250001

65-389.

Report on

A GEOLOGICAL RECONNAISSANCE

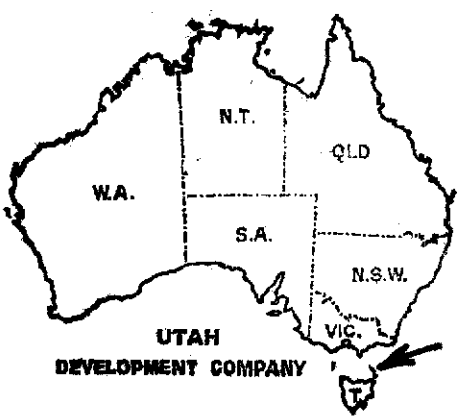
of

CAPE BARREN ISLAND

with

PROPOSALS FOR DRILLING STANNIFEROUS LEADS.

No. 133. May, 1965.



by

P. W. GOSCOMBE,
Geologist.

Winnaleah,
Tasmania.

250002

000

LIST OF ILLUSTRATIONS

PLATES

FIGURES

TABLES

001

List of Illustrations (Cont'd.)

TABLES (Contd.)

250004

002

TABLE OF CONTENTS

250005

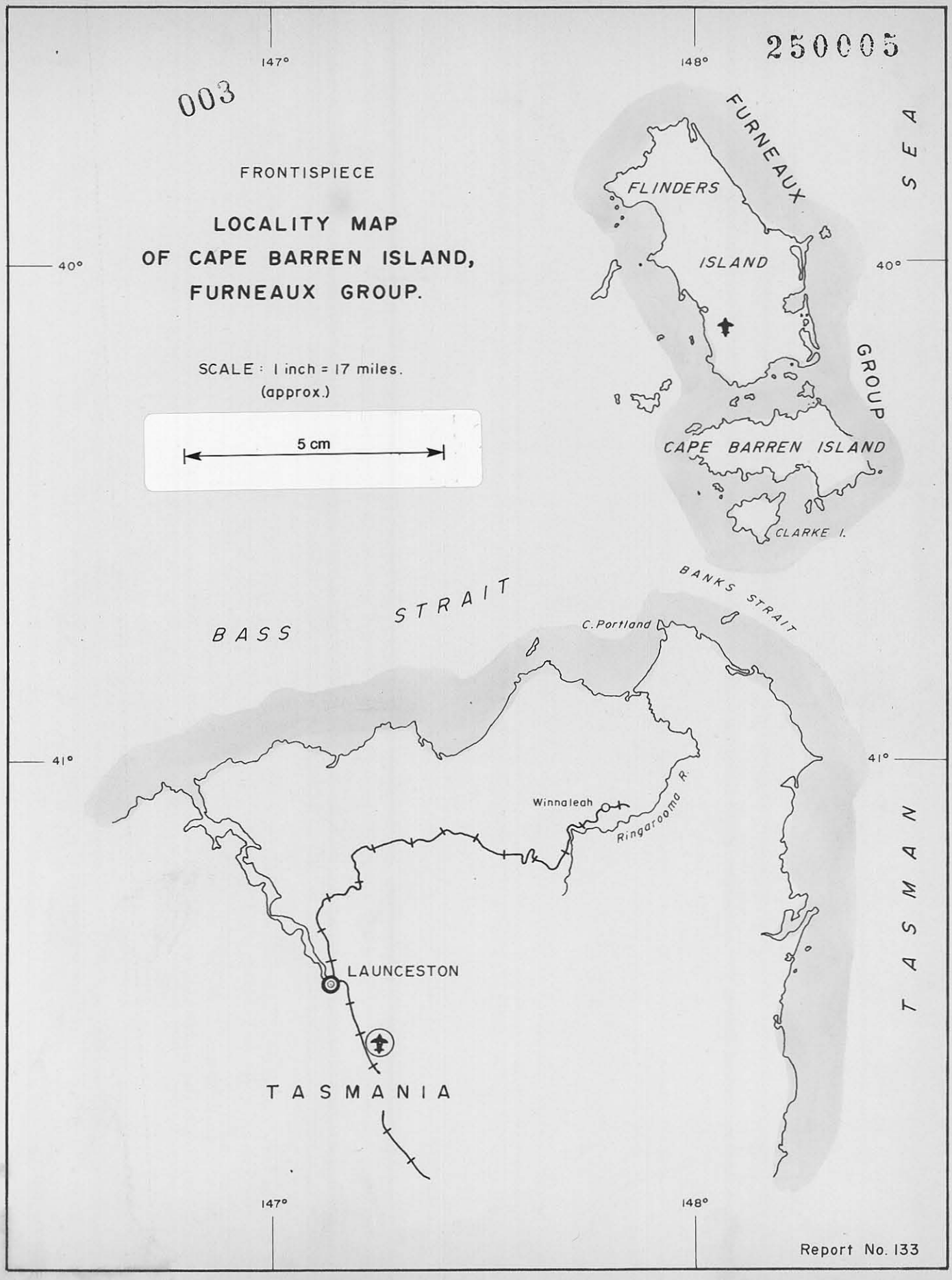
003

FRONTISPIECE

LOCALITY MAP OF CAPE BARREN ISLAND, FURNEAUX GROUP.

SCALE : 1 inch = 17 miles.
(approx.)

5 cm



Report No. 133

INTRODUCTION

GENERAL STATEMENT:

This report records the results of a three week geological reconnaissance survey of Cape Barren Island. The survey is the initial step in a much broader work programme designed to ultimately provide the Company with a sound geological basis for its work in the Furneaux Group.

It was neither possible nor intended that a complete coverage and understanding of the geology of the island be achieved during this survey. The following progress has been made:

(a) Radial line plot of the coastal outline.
(b) Interpretation of the geology from aerial photos.
(c) Surface mapping of the western half of the island.
(d) Examination of all mine workings, prospecting pits and natural exposures of Tertiary fluviatile sediments in the western half of the island.
(e) Production of a geological map at photo scale (Plate 1).

GEOGRAPHY AND ACCESS:

Cape Barren Island, the second largest of the Furneaux Group of islands of eastern Bass Strait, lies five miles south of the main island, Flinders Island, and sixteen miles north of the north east tip of Tasmania (see Frontispiece). It is a rugged, undeveloped island, 172 square miles in area, with granite mountains rising almost straight from the sea, separated by several broad, low lying valleys. Small islands and submerged rocks and shoals are common throughout the surrounding waters, making navigation difficult and often hazardous.

A daily air-service by a major domestic airline connects Launceston with Flinders Island. Access to Cape Barren Island is by light aircraft or small boat. Munro Air Services of Launceston operate a three passenger light aircraft to both islands on a charter basis. A 25 ft. "mail" boat plies between Flinders Island and Cape Barren Island twice weekly, and fishing boats can at times be hired locally within the Furneaux Group.

HISTORY AND ETHNOLOGY:

The Furneaux Group of islands were discovered in 1773 by Captain Tobias Furneaux. They were first occupied in 1779, when Matthew Flinders and Doctor Bass, under Captain Bishop, were sent from Sydney to investigate the sealing prospects in Bass Strait. Bishop established a land base at Kent Bay, on the south coast of Cape Barren Island, where he remained for several months.

The Island became the centre of a flourishing sealing and whaling industry from 1800 to 1835. The men engaged in the industry were generally composed of rugged and ruthless individuals, one of whom was James Munro. In 1824, with a dozen associates, he established a settlement on Preservation Island. Each man in Munro's gang took as a wife a Tasmanian or south-eastern Australian aboriginal woman. Some of the men had large families, and the descendents of these children intermarried for several generations. Other islands became settled, usually by men like Munro and invariably with a large proportion of aboriginal wives. From these families grew a large half-caste population. In 1909, the Tasmanian Government surveyed 6,000 acres of Cape Barren Island as a reservation for these people. Many of the families settled there, and although their numbers have since dwindled and there is no work available to them on the island,they cling to their primitive life there and seldom venture far away.

Farming began on the islands in 1850 when Captain Laing Smith obtained a grazing lease over Flinders Island. Since then, grazing leases have been granted for most of the larger islands, including parts of Cape Barren Island.

ECONOMIC CONDITIONS:

Because there is no regular work available on the island, the majority of the half-caste population subsist on pensions from the Social Services Department. These include unemployment, old age, widows, invalid and war pensions, and child endowment. The people in this group are the mainstay of the community, as islanders who have unsuccessfully sought employment elsewhere will return and expect communal assistance. It is not uncommon for several people to exist on a pension intended for one only.

During a six week "season" in March and April, the whole population, except the old and infirm, go mutton-birding on adjacent islands. Beyond this, they are generally content to remain unemployed. Those who do venture off the island in search of work are seldom away for long.

The high cost of food and limited finance lead to a monotonous diet which does not supply the requirements for healthy growth and development, particularly in the case of the young children. A survey a few years ago found evidence to suggest that "unfavourable characteristics frequently attributed to the Cape Barren Islanders might be caused solely by generations of inadequate nutrition."

The history of tin mining on the island has little bearing on the living conditions and prosperity of the inhabitants, and is described under the heading of "Economic Geology".

FACILITIES:

The island has the following facilities:

Communications: Radio-telephone to Whitemark (Flinders Island) and, weather permitting, a twice weekly mail service.

Medical: The Bush Nursing Society maintains a 3-bed hospital on the island with a double certificated sister in charge. The resident doctor on Flinders Island visits Cape Barren once a month.

Electricity: There is no community supply. The store, school house and hospital have small lighting plants.

Water Supply: Domestic water supply is normally from rain water tanks. Earlier tin operations had difficulty in obtaining sufficient water for continuous sluicing.

Roads: A few dirt tracks exist between the Post Office, the local airstrip and near points on the north and south coasts.

General Services: The landing strip is very rough and suitable only for small aircraft and skilled pilots. The Flinders Trader normally calls at intervals of six weeks. There are three motor vehicles on the island, and no facilities for servicing. Petrol is available only in small quantities, but large quantities may be ordered in advance. The local store carries basic grocery items. It is probable that most of the island, except the rugged granite hills, would be accessible to a four-wheel drive such as a Land Rover or Toyota. No difficulty would be experienced in landing such a vehicle from the Flinders Trader at the main jetty.

CLIMATE:

Weather conditions on Cape Barren Island are temperate during the mid-summer months (November to March) and wet and cold during the remainder of the year. Temperatures and rainfall during the winter months are, however, more moderate than in north east Tasmania, with a lesser incidence of fogs and frosts. Gale force winds and rough seas are common throughout Bass Strait at any time of the year.

The rainfall on Cape Barren Island was registered during the years 1941 to 1961 by the resident school teacher. No other rainfall records are known to exist. The average annual registration was 25.56 inches, with most rain

falling in the months of May, June and July. The precipitation is very erratic, varying from 14 inches to 38 inches. The expectancy of rainfall within five inches of the average is only 50 per cent.

GEOLOGY

GENERAL STATEMENT:

The reconnaissance survey on Cape Barren Island included photo-scale mapping of the western part of the Island (Figure I), and an examination of the mine workings in the Rooks and Modder River areas. The findings were extended to include the whole island by geologic interpretation of recognisable features on the aerial photos. In short, the aim has been to prepare the most reliable and accurate geologic map possible in the available time.

The broader geological features of the island are similar to those described for north east Tasmania. The basement rocks on the island consist of a small remnant of folded and mildly metamorphosed Palaeozoic sediments (Mathinna Beds) on the flank of a discordant body of Devonian granite. The granite is in turn intruded by dykes of Jurassic dolerite. Tertiary rocks include a marine shoreline facies of calc-sandstones and limestones of Miocene age and accumulations of fluviatile tin-bearing sediments in the basement depressions. A wide range of Quaternary terrestial and coastal deposits are also present.

PALAEOZOIC MATHINNA BEDS:

The oldest rocks on Cape Barren Island are a series of sandstones and quartzites lithologically similar to the Silurian-Devonian Mathinna Beds of north east Tasmania, with which they are tentatively equated. They occur in the north east of the island from Apple Orchard Point to Puncheon Point, and for a mile inland. Folded buff, purple and pink current-bedded siltstones, fine-grained indurated sandstones and hard grey quartzites were mapped at Apple Orchard Point. They are all thoroughly injected with veins of milky quartz, reported to contain small quantities of gold in places. Outcrops of Mathinna Beds to the east of Apple Orchard Point were mapped by Blake (1935). Rounded hills between Dover River and Little River contrast markedly with the ruggedness of neighbouring granite peaks. Their physiography is similar to "Mathinna" hills occurring elsewhere in the Furneaux Group and north east Tasmania. Steeply dipping drag-folded beds are discernable along the coastline from Apple Orchard Point to beyond the

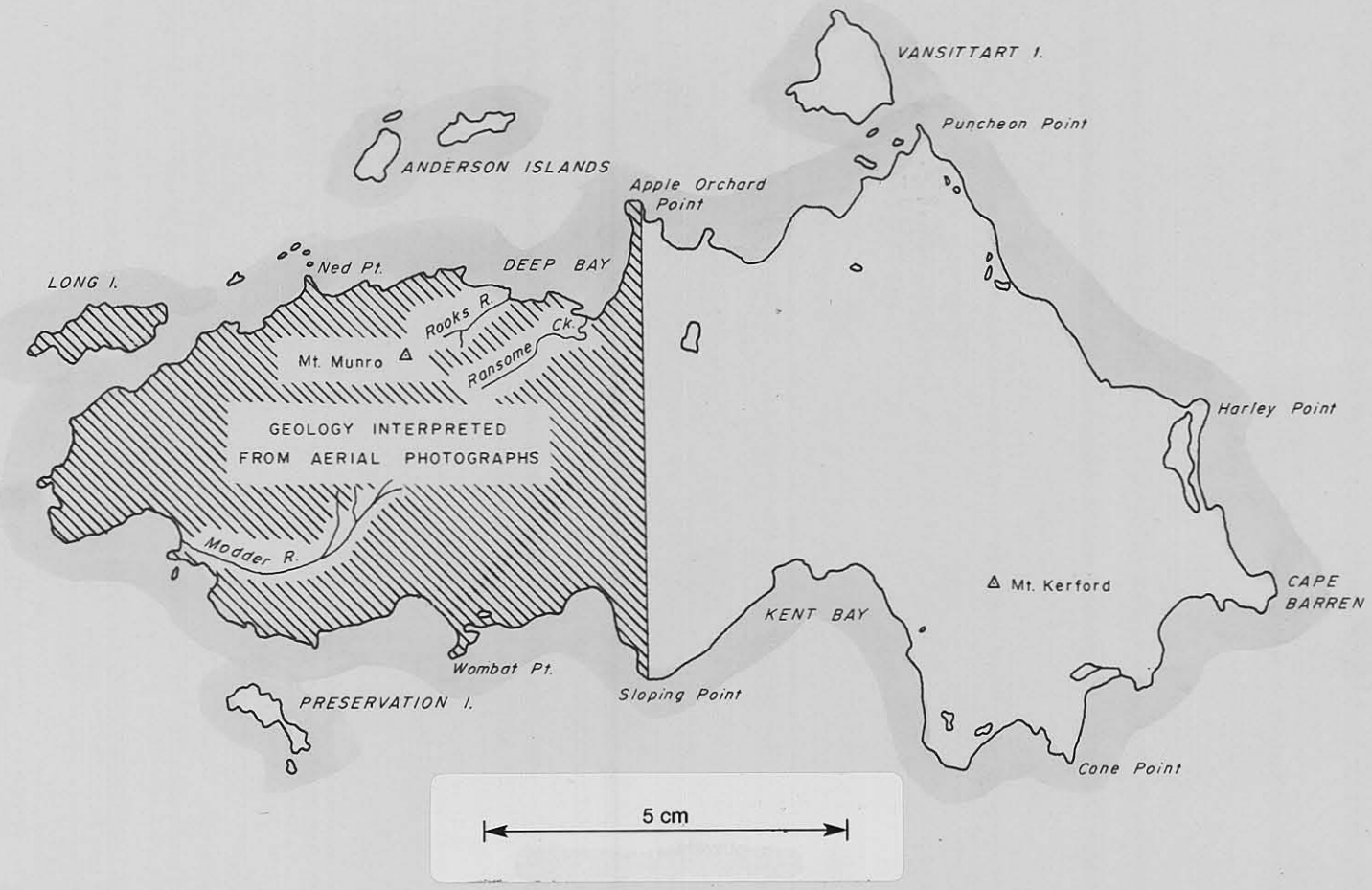


Fig. I

COVERAGE OF RECONNAISSANCE SURVEY OF CAPE BARREN ISLAND

SCALE : 1 inch = 4 miles

Report No. 133

mouth of the Dover River. The southern part of Vansittart Island, Pelican and Puncheon Head Islands, and the extensive shoals off Puncheon Point and the east coast of the island, as far south as Harley Point, are similarly mapped as Mathinna.

TERTIARY MARINE SEDIMENTS:

Banks (1962) makes reference to the occurrence of Tertiary limestones on Cape Barren Island as follows:

> "Calcarina verticulata, Limphistegina lessonic and Planorbulinella plana and other fossils indicating a Batesfordian age (Crespin, 1945: faunal unit 9 of Carter, 1959), occur in a limestone from the township of Cape Barren Island."

Faunal units 7 - 11 of Carter correspond to the Miocene which presumably is the age of the limestones.

Conglomerates, calc-sandstones and limestones of marine origin were mapped over much of the lowlands of western Cape Barren Island. They occur from 50 to 75 feet above sea-level, to approximately 150 ft. above sea-level, as a veneer of sediments lithologically indicative of a regressive shore line facies. They were mapped behind Franklin Inlet and Sandford Bay, along the foot of the west coast range and Mt. Stanley, around the aerodrome, inland from Thunder and Lightning Bay and near Lascar Point on the south coast. Their apparent absence from the valleys of Rooks River, Eastern Creek and Lee River, and along the lower ground between Ned Point and Devil's Chimney, may have tectonic significance. As they do not support a distinctive vegetation or have any vertical relief it is not possible to detect from the aerial photographs whether they occur in the eastern half of the island.

The following lithologies occur in the series:

> Pebble, cobble and boulder conglomerates strongly cemented by a matrix of fine-grained reddish brown ferruginous material.
>
> White, buff and brown, fine and medium grained calcareous sandstones, variously stratified and friable or cemented and extremely hard. The calcareous content consists of finely fragmented shells.
>
> Soft, white, porous, fine-grained limestones composed of pulverised shells.
>
> Soft to moderately hard, white (conquinoid) limestone of preserved shells in a matrix of white calcareous cement.

Hard, dense, white and buff, in places layered, siliceous limestones.

The beds seldom exceed two feet in thickness and commonly interfinger with one another. However, an apparently large thickness of uniformly stratified calc-sandstones showing low-amplitude cross-bedding occurs on a low ridge rising 60 feet out of the plain east of Mt. Stanley. Slumping of the sandstone obscured the true thickness where inspected.

TERTIARY FLUVIATILE SEDIMENTS:

The sediments of this group consist essentially of gravels, sands and clays derived from the granitic rocks of the island and deposited in basement depressions. The sequence is readily divisible into two units on the basis of colour and lithology; the older unit being dark brown to black in colour, carbonaceous and generally more clayey than the younger unit which is off-white to light brown in colour and non-carbonaceous. The older unit is only exposed in the deeper mine workings of the Rooks and Modder River alluvial areas. On the other hand, the younger unit is exposed in numerous pits throughout the valleys of the Rooks, Modder and Lee Rivers, and presumably also the Dover and Rice Rivers, as well as naturally in cliff sections at the mouth of the Lee River, at Sandford Bay, and in the banks of some creeks, such as the un-named creek draining into Thunder and Lightning Bay and the lower reaches of Eastern Creek. A further subdivision of the sediments on the basis of feldspar content in the upper unit is possible and worthy of closer study as the investigation progresses. A limited number of spore determinations made on the sediments revealed a similar assemblage of spores to that reported from the Tertiary lower unit of the north east Tasmanian tinfields (Warin, 1964). It seems reasonable to equate the two. Because of this, and a marked lithologic similarity, a Miocene age ascribed by Harris (1965) to the carbonaceous drifts of north-east Tasmania, is tentatively used for the lower unit on Cape Barren Island.

There is basically, therefore, a lower carbonaceous unit of possible Miocene age and an upper, lighter coloured, non-carbonaceous unit with a noticeably higher feldspar content towards the top. A number of mine faces and cliff sections were logged during the course of the field work, and are recorded in Tables A and B for occurrences in the Rooks and Modder River Valleys respectively, and Table C for other sections. The gross lithologies of the two units are described below.

The Upper Unit:

Comparatively hard, white to light grey, medium to coarse grained sub-angular quartz drifts, with pods of light grey and brown clay, patchy to ample sub-angular to sub-rounded quartz wash and traces of mica.

Light brown to dark brown fine grained drifts with thin bands of coarse drift in places and minor lenticular wash bands.

Hard, cemented, medium to coarse grained, sub-angular drifts, stained in places by black humic solutions.

Cream-coloured, medium to coarse-grained angular to sub-angular sandy to abundantly clayey drifts containing plentiful feldspar and local quartz pebbles.

Fine to medium grained, loosely compacted, white, yellow and brown sand containing patchy sub-angular wash in places and feldspar.

Light grey, brown and black clay.

The Lower Unit:

Dark-brown to black sandy, silty and puggy humic clays with, in places, distributed quartz gravel, small, lenticular mineralised wash horizons, lignitised wood and hard cemented mineralised nodules of pyrite.

Light-brown, dark-brown and black, cross-bedded fine, medium and coarse grained quartz drifts with lenses of sub-angular to sub-rounded mineralised quartz gravel and wash, round pods of brown clay up to 9 inches in diameter, lignitised wood and hard cemented mineralised nodules of pyrite.

QUATERNARY SEDIMENTS:

These consist of aeolian deposits, well sorted marine sediments and alluvial drift.

There is a marked disconformity between the Tertiary drifts and the succeeding one to three feet of dark coloured Quaternary drift. Deep cracks as much as twelve inches deep and four inches wide, filled with mud, were observed at the top of the upper unit in one of the Rooks River mines.

Long attenuated sand dunes, orientated in the direction of the prevailing wind, occur in many low-lying coastal areas, but notably near the mouth of the Modder River and between Deep Bay and the east coast. They consist of compacted, white, fine-grained calc-sand with, in places, hard white calcified roots. Buried soil profiles are not uncommon. A number of cuttle fish were found in a low bank where the Modder River is actively cutting into a dune.

Well sorted sands, reflecting sedimentation in the littoral zone of the Pleistocene seas, were mapped in several places.

Well sorted fine to coarse grained quartz sand, medium to very coarse grained calc-sands, with abundant fragmentary fine to coarse shelly material, and beds of loosely compacted to well cemented complete and partly fragmented shells, occur in a stranded beach east of Lascar Point. Two feet of calcareously cemented finely fragmented shells disconformably overlie late Tertiary feldspathic drifts at Sandford Bay.

Well cemented medium-grained calc-sandstones rest on granite basement at present high tide level in Sandford Bay. They contain cobbles of harder calc-sandstone of a still older, disintegrated beach.

At the back of several beaches are small irregular accumulations of hard, well cemented conglomerate. These are of comparatively recent origin, and were probably thrown up by storms.

Later developments include back-beach transverse dunes such as occur at Thunder and Lightning Bay and Deep Bay, lunettes (Warin, 1964) on the leeward side of the lagoons on the eastern side of the island, stream alluvium and mobile sand. A one to three feet thick veneer of Quaternary alluvium, reported to contain tin (T. J. Barrett, pers. comm.), and topsoil blankets the valleys.

IGNEOUS ROCKS:

Discordant bodies of granitic rocks of Devonian age occur throughout the north-east of Tasmania and the Furneaux Group. On Cape Barren Island they comprise the basement rock in all but a small part of the north-east coast where Mathinna Beds occur. Granite occurs conspicuously in the central highlands, the Mt. Kerford Range and the numerous smaller ranges around the south and west coasts. Although partially concealed in the bordering lowlands and valleys, granitic rocks are exposed along most of the coastline of the island.

The granite is generally evenly textured but a porphyritic type, with tabular crystals of feldspar up to three inches long, is not uncommon. In places the feldspars show a preferred north-south orientation, and the rock in the vicinity exhibits flow structures in this direction. Veins of white, microcrystalline, quartz-biotite granite and pink tin-bearing aplite, probably late stage differentiates of the emplaced magma, occur respectively along the west coast and in the hills above Rooks River. Petrological analysis of the Blue Tier granite of north east Tasmania has shown as much as one per cent

tin (T. Hughes, pers. comm.) in places. However, aplite and greisen veins carry the richest tin values and are regarded as the main sources of alluvial tin. Doubtless, the same conditions apply in the Furneaux Group.

Steep sided dolerite dykes were mapped in Thunder and Lightning Bay, along the west coast, in Sandford Bay and near Lascar Point. In each instance they intrude granite. Similar dykes were mapped in the Battery Bay area and along the coast east of the Dover River by Blake (1935).

STRUCTURAL FEATURES:

The Mathinna Beds of north-east Cape Barren Island are tightly folded and indurated, and exhibit a strong "slatey" cleavage dipping 75° at 240°. Drag folds are evident from the aerial photos and reflect the degree of primary folding that has taken place. It was not possible, however, to determine the style of this folding without additional field observations of the bedding. The joint and cleavage planes of the sediments are thoroughly injected with quartz.

The most common joint directions measured in the granites and the most prominent lineations observed on the aerial photos, fall within the following limits of dip and strike:

Dip:	40° to vertical	Strike:	340° to 40°
	75° to vertical		130° to 150°
	75° to vertical		40° to 60°

a fourth, less apparent direction approximates:

55°	270°

Meridional lineaments, more than a few of which must have originated by faulting, are the strongest and most common. Phenomena observed in the field to have this same directional control include linear flow structures within the granites and dolerite dykes.

Evidence in the field of post-Jurassic faulting was noticed in a dolerite dyke in Sandford Bay where sub-vertical shearing of the dolerite indicates reactivation of a pre-Jurassic fault plane.

Small scale sedimentary structures are common in the Tertiary marine and fluviatile deposits.

TECTONIC HISTORY:

The tectonic setting of the island, as outlined below, is developed from the established and recorded sequence of events worked out for Tasmania.

The Silurian-Devonian Mathinna Beds were laid down towards the end of a period of Palaeozoic sedimentation which took place in a geosynclinal environment. Orogenic movements of the Tabberabberan Orogeny, which commenced either late in the Ordovician or early in the Silurian, folded and mildly metamorphosed the Mathinna Beds. The folded sediments were subsequently intruded, during the Middle Devonian, by granitic rocks, which crop out extensively in north east Tasmania and the Furneaux Group and comprise all but a small portion of Cape Barren Island.

Sedimentation continued throughout eastern Tasmania during the Permian and Triassic, but since that time the State has only partially and intermittently been covered by the sea. If the Permo-Triassic seas extended as far north as the Furneaux Group, the sediments have since been completely eroded away. During the middle Jurassic, huge quantities of tholeiitic magma intruded the Permo-Triassic sequence, mainly as sills but also as steep sided narrow dykes, such as occur in the granite on Cape Barren Island.

At the end of the Mesozoic and early in the Tertiary, a period of tectonism marked by gravity faulting developed horst and graben structures. The north east of Tasmania and the Furneaux Group of eastern Bass Strait were uplifted into a horst. It is thought that repeated movements along these and secondary faults within the "first order" horst periodically rejuvenated the ground, allowing deep erosion to eventually expose the tin bearing Devonian granites of the uplifted blocks. The Miocene sea covered parts of the lowlands of the Furneaux Group and after its regression, and possibly following further uplift of sections of the already highly dissected land form by faulting, tin bearing fluviatile sediments began to accumulate in the valleys.

ECONOMIC GEOLOGY

GENERAL STATEMENT:

Tin was first reported as occurring on Cape Barren Island by Charles Gould in 1871. Since then prospecting has been intermittently carried out in many parts of the island with most activity occurring in the alluviated valleys of the Rooks and Modder Rivers. Small mines were opened up in these localities from time to time but were inevitably forced to close down because of the high costs arising from isolation and an inadequate water supply.

The tin production of the Furneaux Group for the period 1911 to 1935 was 68.855 tons (R. Jack to D. King, pers.comm.), a considerable portion of which must have come from Cape Barren Island. Production from the island since 1947 has amounted to 3.678 tons as follows:

Year	Tons (metallic tin)	Year	Tons (metallic tin)
1948	0.268	1956	Nil
1949	Nil	1957	Nil
1950	0.128	1958	Nil
1951	0.393	1959	0.060
1952	1.093	1960	0.145
1953	0.674	1961	Nil(?)
1954	0.891	1962	0.012

Reports of the results of mining operations, drilling programmes and prospecting by lease-holders are practically non-existent. Frequent reference is made in this section to a generalised account of tin mining on the island by Blake, who visited Cape Barren Island in 1935 during a period of relatively active mining and prospecting.

Rooks River Area: Rooks River rises between Mt. Munro and Double Peak, and drains into Deep Bay on the north side of the island (Plate 1). Numerous pits have been opened up in the various parts of the field since J. Summers and E. Miles first mined tin there in 1882. The largest of these are known by the names of the men who worked them, namely, Webb, Clark and Davis, Watson and Fisher. The walls of these pits are only partially collapsed and overgrown, and are the main source of information on the composition of the drifts, basement topography and the distribution of the tin.

There appears to have been very little serious mining carried out on the field over the last quarter of a century. Two small mining leases (63M, 64M), each of five acres, are currently held by Mr. O. Brodie of Flinders Island. Both are in the vicinity of the old workings of Watson and Clark and Davis.

Mining was carried on by the method of hydraulically sluicing an exposed face in the sediments and recovering the tin in long riffled boxes. Although a network of small dams and water-races was constructed above the workings, there was insufficient catchment to provide water for continuous operation throughout prolonged dry periods.

Webb's Workings, the largest on the field, were operated by E. Webb during the mid-thirties. They appear to have been worked in three stages. The oldest and most northerly part exposes a uniformly shallow veneer of light coloured, upper unit drift which has been mined at random in a number of directions. The highest face occurs on the south side, and is described in Table A, page 1. There is no record of the tin produced.

The newer workings extend much further to the south following the downward trend of the granite basement. The ground surface gradually rises in the same direction exposing a progressively thicker section, which includes the tin bearing lower unit. The basement on the east side of the newer workings is undulating, with a slight fall to the south. On the western side, however, there appears to be a shallow channel bearing 180 degrees. The leading face is in this channel, and has a depth of 23 feet 6 inches. A description of this face is given in Table A, page 2.

Blake reports that sluicing was carried out under a head pressure of 60 feet, and that the tin was recovered in a 380 ft. long sluice box. The tailings were led away to the river by way of a deep tail-race cut into granite.

The recovered tin is reported to have been moderately fine grained, and occurred mainly in the gravel and wash lenses of the lower carbonaceous unit. Samples from some of these lenses yielded a small amount of fine tin on panning. The gravels and wash are individually quite small in extent, are seldom more than a few inches thick, and invariably composed of material no larger than small pebbles. They are distributed intermittently throughout the full section of the lower unit and, collectively, represent a large, potential source of tin.

Tin also occurs in the upper unit, but not to the same extent as in the lower unit.

Blake has the following to say on the matter of tin production from Webb's workings:

> "Nodules of hard cemented pyrite from the bottom layer, often rich in tin, are stacked and, in time, become partially disintegrated by weathering agents, when portion of the tin is liberated. The latter is passed through screens and streamed, while the remainder is treated to several applications of boiling caustic soda to remove the pyrite. After streaming, three grades of tin concentrates are collected, the firsts average 74% tin, the seconds 72% tin and thirds 51% tin.
>
> Over a period of seven months, 14 tons 14 cwt. 3 qurs. 18 lb. of tin concentrates were won from an estimated amount of 12, 154 cubic yards of drifts....."

This is approximately 2.72 lbs of concentrates per cubic yard. Assuming an average grade of the concentrates of 63%, the metallic tin content of the ground was 1.7 lbs. per cubic yard.

The Clark and Davis Workings are a short distance to the south-east of Webb's pit. The drifts are generally similar to those at Webb's, but are considerably thicker and contain granite and quartz wash cobbles six inches in diameter. The leading face section is described in Table A, page 3. Basement was not reached at the face of the pit where the thickness of sediments exceeds 39 feet 3 inches. At the northern end of the pit, the exposed floor has the same fall to the south as at Webb's. However, the increase in thickness of the drifts appears to be greater than expected from the slope of the floor and the rise in ground level. Furthermore, the drifts have a consistent and measurable dip of 5 degrees at 160 degrees in the face and contain, even if only sporadically, some large wash cobbles. Altogether, the evidence suggests that a comparatively large channel, possibly the main lead, extends across the front of the face.

Watson's Workings, which are practically adjacent to Clarke and Davis', are largely collapsed and overgrown. Blake states that 20 ft. of fine sands and grits overlie 10 ft. of cemented drifts containing granite pebbles four inches in diameter. The granite floor was not exposed during mining.

Near the mouth of Rooks River are some comparatively large workings, thought to be those operated by G.G. Fisher during the mid-thirties. Although said to contain 15 - 20 ft. of drifts, the greatest thickness was found to be closer to 15 ft. An undulating granite basement is exposed in the western and deepest part of the workings. A measured section from this area is described in Table A, page 4.

The drifts exposed in this pit differ significantly from those further upstream at say Webb's workings in that they contain abundant feldspar. In the absence of an age determination by spore analysis, this is regarded as evidence of later deposition. There is no record of tin production from this pit.

It is verbally reported by local residents that more than one exploratory drilling programme has been carried out in the Rooks River area. A brief search of the Mines Department records has produced information, of a generalised nature, concerning only one drilling programme. This was carried out on Gunter's leases on Ransom Creek, a tributary of the Lee River which drains into Deep Bay two miles south-east of Rooks River (Plate 1).

The records state that "27 bores were sunk, 9 in Prospecting Area, 6 in granite formation, the rest in the 240 acre sections, Nos. 6, 7, 8 ~~and 10~~ are 10 chains N.E. of 11545 in the gully." Six bores in granite formation are in 11524 m - all show small trace of tin.

The location of prospecting area 6 and the 240 acre section could not be determined but mineral lease 11545 is shown in Fig. II.

Tin values are quoted for 10 of the 27 holes drilled, and it is assumed that the other holes proved to be in barren ground.

No. of Bore	Depth (ft.)	Value (lbs/cu.yd./70% conc.)
6	77	0.076
7	44	0.234
8	45	0.316
11	70	0.577
12	55	0.259
13	57	1.178
14	59	0.188
18	59	0.148
19	56	0.521
24	41	0.205

Modder River Area: The Modder River rises on the south side of Mt. Munro and drains in a south-westerly direction to Thunder and Lightning Bay. The tin field is located near the headwaters of the river. Comparatively little mining has been carried out on this field, but Barrett, the present leaseholder, reports that the area has been drilled on more than one occasion.

The first tin was produced by Barrett and Graham in 1909, from shallow Quaternary drifts which bottomed on a hard cemented layer. Most activity has taken place near the junction of Centre Creek and the Modder River, where two sluice faces and two adits, in various stages of collapse, indicate the intermittent mining that has taken place. This area is referred to by Barrett as the "old workings". The "new workings" are twenty chains further up Centre Creek and consist of a sluice face cut into the western bank of the Creek (Fig. III). T.J. Barrett currently holds two acre and five acre mining leases (51M and 73M) over the old and new workings respectively.

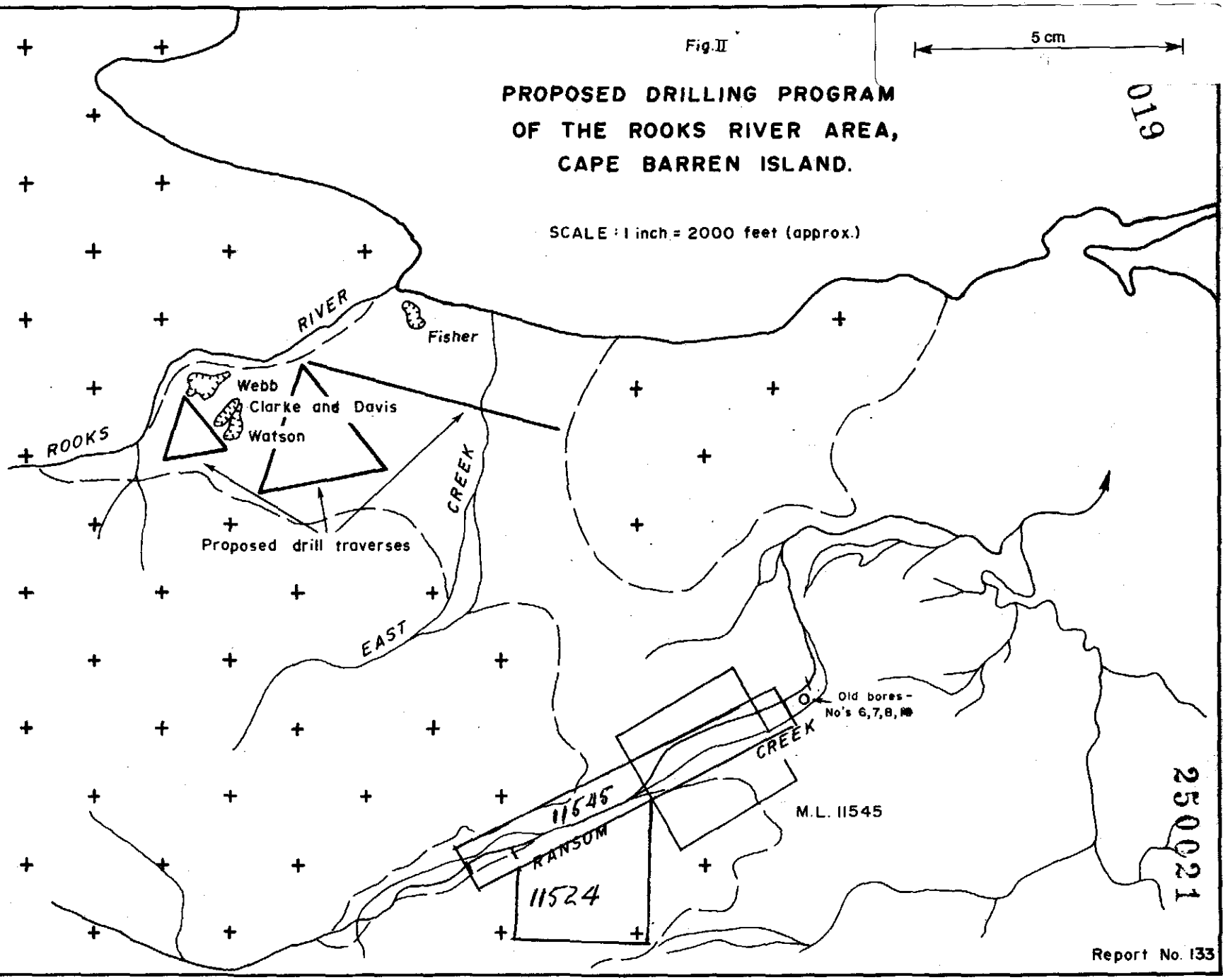
The two-fold subdivision of the Tertiary drifts into an upper light coloured unit, and a lower, dark coloured, carbonaceous unit, with a thin capping of Quaternary drifts, is recognised throughout the field. Grains of feldspar are common and occur well down in the sequence. The drifts generally, and the upper unit

Fig. II

PROPOSED DRILLING PROGRAM OF THE ROOKS RIVER AREA, CAPE BARREN ISLAND.

SCALE : 1 inch = 2000 feet (approx.)

5 cm



019

250021

Report No. 133

250022

020

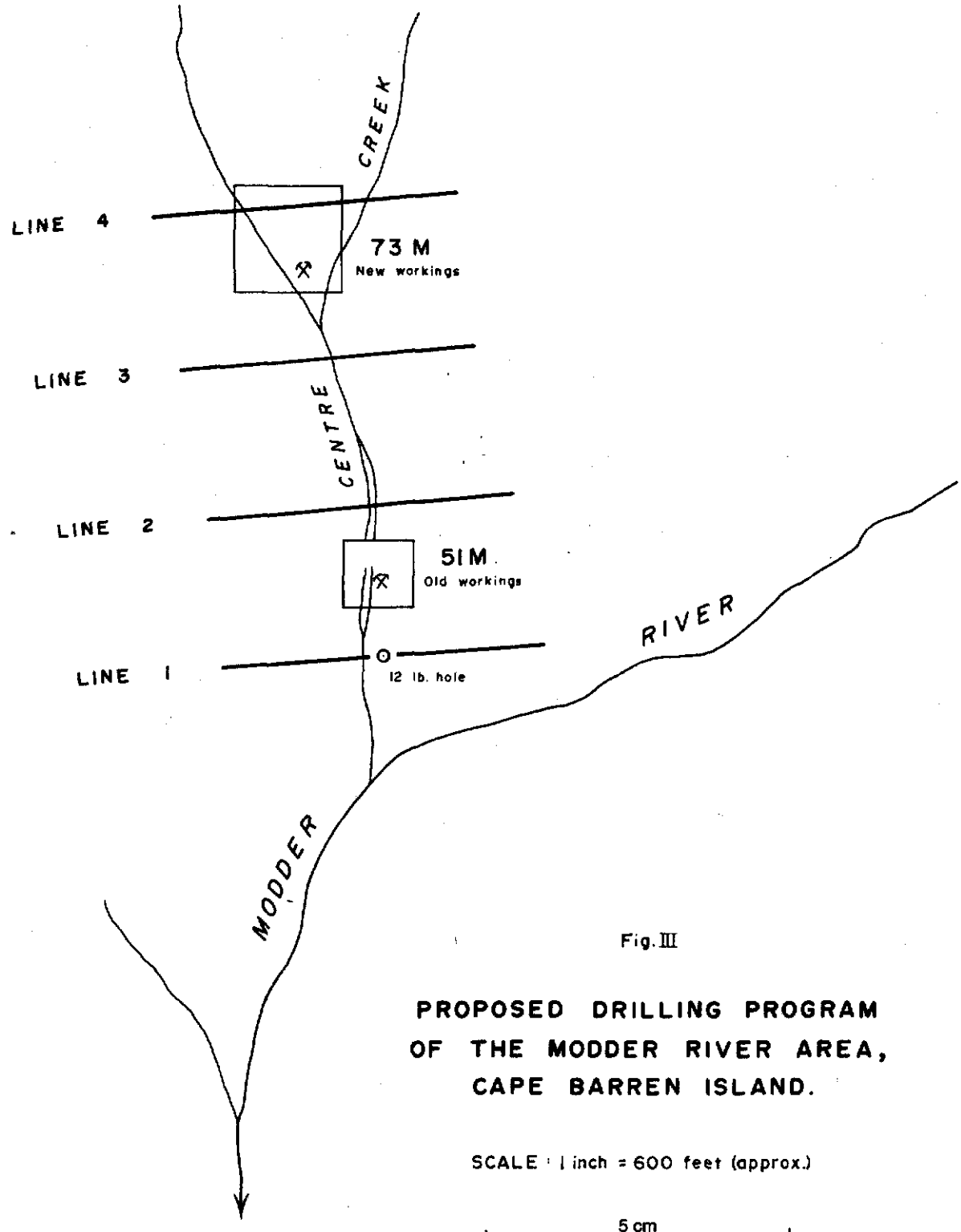


Fig. III

PROPOSED DRILLING PROGRAM OF THE MODDER RIVER AREA, CAPE BARREN ISLAND.

SCALE : 1 inch = 600 feet (approx.)

5 cm

Report No. 133

in particular, are well cemented in places, and would no doubt be harder to break up by hydraulic means than the drifts of say Webb's workings at Rooks River. The presence of feldspar and comparative hardness of the drifts are features recognisable in the drifts in Fishers workings near the mouth of Rooks River.

Relatively coarse grained tin, as large as 1/8" diameter, is visible in the sluice faces, and is associated with fine grained ilmenite and needles of tourmaline. The presence of abundant ilmenite in the drifts is worthy of note, as concentrations of the mineral were observed on a beach east of Lascar Point and on beaches at nearby Preservation and Clarke Islands.

One of the earliest mining ventures on the field was the driving of two adits 75 feet into the drifts on the east bank of Centre Creek. The portals, and presumably the tunnels, have now collapsed and are completely overgrown. It is reported that eleven bags of tin concentrates were recovered from this operation.

Immediately south of the adit is a small sluice face, now collapsed and overgrown, which is reported to have produced one ton of tin oxide.

Further south again is a comparatively extensive sluice face which produced 5½ tons of tin concentrates at intervals prior to 1935. A description of the drifts appears in Table B, page 1. The "new workings" have been periodically mined in a small way by T. J. Barrett and others as recently as 1962. The sequence is essentially the same as in the older workings, and is described in Table B, page 2. Blake reports a production of three tons of tin prior to 1935.

Blake reports that "About 1927 a small area.... was bored to an average depth of 22 feet. It is said that the holes averaged 2½ lbs of tin oxide per cubic yard, and that the best result for a single bore showed 12 lbs per cubic yard".

The area was later check-bored by another syndicate in 1935. The results of this drilling are not officially recorded, but Barrett states that four lines of holes were drilled each 10 chains apart. The "12 lb hole" of the earlier programme was check-bored to a depth of 17 feet and the high value confirmed. The most southerly line of holes indicated 2 to 3 lbs of tin per cubic yard across the flats of the Modder River, a short distance from the so-called "old workings". The depth of ground was reported to be 30 feet.

Other Alluvial Areas: Small amounts of tin have been recovered from prospecting pits and small sluice faces in many parts of the island including the

mouth of Ruby Creek in Battery Bay, the mouth of the Lee River (Table C, page 1), and the Rice River valley.

A comprehensive hand boring programme of 75 holes, carried out near the mouth of the Dover River, indicated traces of tin. The driller's logs and a drillhole locality map are available and indicate a depth of drift varying between 6 and 78 feet. The average depth is approximately 25 feet.

Beach and Off-Shore Areas: It is apparentfromthe drilling at Dover River that the lower drifts there occur below present sea-level, indicating the ancestral land surface extended beyond the present coastline. Hence the possibility that tin may occur in some off-shore areas of Cape Barren Island, notably the north-east coast. Tin has been reported on the beaches of Deep Bay, but an inspection during the present reconnaissance failed to disclose any.

RECOMMENDATIONS FOR FURTHER WORK

A considerable amount of geological mapping and prospecting remains to be done on Cape Barren Island, viz:

(a) Completion of the surface mapping.

(b) Further prospecting in the Modder River area.

(c) Prospecting the valleys and creeks on the eastern and southern sides of the island.

(d) Dating the tin-bearing drifts by means of spore analysis of clay samples. (Comparison of the age of the drifts in Webb's and Fisher's workings).

(e) Palaeontological identification and dating of fossils in the marine limestones.

(f) More detailed examination of the Dover River drilling results.

However, of prior importance is the exploratory drilling and sampling of the known alluvial deposits on the Rooks and Modder Rivers.

DRILLING PROPOSALS:

A light, mechanised drill will be available on a hire basis for use on Cape Barren Island early in June. It is recommended that it operate initially in the Rooks River area where 2,640 feet of drilling is proposed, and later in the Modder River area where 1,680 feet of drilling is proposed. In the previous section brief reference was made to several other areas where tin is known, or is thought likely, to occur. These areas may also warrant drilling in due course.

Rooks River: The evidence outlined in the previous section indicates that the lower carbonaceous unit carries the richest tin values in this area. The unit is believed to be confined to deeper ground and channels in the southern part of the valley.

The average depth of the drifts to the south of Webb's workings is estimated at 35 to 40 feet, with a greatest depth of between 50 and 60 feet. There is insufficient data on which to base an estimate of the grade of the tin in this area. However, approximately one million cubic yards of drifts are indicated, and reported production values nearby exceeded one pound per cubic yard of tin oxide.

Three 300 yard long lines of holes, forming the sides of an equilateral triangle, have been proposed for this area and warrant first priority in the overall programme (Fig. II). The suggested initial spacing is 50 yards, with provision for subsequent drilling every 25 yards. There are, therefore, 18 holes in the first stage, and a further 18 in the second stage; i.e. 36 holes x est. avge. depth, 40 feet = 1,440 feet.

Further out on the plain is a larger triangle of holes, with each side 600 yards long. Suggested initial spacing of holes on these lines is 100 yards. The average depth of the ground is probably around 25 to 30 feet, and the greatest depth, at the southern end of the western line, approximately 50 feet; i.e. 18 holes x est. avge. depth, 30 feet = 540 feet.

Finally, there is a single line of holes extending in an easterly direction across the plain from Rooks River to the granite divide separating East and Ransom Creeks. The line is approximately 1200 yards long, and the suggested spacing of the holes is 200 yards; i.e. 7 holes x est. avge. depth, 20 feet = 140 feet.

Ransom Creek is a tributary of the Lee River, and therefore not strictly part of the Rooks River field. Significant amounts of tin have been found in previous drilling along this creek, so two short lines of holes, 400 and 600

yards long respectively, are recommended. Suggested initial spacing is 25 yards in the creek, and 50 yards on the bank; i.e. 26 holes x est. avge. depth, 20 feet = 520 feet.

Total Drilling at Rooks River = 2,640 feet.

Modder River: The drillhole layout proposed for this area follows the pattern of an earlier boring programme and consists of four lines of holes each ten chains apart and straddling Centre Creek (Fig. III). The datum for the grid is the approximate position of the "12 lb hole" on the flats of the Modder River. Each line is 20 chains long and the suggested initial spacing of the holes is one chain apart. Line one has first priority in the order of drilling.

Line 1 21 holes x estimated average depth 25 feet = 525 feet.
Line 2 21 holes x estimated average depth 20 feet = 420 feet.
Line 3 21 holes x estimated average depth 20 feet = 420 feet.
Line 4 21 holes x estimated average depth 15 feet = 315 feet.

Total Drilling at Modder River = 1,680 feet.

Summary:		
	Drilling at Rooks River	2,640 feet
	Drilling at Modder River	1,680 feet
	Total:	4,320 feet

025

REFERENCES

J.B. Scott	Report on Rooks River Tin Deposit, Cape Barren Island, 1926 (unpublished Government Report).
F. Blake	Furneaux Group of Islands, 1947. (unpublished Government Report).
O.N. Warin	Tin Resources of North Eastern Tasmania and Proposed Drilling Programme, 1964. (unpublished UDC Report No. 130).
W.K. Harris	Palynological Examination of Samples from the Tin Leads of North East Tasmania, 1965. (unpublished S.A.G./D.M. 1094/64).
Geol. Soc. of Aust.	Geology of Tasmania, 1962. (Vol. 91, part 2).

026

FIG. IV: The leading face of old workings operated by Clarke and Davis at Rooks River. Basement was not reached at this point, and the existence of a comparatively large channel is inferred across the front of the face.

FIG. V: View of the Rooks River area from offshore in Deep Bay. The alluvial flats below the Clark and Davis workings cover about one square mile. Note also the wide stretch of beach deposits which will also warrant drill testing.

027

DESCRIPTION OF THE DRIFTS IN THE ROOKS RIVER AREA

Old, shallow workings adjacent to Webb's Mine:

0'0" - 2'0"	Light brown sandy topsoil becoming darker in colour with depth. Abundant evenly distributed sub-angular to sub-rounded quartz increasing to pebble size (1" and greater) with depth.
2'0" - 2'6"	Hard, cemented, medium to coarse grained sub-angular drift. Topmost 1" stained black by humic waters.
2'6" - 6'0"	Light coloured coarse grained sub-angular quartz drifts and patchy sub-angular to sub-rounded quartz wash. Some light brown clay pods. A significant feature of this bed is the highly erratic sedimentation.
6'0"	Weathered granite.

It is worthy of note that the 2'0" of material described as topsoil has all the appearance of a recently deposited drift. It is possible that only the uppermost 6" should be described as topsoil. The bed also contains scattered wash horizons. The difference in colour and hardness indicates that basement falls to the west-south-west. The floor on the eastern side does not show the same fall, and the section increases only with the rise in the ground to a depth of 16'0". The deepest face occurs on the western side of the workings, and was logged as follows.

028

Face section, Webb's Mine:

0'0" - 2'0"	See 0'0" - 2'0", Table A, page 1.
2'0" - 2'3"	Hard cemented quartz drift.
2'3" - 7'3"	Relatively hard, medium to coarse grained, sub-angular drift. At the top are deep cracks (12") filled with mud (4" wide at top). Pods of light brown mud, some quite large, viz. 1' thick, 4' long.
7'3" - 13'6"	Considerable patchy sub-rounded quartz wash, generally corresponding to the flutes of the current bedding. The drift is prolifically current bedded. Cross bedding is common. The bed consists of dark brown to black quartz drift and is loosely consolidated, compared with the light coloured, harder, overlying bed. A relatively persistent wash horizon up to 6" (in places 1') thick occurs at the base.
13'6" - 15'6"	Brown to black sandy clay with sparsely distributed quartz gravel and pebbles.
15'6" - 23'6"	Dark brown to black humic silty clay containing lignite. This bed is nowhere fully exposed due to caving. Thickness in the present face is estimated at 8'0".
23'6"	Weathered granite.

029 Face section of workings operated by Clark and Davis:

0'0" - 2'4"	Light brown to dark brown sandy topsoil with well distributed sub-angular quartz pebbles and matted roots.
2'4" - 2'6"	Dark brown to black humic silt and clay.
2'6" - 3'0"	Strongly cemented quartz drift stained dark brown by percolating humic waters.
3'0" - 12'6"	White to light grey quartz drift. Sub-angular grains up to $\frac{1}{4}$" diameter. Traces of mica. Pods of light grey clay.
12'6" - 17'6"	Light to dark brown, fine grained drift, with thin bands of coarse drift in places. A few thin lenticular wash bands. Several $\frac{1}{2}$" thick black, partially consolidated banks of quartz drift - no obvious metallic mineral present.
17'6" - 22'0"	Dark brown sub-angular quartz drift.
22'0" - 24'0"	Patchy wash horizon. Consists mostly of quartz drift similar to that above, but also contains granite pebbles and cobbles exceeding 6" in diameter.
24'0" - 29'3"	Dark brown to black quartz drift with lenses of sub-angular to sub-rounded quartz wash below 27'0". Some lignite occurs below 27'0". The bed exhibits strong cross-bedding.
29'3" - 34'3"	Dark greenish brown to black humic clay, with distributed sub-rounded quartz pebbles, lignite and small lenticular wash horizons. At the base of the bed are hard nodules of pyrite.
	Base of this section.
	At another point approximately 25'0" west of this section, a further 5'0" of sediments are exposed. This additional section consists of - Light to dark brown cross-bedded, medium to coarse grained quartz drift, with abundant lignite, patchy lenticular sub-angular to sub-rounded quartz wash up to 6" thick and round pods of mid-brown clay up to 9" in diam

030

Face section, Fisher's Mine (Mouth of Rooks River):

0'0" - 1'0"	Black sandy drift with evenly distributed white sub-angular quartz and matted roots.
1'0" - 1'9"	Hard cemented drift.
1'9" - 2'9"	Interfingering lenses of mid-brown clay and clayey drift, coarse sandy drift, and creamy coloured sand, all with abundant white feldspar.
2'9" - 3'3"	Lens of black sandy clay.
3'3" - 5'6"	Light grey to light brown compacted clayey sand with abundant feldspar. Grain size increases slightly below 5'3".
5'6" - 8'0"	Mid-brown to dark brown and black clayey sand with lenses of coarse drift and fine wash. Grains of sub-angular feldspar throughout.
8'0" - 10'3"	Soft yellow-brown fine sand, changing to harder clayey drift below 9'6". Feldspar throughout.
10'3" - 10'9"	Light brown heavy clay with some distributed drift including feldspar.
10'9" - 14'3"	Black puggy clay with patchy lenses of drift, containing feldspar, mica, and topaz.
14'3"	In drift (basement not exposed).

The interval between 3'3" and 8'0" shows rapid variations in grain size and angle of sedimentation along the bed.

Granite floor rises abruptly about 15' back from face, and section thins to approximately 8'. Basement then remains about the same level throughout these western workings. Granite carries thick yellow encrustation.

DESCRIPTION OF THE DRIFTS IN THE MODDER RIVER AREA

Modder River - New Workings:

West Face:

0'0" - 1'6"	Brown to black coarse drift with patchy wash horizon at base. Scattered sub-angular quartz cobbles.
1'6" - 2'6"	Cream coloured compacted sandy drift with abundant mixed clay and some small clay lenses.
2'6" - 10'6"	Grey, buff and yellow coarse sub-angular to sub-rounded drift, with ample fine wash distributed throughout. Abundant rotted granite boulders below 5'.
	Basement extremely irregular.

East Face:

0'0" - 1'6"	Ditto.
1'6" - 6'6"	White, well compacted sub-angular to sub-rounded clayey drift. This bed appears to lens out to the south west.
6'6" - 12'6"	Brown and black, hard clayey drift, with scattered wash pebbles and dark brown clay pockets. Some wash lenses with sub-angular quartz cobbles.
	This is humic type bed. Bedding appears to be quite irregular, rolling.
12'6"	Basement.

032

Modder River - Old Workings (A similar sequence occurs here):

0'0" - 1'6"	Brown to black humic drift with matted roots.
1'6" - 4'6"	Cream, buff, yellow moderately hard coarse clayey drift, with sub-angular quartz and some feldspar. The bottom of this bed is very irregular, and varies in thickness from 2' to 6'.
4'6" - 7'6"	Where above bed thins, lenses of white kaolinitic sandstone of a maximum thickness of 3' were observed.
7'6" - 18'0"	Similar to dark bed of new workings. Feldspars occur in this bed even in lower sections. Some sub-rounded quartz creamy coloured (small) sand lenses contain black and white mica. Tin and other dark minerals can be seen in coarser horizons, particularly in lower sections. Some tin to 1/8" diameter.
	Basement not reached. Hardness of sediments and low head of water made sluicing difficult.

Report No. 133.

TABLE C.
(page 1)

033

DESCRIPTION OF THE DRIFTS IN THE MOUTH OF THE LEE RIVER

Well exposed cliff section in bank of Lee River from mouth to about 1 mile upstream. Banks are high and drifts are sub-horizontal throughout. A section through the cliffs shows:

0'0" - 2'0"	Dark grey to black sandy topsoil (drift?) with distributed quartz gravel and matted roots.
2'0" - 5'0"	Cream coloured sandy angular and sub-angular drifts, containing plentiful feldspar.
5'0" - 6'0"	Mid grey quartz drift.
6'0" - 9'0"	Cream coloured very coarse drift containing sub-angular quartz pebbles and plentiful feldspar.
9'0" - 14'0"	Bank caved and section not exposed.
14'0"	River level.

034

Cliff Section - Franklin Inlet:

The following cliff section is seen to be below various calc sandstones and (?) marine limestones of possible Pliocene age.

2'0" - 2'6"		(Off white, poorly cemented, calc sand.
2'0"	Marine ?	(Off white, "beach" limestone of finely fragmented shells bound by calc-cement.
1'2"		(Buff calc sand and sandy drift, with an unusual pattern of relatively hard cemented calc-sandstone throughout.
4'0"		(Grey clayey drift.
0'3"		(Clayey fine grained wash with feldspar.
0'9"		(Grey brown sand.
1'0"	Fluvial	(Grey brown clayey, sandy drift with distributed coarse quartz and feldspar, in part stained with limonite.
0'6"		(Fine grained wash containing feldspar.
0'6"		(Heavy brown clay.
4'0"		(Brown heavy, clayey uniform drift, in part stained with limonite. Sub-angular quartz.

PALYNOLOGICAL EXAMINATION OF SAMPLES

from

NORTH EAST TASMANIA, CAPE BARREN AND FLINDERS ISLANDS

by

W. K. Harris
Palynologist
Department of Mines, South Australia.

ABSTRACT

Spore and pollen evidence is presented to date several samples from N.E. Tasmania, Cape Barren and Flinders Islands. Samples from Cape Barren Island and N.E. Tasmania are equivalent and are of either Lower Miocene or Upper Oligocene age. A sample from Flinders Island is distinct from all others and is dated tentatively as Pliocene or possibly younger.

INTRODUCTION

At the request of the Tasmanian Department of Mines and Utah Development Company a further nine samples of Tertiary sediments from N.E. Tasmania and adjacent islands have been examined for their spore and pollen content.

The stratigraphy and correlations of the major microfloral units has been discussed in a previous report (Harris, 1965) and this investigation is an extension of the palynological analysis of N.E. Tasmania.

Most samples yielded well preserved spores and pollen but those from the basalt-Tertiary interface yielded few sporomorphs. One sample from this locality was barren. This is due either to pre-basalt weathering or the effects of the basalt flow.

Relevant stratigraphic information and localities of the samples are appended to this report.

RESULTS

N. E. Tasmania and Cape Barren Island:

Distribution of the species is plotted in the following table.

Microfloras from this group of samples are characterised by abundant Nothofagus spp. together with Proteacidites spp. and coniferous pollen.

Species	N. E. TASMANIA					Cape
	UDC 8244	UDC 8242	UDC 8243	UDC 8245	UDC 8246	Barren Island
Alisporites grandis						x
Araucariacites australis			x	x		
Beaupreaidites elegansiformis	x					x
Blechnum sp.						x
Baculatisporite comaumensis		x	x	x		x
Cyathidites annulata	x		x	x		x
C. minor	x	x			x	x
Cingutriletes clavus	x		x	x		x
Cupanieidites sp.	x		x	x		x
Dacrydiumites florinii	x	x			x	x
Dacrycarpites australiensis	x	x		x	x	x
Ericipites sp.	x			x		x
Hemitelia sp.	x		x	x		
Liliacidites sp.				x		x
Laevigatosporites ovatus	x		x	x	x	
L. major	x					x
Microcachryidites antarcticus	x	x				
Monosulcites sp.	x			x		x
Myrtaceidites parvus	x					x
Nothofagus emarcida	x	x	x	x	x	x
N. vansteenisi	x					x
N. falcata	x					x
N. aspera	x	x		x		x
N. hetera		x				
Podocarpidites ellipticus	x	x	x	x	x	
Phyllocladidites paleogenicus	x					x
P. mawsonii	x		x	x		

Species	N. E. TASMANIA UDC 8244	UDC 8242	UDC 8243	UDC 8245	UDC 8246	Cape Barren Island
Perinomonolites sp.	x	x				x
Proteacidites scaboratus	x			x		x
P. spp.	x			x		x
Sparganium sp.						x
Todea sp.	x	x	x	x		x
Triletes ornamentalis	x					
T. tuberculiformis	x	x	x	x		x
Triorites harrisii	x	x	x	x		x
Tetracolporites sp.	x			x		x
Tricolpites sp.	x					x
Tricolporites sp.	x	x		x		x
Verrucatosporites sp.	x	x	x	x		x
Winteraceae pollen						

Flinders Island:

Species assemblage:

Banksieacidites spp.
Casuarinidites cainozoicus
Camarozonosporites sp.
Ericipites spp.
Graminidites sp.
Gleicheniidites circinidites
Haloragacidites haloragoides
Myrtaceidites parvus
Nothofagus emarcida
Podocarpidites ellipticus
Proteacidites sp.
P. sp. ("Grevillea" type)
Restionaceae

The assemblage is dominated by abundant pollen of the family Restionaceae and that of the genus Banksia. Gleicheniidites sp. is very common.

038

AGE OF THE MICROFLORAS AND COMPARISONS

The older microflora from both Cape Barren Island and N.E. Tasmania is equivalent in age to the samples discussed in the previous report. Here a lower Miocene or upper Oligocene age was suggested. This present report does not indicate any refinement of this determination. However it would appear that the subdivision into two microfloras as indicated in the previous report is not valid outside of the area described in that report.

The younger assemblage from Flinders Island is difficult to date precisely due to the absence of distinctive zone species and to the lack of detailed stratigraphic analyses of Upper Tertiary sediments. The very low frequency of Nothofagus suggests a post middle-Miocene age. It is therefore tentatively dated as Pliocene and it has some similarities with Pliocene sediments of Victoria but lacks the distinctive species Dacrycarpites australiensis and Dacrydiumites florinii which are usually abundant in these sediments. This may be due to the fact that the assemblage is stratigraphically higher in the Pliocene or is even of Pleistocene age.

REFERENCE

Harris, W.K., 1965: Palynological examination of samples from the tin leads of North East Tasmania. Geol. Surv. S. Aust. Rept. 60/15, Palyn. Rept. 11/64 (unpubl.)

DATA ON SAMPLES STUDIED

Sample No.	Locality
UDC. 8242	Great Forrester River Area (Mt. Stronach workings).
UDC. 8243	UDC Bore 21, Arba Area at 95 ft.
UDC. 8244	UDC Bore 22, Lawry's Area, Gladstone. 51 ft.
UDC. 8245	Arba Pit Face, Branxholm - lignitic clay 20 ft. below basalt.
UDC. 8246	Arba Pit Face, Branxholm, Basalt-Tertiary interface.
UDC. 8247	Arba Pit Face, Branxholm, Basalt Tertiary interface.

039

S 752)	Rooks River, Cape Barren Island - Pit on
S 753)	North East
S 754	Tanners Bay Tinfield 11-12 ft., Flinders Island.

4154

DOUGHBOY ISLAND

Ned Point

MUNRO BAY

Apple Orchard Point

DEEP BAY

LONG ISLAND

FRANKLIN INLET

Big Hill Creek

ROOKS RIVER

Webb

Clark and Davis

Watson

Fisher

East Creek

Ransom Creek

LEE RIVER

Jetty

SANDFORD BAY

LONG BEACH

DOUBLE PEAK

New workings

Centre

Old workings

Creek

MT. STANLEY

CAPE SIR JOHN

THUNDER AND LIGHTNING BAY

MODDER RIVER

KEY ISLAND

DYAS

CORNER

HALF MOON BAY

ROCKY HEAD RIVER

BATTERY BAY

Lascar Point

Wombat Point

Battery Island

Sloping Point

PRESERVATION ISLAND

RUM ISLAND

LEGEND

QUATERNARY & RECENT

- Mobile shore sand.
- Stabilized (Pleistocene?) dune system.
- Reed swamps, river flats, tree swamps, shallow water.
- Alluvium, generally button grass flats.

TERTIARY

- Sand and pebbles apparently derived directly from weathering unconsolidated Tertiary sediments.

JURASSIC

- Dolerite. (Tertiary?) + Sm.

DEVONIAN

- Granite.

- Geological boundary.
- Fault, joint pattern, photo-lineament.
- Mine workings.
- Tracks.
- Landing ground.

UTAH DEVELOPMENT COMPANY

65-389

GEOLOGICAL MAP OF CAPE BARREN ISLAND - WESTERN SHEET

4154

PLATE 1

250042

2000 1000 0 2000 4000 6000 feet (approx.)

SCALE: 1:24,000 (approx.)

5 cm

Report No. 133