

COMMONWEALTH OF AUSTRALIA

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DEPARTMENT OF NATIONAL DEVELOPMENT  
BUREAU OF MINERAL RESOURCES  
GEOLOGY AND GEOPHYSICS

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**RECORDS:**

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MICROSCOPIC EXAMINATION OF THREE SAMPLES OF DIATOMITE FROM NEW ZEALAND

by

I. Crespin

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DEPARTMENT OF SUPPLY AND SHIPPING.

Mineral Resources Survey.

RECORD 1943/7

MEMORANDUM FOR:-

25th January, 1943.

The Director,  
Mineral Resources Survey,  
Department of Supply & Shipping,  
CANBERRA A.C.T.

MICROSCOPIC EXAMINATION OF THREE SAMPLES  
OF DIATOMITE FROM NEW ZEALAND.

The samples of diatomite were received recently from the Director of the Geological Survey of New Zealand. The localities for the samples are given as Middlemarch, Wainui and Whirinaki. The three diatomites are of fresh water origin.

The diatom content of the diatomites from Middlemarch and Whirinaki is quite unlike any from the Australian deposits, but the assemblage in the Wainui material is closely comparable with that of the Victorian diatomites at Lillieur and Moranding. It may be possible for the New Zealand authorities to test the filtering properties of the Wainui diatomite.

I. CRESPIN.  
Commonwealth Palaeontologist.

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MICROSCOPIC EXAMINATION OF THREE SAMPLES OF DIATOMITE  
FROM NEW ZEALAND.

Three samples of diatomite were recently received from the Director of the Geological Survey of New Zealand. All are of freshwater origin. The following notes are the result of a microscopic examination.

1. Middelmerch.

The diatomite is composed almost entirely of frustules of the naviculoid (boat-shaped) diatom Gymbella. Three species have been recognised. Species 1 measures 40 microns in length and 12 microns in width; Species 2, 60 microns in length and 12 microns in width and Species 3, 30 microns in length and 12 microns in width. Other diatoms are rare. A frustule of Gomphonema, measuring 40 microns in length, and a few fragments of the needle-shaped Synedra, measuring 50 microns in length, are present. Fragments of smooth and prickly varieties of sponge spicules (Spongilla), one having a length of 230 microns, are also recorded.

According to American workers such a diatomite composed almost entirely of naviculoid forms gives good clarification for the flow rate. This diatomite from Middelmerch cannot be compared with any Australian deposit.

2. Wainui.

The diatomite from this locality contains an assemblage of beautifully preserved diatoms. The forms include numerous unbroken frustules of the needle-like Synedra, measuring 80 to 120 microns in length and 10 microns in width; numerous Gymbella with a length of 50 microns and a width of 10 microns; small Navicula; Gomphonema measuring 40 microns in length; Stauroneis 40 microns in length; Dictyon 70 microns in length; Epithemia measuring from 40 to 60 microns in length; and Melosira measuring 10 microns in length and 8 to 10 microns in width.

This diatomite from Wainui contains an assemblage of diatoms similar to that found at Millicur and Morand in Victoria and has definite possibilities as a filter medium. The specimens of Synedra belong to a species with shorter frustules than the one in the Victorian diatomites. The species of Gymbella is similar to that found in Victorian and Western Australian diatomites. The small Navicula is referable to the species present in the Millicur and Morand material.

3. Whirinaki.

This diatomite consists chiefly of small diatoms of various shapes with a few larger forms. The diatoms include Melosira which is common and varies in size, one form measuring 10 microns in length and 10 microns in width, a second one, 12 microns in length and 10 microns in width and a third, 12 microns in length and 8 microns in width; Stauroneis with a length of 100 microns and a width of 40 microns; Navicula with a length of 40 microns and a width of 14 microns; Gymbella with a length of 40 microns; Gomphonema

60 microns; Diploneis, one species measuring 40 microns in length and 20 microns in width and another 60 microns in length and 20 microns in width; Cocconeis 25 microns in length and 20 microns in width; Eunotia 40 microns in length; Epithema 50 microns in length; Surirella 200 microns in length and 100 microns in width; Pinnularia 240 microns in length; Synedra 300 microns in length and Arachnodiscus with a diameter of 20 microns.

The large variety of shapes and sizes of diatoms in this diatomite suggests that it may be suitable for filtration purposes. It is quite unlike any Australian diatomite.

CANBERRA, A.C.T.  
25th January, 1943.

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