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21st August, 1945.

MEMORANDUM:

INTERIM REPORT ON THE POSSIBILITY OF PETROLEUM ON FLINDERS ISLAND.

Scope of Report:-

In accordance with a memorandum from the Director of Mines dated 9th July, I visited Flinders Island to investigate the possibility of the occurrence of petroleum on Flinders Island as reported by Mr. Frank Henwood of Lady Barron. This memorandum was qualified by verbal instructions from the Director of Mines that one field day should be allotted to the investigation on the visit and that the island should be revisited at a later date if it was considered necessary. By working Saturday and Sunday I was able to devote three field days to the investigation.

Mr. Henwood's Statement:-

I interviewed Mr. Henwood who stated that he had no concrete evidence to submit, but had based his statement on the fact that limestone was abundant on Flinders Island, and a sample of rock he had collected several years ago from near Apple Orchard Point on Cape Barren Island had been described as glauconite. He had been told that glauconite and limestone were favourable indications for petroleum. Moreover there was a general belief in Flinders Island that petroleum occurred there and he was of the opinion that it should be investigated.

I confirm Mr. Henwood's statement that there are widespread developments of limestone on Flinders Island. These are foraminiferal limestones of Pliocene age and are of similar type to some limestones occurring in some oil-bearing regions. However, the presence of such limestones does not in itself indicate that the region is oil-bearing. The following samples of these limestones have been forwarded to the Commonwealth Palaeontologist for determination.of the foraminifera:-

7C3 Pratts River near Palana. (At road corner on N boundary of A.R. Cooper's purchase 7/12.)

11C2 Emita. (Beside road on N boundary of A. King's purchase 7/2.)

12C1 Beside Whitemark - Lady Barron Road. (On N boundary of W.J. Martin's purchase 8/3.)

12C2 Same locality as 12C1.

12C6 Pat River near Whitemark. (In NE part of C.D. Harley's purchase 303/2/21.)

12C10 Near Whitemark School. (One chain S of corner of road on N boundary of E.M. Robinson's purchase 100/0/16.)

With regard to the alleged occurrence of glauconite I asked Mr. Henwood to accompany me to the locality specified which he agreed to do. However on arrival at Apple Orchard Point Mr. Henwood was unable to locate the precise area owing to the lapse of time since his previous visit. I accordingly examined the foreshores of the bay west of Apple Orchard Point which includes the specified area, and found that the area consists of steeply folded palaeozoic hornfelses, quartzites and slates striking N2° E and dipping to the east at high angles. Sample 15C2 was collected from this series also 15C1 which is an intrusive dolerite dyke. No glauconite was seen, but it is not impossible that such a bed exists behind the foreshore, but its thickness could not exceed a few feet and it would be merely a veneer on the older sediments. Under these circumstances it can be ruled out positively as a potential petroliferous rock.

Thus it can be fairly stated that Mr. Henwood has presented no sound reason for believing that petroleum occurs on Flinders Island.

Oil "Rush" of 1936.-

During 1936 Austral Oil Drilling Syndicate took up petroleum prospecting leases over 30,000 acres in the vicinity of Lady Barron, and caused some excitement on the island and in the press. An immediate drilling programme was projected. The venture was based on the occurrence of an oil-bearing corky peaty substance on Mr. Briant's property at Lady Barron.

Mr. P.B. Nye, Government Geologist, had examined samples of the substance forwarded by Mr. Henry Briant of Lady Barron in August-September, 1931, and had reported that it was derived from vegetable matter in a swamp, and that it had no connection whatsoever with natural petroleum or oil.

Analyses carried out by the Mines Department Laboratory at Mr. Nye's request reported:-

	Sample A.	Sample B
Moisture	7.98	5.50
Volatile combustible matter	70.93	68.88
Fixed carbon	15.51	19.27
Ash	5.58	6.35
Sulphur	1.36	1.21
	101.36	101.21
Crude oil and tarry matter (Gals. per ton)	85.42	73.8
Specific Gravity		0.957
Sulphur		0.71%

Fractionation Test of Crude Oil:	per cent
0° - 150°C	11.76
150°C - 200°C	5.88
200°C - 250°C	29.41

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250°C - 310°C	40.94
Residue	10.00
Water	2.94
	101.13

I have examined the deposit on Mr. Briant's property and collected sample 12C9. I support fully the opinions expressed by Mr. Nye. The material occurs in the bed of a small artificially drained lagoon. It is about 2 feet thick and covers some 25 acres. Unfortunately it was ignited some years ago and burnt out almost completely. It is without doubt allied to Coorongite which occurs in the Coorong district of South Australia, and which is derived from an oleaginous alga to which the name Elaeophyton Coorongiana has been given. It is possibly the same also as a material called turfa which occurs in a lagoon near the estuary of the Rio Marahu in Brazil. Coorongite is the raw material which is eventually transformed into oil shale (torbanite) through long continued subjection to pressure and heat when buried in the earth's crust.

The presence of this material does not indicate the presence of petroleum in its vicinity. However it is without doubt the starting point of a myth that is current in the island that the island contains petroleum.

Mr. Briant was unwilling to accept Mr. Nye's statement regarding the origin of the substance and clung to his belief that the material indicated the existence of petroleum at a depth which could be tapped by drilling, and eventually succeeded in interesting the Melbourne syndicate in the occurrence. The Austral Oil Company did not have competent geological advice and was impressed by the high oil yield reported by Mr. Nye but disregarded his emphatic statement concerning the origin of the material.

Possibility of the Existence of Petroleum.-

To sum up I conclude that neither the oil boom of 1936 nor the recent suggestions advanced by Mr. Henwood were based on real grounds which give any justification whatever for believing that Flinders Island contains a petroleum field.

However, this statement must not be construed to imply that I consider that there is no possibility of the occurrence of oil on the island. I feel that an answer to this question is also called for by the memorandum from the Director of Mines of the 9th July, but the time allowed was quite inadequate to deal with this broader question. An extra week in the field would have enabled me to give a much more definite opinion than is at present possible. However, in the time at my disposal I made as many observations as possible relative to this problem and present the case as far as it can be decided at this stage.

Flinders Island is made up of the following rock types:-

(1) Strongly folded and contact metamorphosed Palaeozoic sediments.

(2) Granites of upper Palaeozoic age which are intrusive into (1) and which have introduced tin.

(3) Pliocene marine sediments consisting of limestones, some of them cross bedded, sands and clays.

(4) Pleistocene and recent dunes and lagoonal deposits.

The whole of the areas occupied by groups (1) and (2) or which are underlain by (1) or (2) at a shallow depth, may be ruled out as having no hope whatever of containing petroleum.

Group (4) must also be exluded as a possible petroliferous formation but areas occupied by these deposits are in may cases underlain by Group (3) at shallow depths.

Areas occupied by Group (3) which cover a considerable area of the island cannot be completely ruled out on the evidence at present available.

There is no positive evidence that these sediments reach any great thickness but, although marginally they clearly encrust the granites and Palaeozoic rocks there is not yet sufficient evidence that they do not thicken considerably away from the mountains.

There is no evidence that Miocene or Eocene strata are or are not developed below these Pliocene beds in the main basins.

There is little evidence of structural deformation in the Pliocene sediments, and it is not expected that much deformation would be present in any Miocene of Palaeogene sediments which might underlie them. However, buried hills are to be expected and overlapping of older Tertiaries round them and marginally to the basins is not impossible, so that suitable reservoir conditions may exist. Finally the Flinders Island area may well be the rim of a basin of sedimentation now largely flooded by the sea, but which may include also the Gippsland area of Victoria, where it is known that palaeogeographic and bottom conditions were favourable to the generation of petroleum during part of the Tertiary.

Hence although I do not consider the Flinders Island area to be promising as a potential oilfields it cannot be claimed on the scanty evidence available that the possibility should be entirely ruled out.

I, therefore, conclude that an investigation of the Tertiary stratigraphy if the Furneaux Group is warranted, and should be undertaken when staff can be spared for this purpose, but I do not consider that the rather slender prospects justify the interruption of more important work.

S.W. CAREY.D.Sc., A.A.P.G.
GOVERNMENT GEOLOGIST.

Director of Mines,
HOBART.