Air strip prepared and air base established 1959/60 season.
C Cape Geddes Laurie Island South Orkney Is.	Lat. $60^{\circ}42'S$ Long. $44^{\circ}34'W$	22 Jan'46 - 17 Mar'47	Abandoned in favour of a base on Signy Island.
D Hope Bay Trinity Peninsula Graham Land	Lat. $63^{\circ}24'S$ Long. $56^{\circ}59'W$	12 Feb'45 - 4 Feb'49 4 Feb'52 - onwards	Survey, geology, field geophysics etc. Destroyed by fire 8 Nov'48 Re- built in new position Feb'52.
E Stonington Island Marguerite Bay Graham Land	Lat. $68^{\circ}11'S$ Long. $67^{\circ}00'W$	24 Feb'46 - 12 Feb'50 10 Mar'58 - 7 Mar'59	Survey, geology etc. Proposed location for air supported field work.
F Argentine Islands Graham Land	Lat. $65^{\circ}15'S$ Long. $64^{\circ}16'W$	9 Jan'47 - onwards	Geophysical Research Site previously occupied by the British Graham Land Expedition 1935-6. New hut erected in 1955.
G Admiralty Bay King George I South Shetland Islands.	Lat. $62^{\circ}05'S$ Long. $58^{\circ}25'W$	25 Jan'47 - 23 Mar'47 18 Jan'48 - onwards	Meteorological Station. New hut built Jan.1950 replaced April 1956. To close early 1961.
H Signy Island South Orkney Is.	Lat. $60^{\circ}43'S$ Long. $45^{\circ}36'W$	14 Mar'47 - onwards	Meteorological Station and biological centre. New hut built April '55.
J Prospect Point Graham Coast Graham Land	Lat. $66^{\circ}00'S$ Long. $65^{\circ}21'W$	2 Feb'57 - 23 Feb'59	Survey and geology; closed when work completed.
M Grytviken South Georgia	Lat. $54^{\circ}16'S$ Long. $36^{\circ}30'W$	1 Jan'50 - 1 Jan'52	Meteorological Station. Now operated by local administration
N Anvers Island Graham Land	Lat. $64^{\circ}45'S$ Long. $64^{\circ}05'W$	28 Feb'55 - 10 Jan'58	Survey and Geology Closed when work completed.
O Danco Island Danco Coast Graham Land	Lat. $64^{\circ}44'S$ Long. $62^{\circ}38'W$	2 Mar'56 - 22 Feb'59	Survey and Geology closed when work completed.

<u>Letter and Name</u>	<u>Locality</u>	<u>Occupied</u>	<u>Remarks</u>
V View Point Duse Bay Graham Land	Lat. $63^{\circ}32'S$ Long. $57^{\circ}24'W$	11 May '53 - onwards	Advanced field hut and depot for parties working from Base D - Hope Bay.
W Detaille Island Loubet Coast	Lat. $66^{\circ}52'S$ Long. $66^{\circ}46'W$	24 Feb '56 - 1 Apr '59	Survey, Geology Meteorology etc. Work completed.
Y Horseshoe Island Marguerite Bay Graham Land	Lat. $67^{\circ}49'S$ Long. $67^{\circ}17'W$	11 Mar '55 - onwards	Survey, geology, and meteorology. Holding party in occupation during 1960 and meteorology abandoned.
Z Halley Bay	Lat. $75^{\circ}31'S$ Long. $26^{\circ}36'W$	16 Jan '56 - onwards	Geophysical research. Royal Society I.G.Y Base taken over by F.I.D.S. in Jan. 1959

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INTRODUCTION

1. With the prospect of continued international scientific co-operation in Antarctica developed under the International Geophysical year, and encouraged by the Agreement reached at the Washington Conference, it has become possible to frame the future programmes with a view to concentrating available resources upon the more important land stations. The closing down of bases is expected to take place at the rate of one a year for the next three years in which time the build-up of facilities at the other bases should be complete.

The bases scheduled for closing down are:-

Base 'G' - Admiralty Bay	1960/61
Base 'A' - Port Lockroy	1961/62
Base 'D' - Hope Bay	1962/63 (Possibly 1961/62)

The permanent stations to be retained are:-

Base 'B' - Deception Island	Meteorology, main air facility.
Base 'E' - Marguerite Bay	Meteorology, field work southwards supported by air in spring and summer.
Base 'F' - Argentine Islands	Meteorology, Geophysics, Ionospherics.
Base 'H' - Signy Island	Meteorology, Biology.
Base 'Z' - Halley Bay	Meteorology, Geophysics, Glaciology.

Work on Adelaide Island does not necessarily depend upon the establishment of a hut, and Base 'T' has therefore not been included in either category.

2. The difficult ice conditions in 1959/60 seriously affected operations off the west coast of Graham Land, south of latitude 65°S, for the second season running. The plan to establish Base 'E' by air had to be abandoned when the KISTA DAN failed to reach the ice edge in Marguerite Bay, nor could any attempt be made to establish Base 'T' on Adelaide Island. The nearest it was possible to establish an air field on the sea ice was about five miles south of the Argentine Islands, some 200 miles from Base 'Y', Horseshoe Island. In these circumstances it was something of an achievement when the Otter not only relieved the six men at Base 'Y' but flew in four men as a holding party together with minimum supplies. The advantages of retaining a foothold in Marguerite Bay are:-

- a. Landing grounds can be marked and weather reports issued for flying operations in 1960/61.
- b. Sea ice observations will be continued and information about local conditions can be passed to ships.
- c. The destruction of a number of dogs has been avoided.

In addition the holding party is carrying out a limited programme of field work and research in the areas of Base 'Y' and Base 'E'.

3. Modifications in the programme for 1959/60:-

(i) Aims not achieved

- a. The establishment of Base 'E' and air base on Stonington Island.

- b. The establishment of Base 'T', Adelaide Island.
- c. The relief and re-supply of Base 'Y', Horseshoe Island.

3. (ii) Modified projects introduced

- a. Holding party of four men left at Base 'Y'.
Restricted programme in Survey, Geology and Medical Research with the party occupying Base 'Y' or Base 'E' according to circumstances.
- b. Base 'T' party installed in "Wordie House", Winter Island, Argentine Islands. It is planned to fly them in to Adelaide Island in August/September, 1960, in order to carry out their original programmes of survey and geology until relieved by sea or air in February or March, 1961. In the meantime they will assist with the Base 'F' survey scheme whenever possible.
- c. Aircraft put ashore at Deception Island, where they are being repaired and overhauled ready for flying to the Argentine Islands in the spring of 1960, whence flights in support of Base 'T' and the Marguerite Bay party will be made. It is proposed to establish the main air facility permanently at Deception Island, and a hangar will be built there in 1960/61 and the base installation enlarged.
- d. Surplus men from the southern bases were absorbed where possible at other bases, so improving potential output.
- e. After careful consideration it was decided to discontinue Synoptic Meteorology at Hope Bay, and to maintain instead the autographic records with daily checks against the standard instruments. Apart from the fact that the weather at Hope Bay is extremely localised and therefore of limited value for forecasting purposes, the advantages to be gained by this arrangement are as follows:-
 - i. All men will be free to support field work throughout the year.
 - ii. In consequence of (i) it is anticipated that Base 'D' can be closed down at an earlier date than was originally supposed.
 - iii. Less traffic on the meteorological wireless schedules, so facilitating the handling of the more important information.

The autographic records, which will be sent out annually, will be available for reference if required in connection with climatology.

4. Plans for 1960/61 include:-

- a. The establishment of Base 'E' with a programme of survey and geology. Synoptic Meteorology will also be carried out in view of the decision not to re-open Base 'Y'. Air support will be provided in the spring and summer, and the aircraft withdrawn annually to winter at Deception Island for shelter and overhaul.
- b. The establishment of Base 'T', if access by sea is possible. Otherwise work on Adelaide Island will continue by flying in a field party in the spring.

4. c. The closing down of Base 'G' Admiralty Bay. The retention of this base could only be justified on meteorological grounds and, since only one station in the South Shetlands is required, Deception Island will serve the purpose.
- d. Expansion at Base 'F', Argentine Islands, to make room for the ionospheric equipment to be installed there in 1961/62. The change can then be made from Port Lockroy with the least interruption in the records.
- e. Expansion at Base 'B', Deception Island, to accommodate aircraft and air base personnel. In 1960/61 a hangar and workshops will be erected and more powerful generators installed to provide the extra power required. Repairs and modifications will also be made to the existing base buildings.
- f. The replacement of living accommodation at Base 'Z' Halley Bay, as the first stage in a programme of restoring the whole installation for continued occupation.

SCIENTIFIC PROGRAMME(a) Meteorology(i) Stanley Meteorological Office

Daily synoptic observations at the eight main hours with an additional observation at 2300 GMT to conform with South American practice. Pilot Balloon ascents are made whenever possible. Observations from the bases and South Georgia are collected and re-broadcast as FICOLS (Falkland Islands Collectives) as set out in the tables given below. Upper air data is collected from the Stations at Stanley, Argentine Islands and Halley Bay and included in the FICOLS.

The Stanley Forecasting service issues local forecasts and Whaling Bulletins two or three times daily as required. Whaling forecasts are issued from South Georgia in the whaling season. (for further details see Annual Reports of the Falkland Islands Dependencies Meteorological Service.).

Collection of Observations

<u>Time of Collection (GMT)</u>	<u>Contents (Times GMT)</u>
0000	2100, 2300, 0000 Synops
1200	0300, 0600, 0900 1200 Synops 0000 Temps.
1800	1500, 1800 Synops 1200 Temps.

Ficol Broadcasts

<u>Contents (Times GMT)</u>	<u>Time of Transmission GMT</u>	<u>Transmission Main (kc/s)</u>	<u>Frequencies Second (kc/s)</u>
2300 Synops 0000 Synops (Halley Bay)	0100	12300	9100 } 5100* }
0000 1200 Synops 0000 Temps 1800 Synops 1200 Temps	1300 1900	19800 19800 } 12300* }	9100 9100

(a) Pilots and ships are broadcast as available

(b) 0000, 0300, 0900, 1500, 2100 GMT observations are not re-broadcast.

* substitute frequency for 1st May to 30th September.

(ii) Dependencies Stations

Full surface observations are made at South Georgia and at Bases B, F, G, H and Z as at Stanley. Pilot Balloon ascents are made whenever possible.

At Bases F and Z and Stanley upper air measurements of pressure temperature and humidity are made once daily. At Base Z Decca wind-finding equipment is installed.

It is proposed to close Base G, Admiralty Bay, in the 1960/61 summer and to re-open a station at Base E, Stonington Island. The full surface observation and reporting programme was discontinued at Base D, Hope Bay on 1st May 1960. Climatological records are, however being kept.

(b) Geophysical Programme

(i) Argentine Islands (Base F)

- a. Geomagnetism: Continuous recording of the three components of the magnetic field H, D and Z by La Cour variometers. A normal and an insensitive set running at 15 mm/hour are used. Absolute values from 3 Q.H.M.'s, a Kew pattern unifilar magnetometer and 2 B.M.Z.'s.
- b. Solar Radiation: Total (sun and sky) and diffuse (sky only) radiation by two Moll-Gorczynski solarimeters. Measurement of the net radiation flux using a Kew ventilated flux plate radiometer
- c. Ozone: Daily ozone measurement with a Dobson spectrophotometer. Umkehr observations for vertical distribution when conditions are suitable.
- d. Seismology: Continuous recording using Willmore pattern seismometer and $\frac{1}{4}$ second galvanometers. Three components recorded

(ii) Halley Bay (Base Z)

- a. Geomagnetism: Continuous recording of the three components of the magnetic field H, D and Z by la Cour variometer. A normal and an insensitive set running at 15 mm/hour are used. Absolute values from 3 Q.H.M.'s P.I.C magnetometer, 2 B.M.Z.'s and Earth inductor.
- b. Solar Radiation Total (sun and sky) and diffuse (sky only) radiation by two Moll-Gorczynski solarimeters. Measurement of net radiation flux by Kew ventilated flux plate radiometer.
- c. Ozone: Daily ozone measurement with a Dobson spectrophotometer. Umkehr observations for vertical distribution when conditions are suitable. Also Brewer's electrochemical surface ozone measurement. The ozone sonde has been discontinued awaiting a new model.
- d. Auroral Observations: Visual auroral observations and the continuation of auroral photography with the all sky camera.
- e. Cosmic Dust: Specially prepared plates are exposed to collect cosmic particles with a view to determining the nature and the rate of precipitation of this material. In addition collections are made from ice cliffs and crevasse walls to establish precipitation rates in earlier years.

(iii) Stanley

- a. Solar Radiation: Total (sun and sky) and diffuse (sky only) radiation by two Moll-Gorczynski solarimeters. Measurement of net radiation flux by Kew ventilated flux plate radiometer.
- b. Seismology: Continuous recording using Willmore pattern seismometer and $\frac{1}{4}$ second galvanometers. Three components recorded.

(iv) Field Geophysics

Sea-borne Magnetometer Survey (Summer 1960-61)

- a. An automatic recording proton resonance magnetometer, which has been installed in RRS SHACKLETON, will be used for this survey of the earth's total magnetic field in the Scotia Arc area.
- b. The programme is a continuation of reconnaissance observations which were started in the summer of 1959-60. This will include as many long traverses as possible across the Scotia Arc and the Scotia Sea, and from the Falkland Islands to the several island groups situated on the Scotia Arc.
- c. Detailed work commenced in 1959-60 in the Bransfield Strait and South Shetland Islands area will be completed. A detailed survey will be carried out in the South Sandwich Islands and South Orkney Islands areas.
- d. Wherever possible the magnetic survey observations will be linked to the gravity observations (see section 2).

Gravity Survey

- a. A new Worden gravimeter (No.556), fitted with a geodetic dial and thermostatic control, will be used for the observations in this programme.
- b. Repeat observations will be made at stations on the international gravity network (Montevideo and Buenos Aires international airports), at Port Stanley and at main Stations in the Dependencies (Deception Island; Hope Bay; Signy Island; Grytviken, South Georgia, etc.) where observations were made in 1959-60. It is anticipated that at least 10 repeat observations will be made in the Dependencies.
- c. As many observations as possible will be made at sites in the South Sandwich, South Orkney and South Shetland Islands, and on the west coast of Graham Land and offshore islands. At the end of the season a list of all readings will be made available.

Magnetometer Survey (Trinity Peninsula 1961)

- a. The equipment to be used for this survey is an Askania Gfz torsion magnetometer for field observations, and an Askania Gfz field balance with an automatic continuous recording unit for routine base observations such as diurnal variation.
- b. The 1960 Programme, which was limited to determining the vertical component of the earth's magnetic field in the area of Trinity Peninsula immediately west of Duse Bay and the north and west coasts of James Ross Island, will be continued systematically southward on the peninsula.

c. Survey and Geology at Bases

The work proposed for the 1961 winter is as follows:

Topographical Survey at the Bases.

As ice conditions in the summer 1959/60 prevented the re-opening of Base E and the establishment of Base T, much of the survey programme for these two Bases remains the same as that proposed for the winter 1960.

From Base D control for the air photography of the Trinity Peninsula north of the East and West Russell Glaciers is nearly complete.

Hope Bay - Base D

The completion of triangulation to control the air photography down Prince Gustav Channel to Cape Longing, and the extension of this triangulation to Larsen Inlet, Cape Sobral and Mt. Elliott and as far south and as far inland as the country and photography permit.

The filling in of detail for mapping at 1:200,000 of certain gaps left from previous surveys down the east coast of Graham Land, namely

- (i) The north-western corner of the Drygalski Glacier ($63^{\circ}40'S$. $61^{\circ}10'W$) 1:200,000 sheet 6460.
- (ii) The southern limits of Green Glacier ($65^{\circ}40'S$. $62^{\circ}20'W$) 1:200,000 sheet 6562
- (iii) The area between $65^{\circ}20'S$ and $66^{\circ}00'S$, where prominent features have been observed from the coastal traverses, but where a considerable amount of detail between the coast and the edge of the plateau remains to be mapped. 1:200,000 sheet 6562.

The extension of the Trinity Peninsula triangulation scheme southwards from the West Russell Glacier towards Charcot Bay if time permits. This work might be done if geological work is being undertaken in the same area. The extension should be linked to permanent rock stations in the Trinity Peninsula scheme, and it should include permanently beaconed stations on the coast, which could at a later date be used in a tellurometer survey across the Sound.

Stonington Island - Base E

Survey work will only be carried out in the vicinity of Stonington until the field hut has been established near Fossil Bluff; after that time it will be concentrated in George VI Sound.

- (i) Sledge wheel and compass traverse of the Neny Trough and the remaining unsurveyed areas between Stonington and $69^{\circ}20'S$ and Marguerite Bay and $64^{\circ}30'W$.
- (i i) Reconnaissance and then triangulation in George VI Sound working southwards from Fossil Bluff. The scheme will later be extended east and west of the Sound as air photography is achieved.

Adelaide Island - Base T

A triangulation scheme for the island has been worked out by the Base T party wintering in the Argentine Islands from a study of the air photography.

- (i) Reconnaissance followed by triangulation will begin on the east side of the Island where photographic cover exists. This will be linked to the existing triangulation in Laubeuf Fjord and Hanusse Bay.

Geology

Hope Bay - Base D

Completion of detailed geological mapping (scale 1:25,000) of the east coast of Trinity Peninsula from View Point south to Larsen Inlet, and the west coast from Cape Ducorps south to Cape Kater. The immediate aim of this work is to produce geological maps on scales of 1:25,000, 1:100,000 and 1:200,000 with adequate sheet descriptions. The detailed description of the geology will be published in due course as F.I.D.S. Scientific Reports. Detailed instructions have been issued to the geologists.

Stonington Island - Base E

Reconnaissance geological mapping will be carried out on the east and west sides of King George VI Sound from an advance base which is to be established in the vicinity of Fossil Bluff (lat. 71°20'S.). Certain key areas on Alexander Land and on the mainland, where the stratigraphy or field relations between rock units are particularly well developed, will be mapped in detail at the discretion of the geologists in the field. The work on Alexander Land is to be mainly palaeontological/stratigraphical whereas that on the mainland will be petrological. Detailed instructions will be issued to the geologists assigned to this area.

Adelaide Island - Base T

A reconnaissance geological survey of the northern and central parts of Adelaide Island will be carried out in conjunction with the topographical survey reconnaissance. Detailed work will be done in areas of particular interest and as time permits. Detailed instructions will be issued to the geologists.

d. Summer Tellurometer programme 1960-61

The summer programme is to concentrate on the survey of the Joinville Island Group making a tellurometer/theodolite traverse round the Group and linking the Island to the Trinity Peninsula triangulation scheme. Both RRS SHACKLETON and H.M.S. PROTECTOR will participate in the survey, and in support of the programme some hydrographic work will be carried out. If work is impossible in this area an attempt will be made to obtain some control of the Elephant Island Group. The tellurometer should be returned to the United Kingdom at the end of the summer.

e. Hydrographic Survey

H.M.S. PROTECTOR will assist in improving the Charts generally during her passages in the Falkland Islands Dependencies area. She will also make extensive passage soundings as will the RRS JOHN BISCOE and SHACKLETON during their normal cruises. RRS SHACKLETON will also undertake Hydrographic work in Antarctic Sound and to the east of Joinville Island.

H.M.S. OWEN, a Survey Ship, will be making regular hydrographic surveys in South Georgia between October 1960 and March 1961. She will also be making long runs of Soundings and investigations of shoals and oceanographical observations in the area.

f. Ionospheric Work

Port Lockroy - Base A

One ionogram reading will be taken each hour and fully reduced using the standard daily work sheet. The standard monthly summary of each parameter will continue. Audio frequency "whistles" will continue to be recorded. Absorption measurements were discontinued at the end of 1959.

Halley Bay - Base Z

Vertical incidence soundings of the ionosphere were begun at Halley Bay during the period of high solar activity in 1957-58. Since solar activity is now much lower, the continuation of this programme during the coming season will provide an opportunity to study the changes in the ionosphere which accompany changes in solar radiation at Halley Bay.

Ionograms, $h^i(f)$ records, will be made at 15 minute intervals but, in addition, records will be made at 4 minute intervals during the sunrise and sunset periods so that rapid changes can be investigated.

The most important data will be transmitted to the United Kingdom by radio. Complete tables of data will be available on the return of the staff to the United Kingdom at the end of the season.

g. Glaciology

Deception Island - Base B

The programme will be specifically directed towards the study of selected patches of ice in the vicinity of the base hut. Observations on accumulation and ablation, temperature profiles, snow stratigraphy, mapping of the ice-rock boundaries throughout the year, will be carried out so that the budgets of glaciers with different geographical aspects can be compared with each other.

Argentine Islands - Base F

The 1960 programme will be continued in 1961. This is a systematic study of the stability, movement and nourishment of the small ice caps which occur on several of the Argentine Islands group. Selected ice caps will be surveyed at regular intervals and these observations will be correlated with movement studies. Temperature profiles will be recorded and the annual budget for each selected ice cap determined by accumulation/ablation studies.

Signy Island - Base H

A comprehensive programme of systematic observations is to be carried out on the McLeod and Orwell Glaciers. The observations include accumulation and ablation studies to determine the annual Budget, movement measurements and temperature profiles at six altitudes and to a depth of 10 metres on each glacier, and snow stratigraphy by pitting and coring methods. Both glaciers and their associated moraines will be mapped on a large scale (1:1,000); monthly records of the extent of snow and ice cover are to be kept.

Halley Bay - Base Z

The 1960 programme of systematic observations in the vicinity of Halley Bay will be continued in 1961. This includes studies on the movement of the ice-shelf, snow stratigraphy, temperature profiles and temperature measurements at 10 metre depths, accumulation/ablation studies, determination of the annual budget, observations on sastrugi and their formation, and observations on the erosion of the snow surface by wind.

Other Bases

Elementary glaciological observations, mainly on accumulation and ablation will be done as part of the meteorological programme. Descriptive studies on moraines and associated glacial features, such as fringing glaciers, will also be carried out.

h. Ice Observations

Ice observation programmes from bases, ships and aircraft will be maintained. These observations are linked with the ice probability study being carried out at the Scott Polar Research Institute, Cambridge.

j. Oceanography.

Argentine Islands - Base F

The sea level and long wave recorder will continue to be used. During the summer the sea level recorder works from a float in a stand pipe while in the winter the recorder is placed on the sea ice and is worked by a line attached to a weight on the sea bottom.

Wave Recording Programme. MRS JOHN BISCOE 1960-61

The installation of the N.I.O. ship borne wave recorder in the JOHN BISCOE will be the same as during the 1959-60 season, except for the installation of an improved power supply. Recordings of long period waves of small amplitude in pack ice and fast ice should show considerable improvement as a result.

The aim of the programme will be:

- (i) To obtain statistical data on wave conditions throughout the voyage.
- (ii) To use any opportunities to collect further data on wave penetration into pack ice and fast ice.

Observations will be made at 0000, 0600 1200 and 1800 whenever the ship is at sea.

Collection of sea water samples for the National Institute of Oceanography

Samples of sea water are being collected at regular intervals during the southern voyages of the JOHN BISCOE and KISTA DAN. These collections form part of a world wide collection organised by the National Institute of Oceanography as a first stage in an investigation into the variations which are believed to exist in the relative proportions of the various dissolved salts.

k. Biology.

Deception Island - Base B.

Ringling of skuas will continue.

Argentine Islands - Base F

Blue-eyed shags and skuas will be ringed.

Signy Island - Base H

Counts of Elephant and Weddell seal populations and of other species will continue. Special attention will be paid to the occurrence and distribution of Fur seals. Tagging of Elephant and Weddell seal pups will provide information on dispersal, longevity and reproduction.

The collection of anatomical specimens from seals will continue for the purposes of a study on development and reproduction.

The soil and littoral fauna investigations are to continue.

The ornithological programme includes a study of incubation in Cape Pigeons and Snow Petrels. Behaviour observations and ringing of the following species will continue.

Giant Petrels	Skuas
Adelie and Chinstrap Penguins	Sheathbill
Cape Pigeon	Snow Petrel.

Halley Bay - Base Z

One full-time biologist at Emperor Bay and another part-time at Halley Bay, are responsible for the biological programme, which is exclusively concerned with the Emperor Penguin.

The normal F.I.D.S. ringing procedure will be followed, 1000 birds per year being ringed and measurements of beak, feet and flippers taken. A captive colony of 50 birds will be analysed for behaviour and gonad size, the relation between the two being of interest. A captive group will also be used for a study of the initiation of hormonal action at the onset of breeding. Artificial illumination will be introduced for this purpose. Diurnal rhythms will be looked for. Mortality and cause-of-death studies will be made.

Experimental work on the metabolism of males in the breeding season will be attempted. This will include series of careful bird weighings, and chemical determinations of salts etc. in excreta, blood and tissue fluid. It is hoped to determine, inter alia, how much nitrogen metabolism occurs and to gain a rough idea of the salt balance situation in the fasting birds. Thermal demand will be crudely recorded by temperature measurements in the 'huddle' and at the skin of the bird. An attempt will be made to determine whether or not daily weight loss changes with thermal demand.

South Georgia

The work concerned with the control of the Elephant seal industry will continue.

Work on the population and reproduction of the fur seal will continue.

1. Medical Research

A programme of Physiological Research will be carried out at four bases by the Medical Officers. Basically it will be a continuation of work done in previous years with extensions to cover aspects which have arisen from the earlier results.

In its broader aspects, the subjects under investigation will be Energy balance, Fluid balance and Fat metabolism with general measurements of Exposure to, and effect of, the Cold environment.

More specifically, variations of the micro-climate during sleep will be assessed together with the concurrent changes in deep body temperature and sweat patterns. Fat metabolism will be investigated by serial blood analyses and subcutaneous biopsy. Combined with the latter, the rate and nature of wound healing will be assessed. Work will be continued into the peripheral effects of cold on tactile sense and on the variations in body weight and skin-fold thickness which occur.

m. Physiography

Plans for future work include more topographical mapping from the R.A.R.E. air photographs, and priority will be given to the mainland area east of George VI Sound.

In addition to plotting the maps of Alexander Land and Adelaide Island work has begun on plotting the flight lines of the R.A.R.E. on the east coast of the Graham Land peninsula. This work is to be continued, and eventually followed by the compilation of detail inland from Mason's east coast ground surveys. A start will be made on a description of the physiography of the areas already mapped.

n. Radio Echo

Proposed programme of radio echo work at Halley Bay 1960-61

The radio echo experiment at Halley Bay 1960-61 will be similar to that conducted by D.P.Harrison during the I.G.Y. The aims of the experiment are as follows:-

- (i) To obtain auroral and meteoric radio echos which will yield information about the nature of the aurorae, their method of formation and their relationships with other geophysical phenomena, particularly magnetic.
- (ii) To study the relations between visual and radio echo auroral forms and occurrences.
- (iii) To investigate further the spatial distribution of auroral reflecting centres and the reflection geometry during the period of declining solar activity.
- (iv) To study the relationship between the occurrence of auroral echos in the northern and southern hemispheres.

The equipment used will be that used by D.P.Harrison during the I.G.Y. with the following major changes.

- a) In place of the previous rotating Yagi aerial system three stationary rhombic aeralis will be used. A new switching equipment will switch the equipment to different aeralis and different sensitivities according to a prearranged switching programme.
- b) There will be some modifications to the electronic apparatus including a new crystal controlled receiver and crystal controlling of the transmitter.
- c) A new timing unit will use the crystal controlled 60 c/s supply from the Union Radio in the Main Hut as a standard and will replace the watch at present used to indicate time on the records.

o. Bryological Study South Georgia

Mr. S.W.Greene of Birmingham University will visit South Georgia to make Bryophyte collections for use in the revision of the Bryophyte Flora at present being carried out by Miss J Brumby under the supervision of Mr S.W.Greene.

Visits will be made to as many parts of the Island as possible, particularly the North and South West coasts and intensive collecting in the Cumberland Bay and Royal Bay areas is proposed. It is thought that collecting will be confined principally to coastal regions, but it is also hoped to examine some of the moraines and inland rock faces at higher altitudes.

It is also proposed to carry out certain detailed observations on the reproductive behaviour of a limited number of mosses in a preliminary attempt to find out how the reproductive cycle relates to seasonal changes. If possible, some weather recordings will be made beside the plants in the field.

In addition to the Bryophyte work, it is hoped to make a thorough collection of all the vascular plants on the Island, and at the same time to collect some Lichens. If time allows, some preliminary ecological observations will be made on the distribution and composition of the land vegetation.

p. Cosmic Dust

Last year's experiment will be repeated using larger polythene collecting bottles of 10 gal. capacity. Nine bottles will be used so that three may be filled with snow from each of three horizons, one near the surface, one near the bottom of the cliff face and the other from some intermediate level.

The sticky plates exposed during 1959/60 will be examined on their return to the United Kingdom.

q. Geomorphology

Deception Island - Base B

A comprehensive programme of systematic observations, including studies on patterned ground, soil profiles, ground temperature profiles, freeze-thaw phenomena and permafrost formation, and hot spring temperature, will be carried out in conjunction with the glaciological programme. It is also hoped to complete soundings in Kroner Lake.

Hope Bay - Base D

There will be a limited programme of descriptive work on moraines and glacial features.

SUMMARY OF SCIENTIFIC PROGRAMMES BY LOCATION

STANLEY FALKLAND ISLANDS

Synoptic Meteorology (surface)
Upper Air Observations (Radio Sonde Unit)
Forecasting Service
Climatology
Radiation (A.M.sponsored programme)
Supervision of Dependencies Meteorological Stations
Seismology (Seismographs operated by D.S.I.R. Radio Research Station)
Aurora and Airglow Observations (visual)

SOUTH GEORGIA

Synoptic Meteorology (surface)
Forecasting Service (Whaling season)
Biology (Elephant Seals and Fur Seals)

BASE A PORT LOCKROY (5 men)

Ionospheric recording
Whistler Observations
Ice Observations
Weather Log
Bird Ringing
Aurora and Airglow Observations (visual)

BASE B DECEPTION ISLAND (12 men)

Synoptic Meteorology (surface)
Ice Observations
Aurora and Airglow Observations (visual)

BASE D HOPE BAY (14 men)

Geology
Magnetometer Survey of Tabarin Peninsula and Prince Gustav Channel
Topographical Survey
Medical Research
Glaciology
Synoptic Meteorology (surface)
Ice Observations
Aurora and Airglow Observations (visual)

BASE E STONINGTON ISLAND (14 men)

Geology
Topographical Survey
Ice Observations
Weather Log
Aurora and Airglow Observations (visual)
Physiology

BASE F ARGENTINE ISLANDS (15 men)

Synoptic Meteorology
Upper Air Observations (Radio Sonde)
Geomagnetism
Ozonometry
Solar Radiation
Seismology
Oceanography (Tides and Long Waves)
Ice Observations
Aurora and Airglow Observations (visual)

BASE H SIGNY ISLAND (6 men)

Synoptic Meteorology (surface)
Ice Observations
Building Research
Bird Ringing
Aurora and Airglow Observations (visual)

BASE T ADELAIDE ISLAND (6 men)

Geology
Topographical Survey
Ice Observations

BASE Z HALLEY BAY

Meteorology
Upper Air Observations (Radio Sonde)
Ozone
Geomagnetism
Ionospheric Recording
Solar Radiation
Aurora and Airglow Observations (visual and with the all sky camera)
Radio Echo
Glaciology
Biology
Human Physiology

SPECIAL SUMMER ACTIVITIES

(a) Joinville, Dundee, Paulet, Rosamel, d'Urville and Bransfield Islands

Topographical Survey by tellurometer parties based on RRS SHACKLETON and assisted by H.M.S.PROTECTOR'S Helicopters.

(b) South Georgia

Hydrographic Survey by H.M.S.Owen
Bryological Expedition by S.W.Greene

(c) RRS SHACKLETON on passage

Hydrographic Survey (by ships officers)
Magnetism (towed proton resonance magnetometer)
Ice Observations
Meteorology
Gravity (observations to be made with Worden gravimeter at all landings).

(d) RRS JOHN BISCOE on passage

Wave attenuation in pack ice
Ice Observations
Meteorology

PART II

DISPOSITION OF STAFF

(a) BASE ESTABLISHMENTS (AT THE END OF THE 1960/61 RELIEF SEASON)

In order to carry out the Scientific Programme the bases will be manned as follows:

BASE A. PORT LOCKROY (Total 5)

General Assistant (Base Leader)
Scientific Assistant (Senior)
Scientific Assistant (Junior)
Wireless Operator
Diesel Electric Mechanic

BASE B. DECEPTION ISLAND (Total 12)

Three Meteorologists
Two Wireless Operators
Diesel Electric Mechanic
Two General Assistants
Two Pilots
Two Aircraft Fitters

BASE D. HOPE BAY (Total 14)

Two Geologists
Geophysicist
Medical Officer
Two Surveyors
One Meteorologist
Two Wireless Operators
Four General Assistants
Diesel Electric Mechanic

BASE E. STONINGTON ISLAND (Total 14)

Two Geologists
Two Surveyors
Medical Officer
Wireless Operator
Four Meteorologists
Three General Assistants
Diesel Electric Mechanic

BASE F. ARGENTINE ISLANDS (Total 15)

Two Geophysicists
Medical Officer
Five Meteorologists
Cook
Two Wireless Operators
Diesel Electric Mechanic
Three General Assistants

BASE H. SIGNY ISLAND (Total 6)

Four Meteorologists
Wireless Operator
Diesel Electric Mechanic

BASE T. ADELAIDE ISLAND (Total 6)

Geologist
Two Surveyors
Two General Assistants
Wireless Operator

BASE Z. HALLEY BAY (Total 24)

Medical Officer
Five Meteorologists
2 Geophysicists
2 Physicists (Aurora and Radio Echo)
Two Ionospheric Assistants
Two Cooks
Glaciologist
Diesel Mechanic
Biologist
Radar Mechanic
Two Wireless Operators
Four General Assistants

(b) HEADQUARTERS ESTABLISHMENTS

1. Stanley

(i) Administration

Secretary F.I.D.S.
Establishments Officer
Establishments Assistant
Shorthand Typist

(ii) Supplies

Supplies Officer
Clerk, Supplies
Clerk, General
Storekeeper
Carpenter

(iii) Dependencies Treasury

Accounting Officer
Accounts Assistant
Clerk Accounts

(iv) Meteorological Service

Chief Meteorological Officer
Chief Forecaster
Forecaster
Senior Scientific Assistant
Six Scientific Assistants
Clerk/Typist
Handyman

(v) Wireless Service

Senior Operator
Four Operators
Two Radio Mechanics

2. London Office

(i) Director's Office

Director
Personal Assistant
Typist

(ii) Recruiting and Publicity

Liason and Publicity Officer
(Administrative Assistant to Director)

(iii) Supplies, Establishments and Welfare

Supplies and Establishments Officer
Equipment Officer
Typist

(iv) Scientific Bureau

Scientific Officer
Scientific Assistant

3. Directorate of Overseas Survey

Survey Instructor
Survey Computer

4. Birmingham University Geology Department (FIDS Section)

Senior Research Fellow
Geophysicist (Research Fellowship)
Research Student
Technician
Part-time clerical and typing assistance

5. Birmingham University Geography Department (FIDS Section)

Physiographer (Research Student)

6. Scott Polar Research Institute

Sea Ice probability and forecasting Officer
Ice Navigation Study Officer

PART III

SHIPS PROGRAMME FOR 1960/61 RELIEF SEASON

(a) RRS SHACKLETON

27th September - 5th November

Voyage out from the United Kingdom via St. Helena, Tristan da Cunha and Montevideo.

10th November - early January

1st southern voyage to:-

- (i) Carry out Geophysical programme
- (ii) Support survey work in Joinville Group
- (iii) Relieve northern bases as ice permits

1st Week January

Refuel in South Georgia and proceed to Stanley for mail and cargo etc.

Mid January - 1st March

Second southern voyage to continue Survey and scientific work.

This voyage will include visits to Bases mainly to deliver mail but staff and equipment may be moved as required.

Early March - 21st March (approx).

Voyage to Cape Town via South Georgia.

21st March - end April

On charter to South African Government. Then return to United Kingdom.

(b) RRS JOHN BISCOE

1st November - 28th November

Voyage out from the United Kingdom via Montevideo.

4th December - 22nd December

1st Southern voyage to assist SHACKLETON in the relief of northern bases and to contact Base F to land mail and change over scientific staff.

22nd December - 28th December

In Stanley

1st January - 3rd January

Optional voyage to South Georgia - Refuel and R/V with SHACKLETON to transfer cargo and staff if necessary.

4th January - onwards

Relieve and re-supply Base F.

Establish Bases E and T.

Scientific work and calls at other bases as required.
A call at each base will be made on the outward passage to Stanley.

Late April

Return to the United Kingdom.

(c) MV KISTA D.N (approximate)

2nd December - 1st January

Voyage out from the United Kingdom via Montevideo.

6th January - 6th February

Voyage to relieve and re-supply Halley Bay via South Georgia.

Early February

Short voyage to northern bases if required.

16th February - 17th March

Voyage to United Kingdom.

(d) H.M.S. PROTECTOR

H.M.S. PROTECTOR will be in Dependencies waters during the following period.

2nd January - 19th January

15th February - 26th February

7th March - 16th March.

(e) H.M.S. OWEN

20th September - 26th November

Voyage out from the United Kingdom via Montevideo

28th November - 1st December

Stanley to South Georgia

15th December - 21st December

South Georgia to Montevideo

2nd January - 7th January

Montevideo to South Georgia

26th March - 31st May

South Georgia - United Kingdom.

H.C.S.

With reference the set of FIDS Summer Season Operations sent you earlier to-day, I regret I omitted to enclose the following "instructions" with it:

"Please find enclosed amendments to the first set of Summer Operations sent you. Replace parts I, II, III and IV. The progress report and page headed "General" should be attached after the pages in the first set dealing with the Shackleton's Scientific and Survey programme. After the "General" page comes the Biscoe's programme for 1st Southern voyage, itinerary and passenger list."

86
FIDS OFFICE
7:12:60

H.C.2



The Falkland Islands Dependencies Survey,
Stanley.

29th December, 1960.

Please find enclosed further Progress Report and instructions
for the "Shackleton's" second souther voyage. These pages should be
attached to the set of Summer Season Operations already held by you.

Slb

r.

PROGRESS OF F.I.D.S. SUMMER SEASON OPERATIONS
1960/61.

(As at the 29th December, 1960, upon the departure of R.P.S. "Shackleton" on her second southern voyage).

Task 'A'

Base 'H', Signy Island - relieved and re-supplied by the "Shackleton" between the 17th December and the 19th December, 1960.

Task 'B'

The Potters Cove geological party was taken back to Base 'G' by the "John Biscoe" on the 23rd December, 1960. All field work has now been completed and the meteorological programme is to cease on the 31st December, 1960.

Task 'C'

Base 'F', Argentine Islands, was relieved and re-supplied by the "John Biscoe" between the 15th December and the 19th December, 1960. The ship met light pack in Penola Strait. She entered Meek Channel from the east and broke up the remaining fast ice in order to reach anchorage.

Task 'D'

The four men at Base 'E' returned from the field on the 20th November. They set out again on the 17th December, for an estimated four week period but this time left the wireless operator at base to maintain reliable communications. They plan to retreat to Base 'Y' as soon as possible after returning from the current journey.

Task 'G'

The majority of stations around the north and east coasts were occupied during the "Shackleton's" first participation and the necessary tellurometer measurements made in conjunction with a sledging party on Joinville Island. Paulet Island was inaccessible owing to heavy pack filling Erebus and Terror Gulf. When the "Shackleton" left the area on the 16th December, parties were left in the field at Welchness (Dundee Island) and on Joinville Island with the intention of carrying out tellurometer measurements in conjunction with parties moving to Ridge Peak and Mount Bransfield from Hope Bay. On the 28th December, the "John Biscoe" moved the party from Dundee Island to Bransfield Island. H.M.S. Protector will attempt to complete the survey by helicopter early in January.

Task 'H'

Completed. See Task 'B'.

Task 'I'

Work has started but there has been no progress report as yet.

Task 'J' / ...

Task 'J'

Trials completed. A full report has yet to be received but it is understood that the island is not judged to be suitable owing to permafrost.

Task 'K'

The "Kista Dan" arrived at Montevideo on the 27th December. She will sail for Stanley after loading the Otter.

Task 'L'

A magnetometer traverse was made from the South Orkneys almost to the Falklands. The "Shackleton" intends to carry out traverses on passage to South Georgia and also to visit points on the South Georgia coast for gravity readings. Then she will move along the Scotia Arc to the South Sandwich group for intensive magnetic and gravity work, ice permitting. There will be two later opportunities if ice precludes work on the first visit.

Task 'M'

Hydrographic survey was carried out by the "Shackleton" in December when she was working with the Joinville Survey teams.

Task 'R'

Although H.M.S. Owen has been delayed some of her complement were landed at South Georgia by H.M.S. Protector. They hope to receive assistance from the "Shackleton" and from seal catchers.

General.

The "John Biscoe" reported 9/10 pack in the Neumayer Channel and Gerlache Strait on the 20th December. She is now on passage to Signy Island and is expected to return to Stanley on or about the 7th January, 1961.

SCIENTIFIC AND SURVEY PROGRAMME

R. R. S. "Shackleton" - 2nd Southern Voyage 1960/61.

(Task letters in brackets)

1. Sea-borne Magnetometer Survey (L (i)).
See 1st voyage programme
2nd voyage aims.

Traverses from Stanley to South Georgia and South Sandwich Islands.

Traverses at the South Sandwich group as ice permits.
Thence via the South Orkneys to the Bransfield Strait and the west coast of Graham Land.

2. Gravity Survey (L (ii)).
2nd voyage aims.

Readings at as many places as possible on the South Georgia coasts and in the South Sandwich Group. Thereafter as opportunity arises.

N.B. The Magnetic and Gravity Surveys take 1st priority on the ship until the 1st call at the Argentine Islands (i.e. approximately three weeks).

3. Survey of the Joinville Group (G).

Whatever remains to be done is to take 1st priority after returning to Hope Bay from the Argentine Islands.

4. Hydrographic Survey (M).

As opportunity arises.

5. Meteorology and Ice Observations.

Routine.

R.R.S. "Shackleton".

Passenger Movements - 2nd Southern Voyage
1960/61 season.

On board at Stanley.

P. Kennett	)	
H. A. D. Cameron	)	Round trip
R. H. C. Gatty	)	

P. H. H. Nelson		Base 'D'
-----------------	--	----------

A. Crouch	)	
F. Preston	)	Base 'T' - Argentine Islands.

Embarkations.

At Base 'H'.

P. C. White		For U. K. via South Africa
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At Base 'A'.

P. H. Leek		
E. Watson		do.

At Base 'G'.

C. M. Barton		do.
--------------	--	-----

At Base 'D'.

G. Edwards		do.
------------	--	-----

R. R. S. "Shackleton".

2nd Southern Voyage 1960/61 Season.

Check List for Relief and re-supply of Bases.

Base 'H' - Signy Island.

Land mail.

Base 'B' - Deception Island.

Land four drums of Base 'E' petrol (NOT AVGAS)

Base 'F' - Argentine Islands.

R.V. with the "John Biscoe" and transfer 126 drums of tractor petrol and 75 drums AVGAS.

Base 'D' - Hope Bay.

Attempt to land sledging stores as far south on the east coast as ice permits and stock up Base 'D' with seals.

F.I.D.S. Summer Season Operations 1960/61.

I. Objects

To relieve and re-supply the British Bases to be maintained in 1961 and to ensure the efficient operation of the planned scientific programme for the 1960/61 summer and the 1961 winter.

II. Sub-division of Major Tasks.

A. The relief and re-supply of "northern bases"

Base A - Port Lockroy
Base B - Deception Island
Base D - Hope Bay
Base H - Signy Island

B. The closing down of Base 'G' Admiralty Bay.

C. The relief and re-supply of Base 'F' - Argentine Islands.

D. The relief of the "Marguerite Bay holding party".

E. The establishment of:

Base E - Stonington Island
Base T - Adelaide Island

F. The relief and re-supply of Base 'Z' - Halley Bay.

G. The survey of the Joinville Island group.

H. The completion of the King George Island geological survey.

I. The erection of an aircraft hangar and workshop at Deception Island.

J. "Whistler" aerial trials at Telefon Bay, Deception Island.

K. The transport of the new Otter aircraft to Deception Island.

- L. (i)
Magnetometer observations.
(ii)
Gravity observations.

M. Hydrographic Survey about the Joinville Island group.

N. Measurements of wave attenuation in pack ice by the "John Biscoe".

O. Aircraft support for Base 'E' and George VI Sound during late summer operations - dependant on availability of second aircraft in time.

P. AVGAS depots and reconnaissance of emergency landing grounds.

Q. Secure Base 'W' and replenish food depot.

R. Hydrographic Survey - South Georgia.

S. Bryological study - South Georgia.

III. Allocation of Tasks.

UNIT	TASK LETTER																			
	A	B	C	D	E	F	G	H	I	J	K	L	L	M	N	O	P	Q	R	S
"SHACKLETON"	X	^J X					/	/	/			X	hXo	X						
"JOHN BISCOE"		/	X	X	X					/	/	tXo			X	/	X	X		
"KISTA DAN"						^J X					X									
R.A.F. UNIT				/												X	/			
BASE 'A'	/																			
BASE 'B'	/								X	X										
BASE 'D'	/						X													
BASE 'E'					/											/				
BASE 'F'						/														
BASE 'G'		^J X						X												
BASE 'H'	/																			
BASE 'T'					/															
BASE 'Z'						^J X														
H.M.S. PROTECTOR							/													
H.M.S. OWEN																			X	
DR. GREENE & ASSISTANT																				X

X = Primary Responsibility

/ = Secondary or support role

N.B. Where X appears twice under one task letter the responsibility is either a joint one or will be handed over from one to the other.

Hence - J = joint

H.O. = hand over

T.O. = take over

IV. Ship Availability - 1960/61 Season.

R.R.S. "Shackleton".

- 12th November - 24th December - Bases north of Argentine Islands.
- 28th December - 23th February - South Georgia - Scotia Arc - Joinville - Northern bases.
- Early March - Prepare and sail for Cape Town - To be confirmed.

R.R.S. "John Biscoe".

- 4th December - 28th December - Argentine Islands - Northern bases - South Georgia.
- January - end March - Marguerite Bay - All Bases - South Georgia.
- (9th January - 20th January - Might be required for collection of Otter from Montevideo and delivery to Deception).
- April - Sail for United Kingdom.

M.V. "Kista Dan".

- 5th January - 5th February - South Georgia, Halley Bay and return.
- 5th February - 19th February - Possibly collect Otter from Montevideo and deliver to Deception.
- 20th February - 20th March - Voyage to United Kingdom.

H.M.S. Protector.

- 9th December - 19th December - South Georgia.
- 6th January - 19th January - Joinville Island - Northern bases.
- 20th February - 28th February - Bases.
- 12th March - 19th March - Bases.
- 29th March - Leave Stanley for north.

R.R.S. "Shackleton".

1st Southern Voyage - 1960/61 Season.

Check List for Relief and re-supply of Bases.

Base 'B' - Deception Island.

Re-supply.

Land steel erectors for work on hangar to start.

Chapman is to assist in laying out hangar foundations.

Base 'A' - Port Lockroy.

Re-supply.

Petermann Island (for Base 'F').

Pick up men.

Land mail.

If possible sort personal parcels taking out those for outgoing men if they wish.

Land boxes containing parcels if Bases F and T are prepared to take delivery at Petermann.

Land whatever fresh meat and vegetables can be made available.

If ship unable to supply a contribution from Base 'D' may be made. Any such contribution to be notified to Stanley.

Base 'G' - Admiralty Bay.

May need some gas oil.

Pick up sledge party who will be at foot of Camp glacier.

The surveyor Barton needs to visit the area between Demay Point and Thomas Glacier. He expects it will not take longer than an hour or two and the ship's launch will be adequate.

A geological party from 'G' should be landed at Potters Cove on the way out.

Base 'D' - Hope Bay.

Re-supply.

View Point cargo to be landed as far south down Gustav Channel as possible.

If particularly ice free cargo may need to be divided into two depots.

Base 'D' has seal to last until mid-February but any readily obtainable would ease the pressure later and 300 are required for the winter.

Base 'H' - Signy Island.

Re-supply.

Collect and land at 'H' the equipment left at Shingle Cove.

Itinerary - R.R.S. "Shackleton" - 1st Southern Voyage 1960/61 Season.

(Dates approximate because of magnetometer work)

ARRIVE	PLACE	TASK LETTER	DEPART
	STANLEY		12th November
19th November	DECEPTION ISLAND	- L(i)	
		- A.I.	22nd November
23rd November	PORT LOCKROY	- L(i) & (ii)	
		- A	24th November
25th November	VICINITY PETERMANN IS.		25th November
		- L(i) & (ii)	
27th November	ADMIRALTY BAY		28th November
		- H, L(i) & (ii)	
28th November	POTTERS COVE		28th November
		- L(i)	
29th November	HOPE BAY	- A	2nd December
		(G	
2nd December	JOINVILLE SURVEY	- (L(i) & (ii)	18th December
		(M	
20th December	SIGNY ISLAND	- A	
		- L(i) & (ii)	21st December
24th December	STANLEY		

R.R.S. "Shackleton".

Passenger Movements - 1st Southern Voyage.
1960/61 Season.

On board at Stanley:

P. Kennett	
H.A.D. Cameron	- Round trip
R.H.C. Gatty	
O.J. Collings	
P. Secker	- Base 'B' - 1st call
B. Hodges	
D.J. Hounsell	- Base 'A' - 1st call
H.E. Chapman	
R.J. Metcalfe	- Joinville Survey
C.A. Lehen (B)	- Base 'D' - 1st call

Embarkations:

At Base 'A'.

J.C. Cunningham for Stanley.

Vicinity Petermann Island.

F. Preston - For Joinville.
A. Crouch

E.C.J. Clapp - For Stanley - provisional, to be confirmed.

At Base 'G'.

N.V. Jones - For Signy - From H to South Georgia by
"John Biscoe".

At Base 'D'.

J.E. Check - For Stanley

K. Allen
I.L. Fothergill
C.G. Brading
J.M. Smith
I.F.G. Hampton - Joinville Survey Party
D.S. Baron
R.A.E. Harbour

SCIENTIFIC AND SURVEY PROGRAMME.

R.R.S. "Shackleton - 1st Southern Voyage 1960/61.

(Task letters in brackets).

1. Sea-borne Magnetometer Survey (L(i)).

Objects and Requirements.

See Programme of Work 1960/61.

Part I - Scientific Programme.

Section (a) (iv) - page 3.

Personnel.

P. Kennett - Geophysicist in charge.

H.A.D. Cameron - Assistant and Technician.

Priority

1st - in nominated areas.

2. Gravity Survey (L(ii)).

Objects etc.

See above.

3. Survey of Joinville Group (G).

Objects.

See - Programme of Work 1960/61.

Part I - Scientific Programme

Section (d) - page 5.

Requirements.

See Survey Programme 1960/61 - issued by D.O.S.

Part I - Summer Programme 1960/61.

Details.

Held by H.E. Chapman.

Method.

Ship, or ship combined with dog sledge party on Joinville Island. To be decided at Hope Bay on arrival. Eastern half of scheme to be attempted first.

Three tellurometers are available and one theodolite per surveyor. Field equipment to be supplied by Hope Bay and supplemented from Stanley as necessary.

PERSONNEL - 1ST LEG.

C.G. Brading	-	Surveyor in charge.
R.A.E. Harbour	-	Surveyor
H.E. Chapman	-	Surveyor
R.J. Metcalfe	-	Surveyor
F. Preston	-	Surveyor
K. Allen	-	Wireless Operator/Technician
I.F.G. Hampton	-	Physiologist
I.L. Fothergill	-	Field Assistant
D.S. Baron	-	Field Assistant
J.M. Smith	-	Field Assistant
A. Crouch	-	Field Assistant

Availability of man-power for season.

NAME (S) = Surveyor	December		January		February		March		REMARKS
	1st $\frac{1}{2}$	2nd $\frac{1}{2}$	1st $\frac{1}{2}$	2nd $\frac{1}{2}$	1st $\frac{1}{2}$	2nd $\frac{1}{2}$	1st $\frac{1}{2}$	2nd $\frac{1}{2}$	
C.G. Brading (S)									Returns U.K.
R.A.E. Harbour (S)									Wintering 'D'
K. Allen									Returns U.K.
I.F.G. Hampton									Returns U.K.
I.L. Fothergill									Wintering 'D'
D.S. Baron									Wintering 'D'
J.M. Smith									Wintering 'D'
F. Preston (S)									To 'T' Possible
A. Crouch									To 'T' extension
H.E. Chapman (S)									to end
R.J. Metcalfe (S)									To 'E' January
K.A. Edwards (S)									To 'E'
S.F. Wright (S)									Wintering 'D'
									To 'T' Possible
									extension
									to end
									January.

PRIORITY.

1st in Joinville Area.

4. Hydrographic Survey (M).

Requirements.

See - Programme of Work 1960/61.

Part I Scientific Programme
Section (e) - page 5.

Method.

Work to be carried out under the direction of the Master in conjunction with Topographical Survey.

Personnel.

Ships Officers.
H.E.Chapman - Surveyor.

Priority.

Subsidiary to Topographical Survey.

5. Meteorology.

Priority - Routine.

6. Ice Observations.

Priority - Routine.

7. Geology - Admiralty Bay (H).

Ship will assist by landing a party at Potters Cove and providing a boat within Admiralty Bay.

FALKLAND ISLANDS AND DEPENDENCIES 10

