

## 6. 7. SOME OCCURENCES OF PEAT OR SEMIPEAT IN TASMANIA

by P. B. Nye

In a recent paper, Cane (1966) reported the results of an investigation by him of an alleged occurrence of petroleum at a lagoon near Lady Barron on Flinders Island. He concluded from his investigation of the material purporting to be petroliferous, that it is a curious comminuted organic mass of plant debris apparently formed under unusual conditions.

Cane's section of soil, subsoil, etc., where the material occurred is given as:—

- 1"—3" Recent vegetal remains.
- 2"—8" Brown-black peaty soil.
- ? Heavy black soil.
- ? Quartzitic gravel.
- ? Clay.

His laboratory examination of the dried semipeat, and of earlier samples taken in 1934, showed the major portion to consist of a curious dun-coloured matrix of friable corky nature in which were embedded many charcoal particles and small fibrous remains of other plants.

This peculiar cork-like material referred to by Cane has been found in two other places in Tasmania, and the history of its discovery is quite interesting.

The first specimen of this material known to the Geological Survey of Tasmania was one included in a collection of the Survey. It was in the collection in the 1920's, and possibly a part of the 1910's, but cannot now be found. From memory, the label associated with the specimen showed that it had been sent in by a Mr Harrison of Wynyard, and it is possible that the label showed also that the specimen came from near Smithton.

The material interested officers of the Survey and a communication was sent to Mr Harrison asking for the locality of the specimen before (or during) the systematic survey of the Smithton district started in 1929. With the information received and/or from enquiries made locally at Smithton, it was learned that the specimen came from a small pond situated to the south-east of Alcomie.

The pond was visited in 1930 or 1931 during the Smithton survey. It was a small pond about 10 to 15 yards in diameter and with a small island in it. The pond was on country occupied by Tertiary basalt, and the depression was probably formed by a small landslide on the hillside.

Search of the edges and the adjacent bottom of the pond revealed that a black soil and perhaps sub-soil extended to depths of 1 to 2 feet. No cork-like material was found, but a few black sooty lumps a few inches in size were found in the black soil (and subsoil). The lumps were taken to Hobart and some at least were left exposed to the air. After a few weeks the black

colour disappeared and a dirty yellowish-brown cork-like material generally similar to, but not quite as yellow as, the original specimen, was revealed. It was concluded that the material was of vegetable origin from the many fragments of vegetation in it, and that it was apparently formed in a manner similar to peat and possibly arose from some particular vegetation. The country around the pond was grasslands, but no doubt before the land was cleared, it was covered by the virgin forest that grew on the basalt south of Smithton.

The results of the inspection of the pond were described in the Smithton Bulletin (Nye and others, 1934) and the following proximate analysis of an air-dried sample of the cork-like material was given.

## Sample Reg. No. 371/31

	Per cent
Moisture .....	6.76
Volatile combustible matter .....	71.90
Fixed carbon .....	18.68
Ash .....	2.66
Sulphur .....	0.48
	100.48

Crude oil and tarry matter  
yield on distillation ..... 75.74 gal. per ton

While the Smithton Bulletin was being prepared, samples of material similar to that at Alcomie were received by the Geological Survey from Lady Barron on Flinders Island, as the following statement appears in that bulletin.

'It is noteworthy that similar material has been forwarded from Lady Barron, and is stated to occur in a peaty deposit'.

The material from Lady Barron was sent in by Mr Henry Briant of that locality in 1931. The Geological Survey had two samples (A & B) of the material analysed. The proximate analysis and distillation tests gave results similar to those of the material from Alcomie. These analyses are given in the Geological Survey typewritten report by Carey (1945) dealing with the possibility of petroleum on Flinders Island.

Carey visited Lady Barron in 1945 and reported that the material under review occurred in the bed of a small, artificially drained lagoon, and that the deposit was 2 feet thick and covered 25 acres, but that it had been ignited some years earlier and had burnt out almost completely. A sample (1296) was sent by Carey (1945a) to Mr. J. A. Dulhunty of the Geology Department, University of Sydney for examination, but the ensuing correspondence, if any, is not available at present.

Blake visited the Furneaux Group of Islands in 1947, and his Geological Survey typewritten report (1947) described the peat deposit at Badger Corner; this is the deposit the locality of which was previously referred to as Lady Barron.

In 1941, while the writer was at Mathinna, Trooper M. R. Campbell of the Police Force, submitted a specimen of a black, peaty material. The specimen had not been exposed to the air

for long, but the material was similar to the black sooty material obtained previously from Alcomie and Lady Barron. The locality of the material was stated to be near the East Coast between Scamander and St Marys.

A specimen of the black material from the East Coast and specimens of black material and light-coloured material from the Geological Survey store collection and labelled Smithton were sent to Dr I. Cookson of the Department of Botany, University of Melbourne (Nye, 28-8-41). At the time of writing doubt existed in the writer's mind as to whether the store collection was correctly labelled as Smithton. However, it is now noticed that Cookson (5-9-41) refers to the Smithton specimens as being from Lileah (this locality is adjacent to Alcomie) so presumably the specimens were labelled as such and are from the Smithton district.

Dr Cookson was busy at the time and could give the material only a cursory examination, but submitted (Cookson, 5-9-41) the following comments:—

- (i) The high percentage of minute plant fragments at once became obvious.
- (ii) I have seen several types of pollen grains but have not attempted their identification.
- (iii) There seems little doubt that both the light and dark materials are some sort of peaty deposit, and I take it that their origin is a recent one.
- (iv) At first sight, the pollen content of the light material from Lileah is much higher than of the black material from the same locality.

A more complete examination was to be made by Dr Cookson, or someone selected by her, but it is doubtful if a report was ever received by the Geological Survey (the writer left Tasmania in November 1941 and has no further knowledge about the matter.)

All investigators have stated that the dun-coloured material is composed of fragments of vegetation and that the material is associated with black peaty soil, peaty deposits or semipeat. At Alcomie the material has clearly been formed in, or adjacent to, a freshwater pond, and therefore under freshwater conditions. With regard to Lady Barron, Carey (13-8-45) states '... whereas the Lady Barron Lagoon is close to sea level and was certainly submerged during the Upper Pliocene, and was probably flooded by the sea before the general 15 foot emergence in sub-recent times'. This statement indicates that the peaty deposit could possibly have been formed under saltwater conditions, but the conditions do not, of course, preclude a freshwater origin between flooding of the land by the sea or after the last flooding. The East Coast occurrence has not been examined and it is therefore impossible to state under what conditions the material was formed.

Little investigation has been made of the vegetable fragments forming the lumpy peaty material. Indeed, the fine state of subdivision of the vegetable fragments will probably render impossible any complete examination and determination of the species. With regard to the Lady Barron material Cane (1966) reported that the Botany Department of the University of Tasmania identified portions of fronds of *Xanthorrhoea australis*. Cane (1966) and

Cookson (5-9-41) both reported the presence of pollens, but did not attempt to identify them. Cane (1966) reported that 'the substance was made up of highly suberised tissue and cutanised vascular remains, flakes of cuticle, specks and fragments of resins and pollens, bacterial residues and charcoal particles, together with large plant remnants and cells'.

At Alcomie, the cork-like material is present as small separate lumps in the black soil (and sub-soil). The reports on Lady Barron are not clear as to whether the cork-like material is distributed in lumps throughout the peaty deposit or more or less forms the whole of the peaty deposit'.

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