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No. D-5

## LONG DURATION CONSOLIDATION TESTS

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The subsoil of the isle of Marken--situated at 15 km. north-eastward from Amsterdam--Fig. 1--consists of a clay-layer, thick 1.5 - 2 m, under which a peat layer thick 4 - 4.5 m, which rests upon a sandy underground. Around the island is an embankment of about 8 km. length, with a mean height of 1.50--2.20 m above soil surface.

The peat layer under this embankment has been consolidated as Fig. 2 indicates till about 2 m below the peat surface in the neighbourhood.

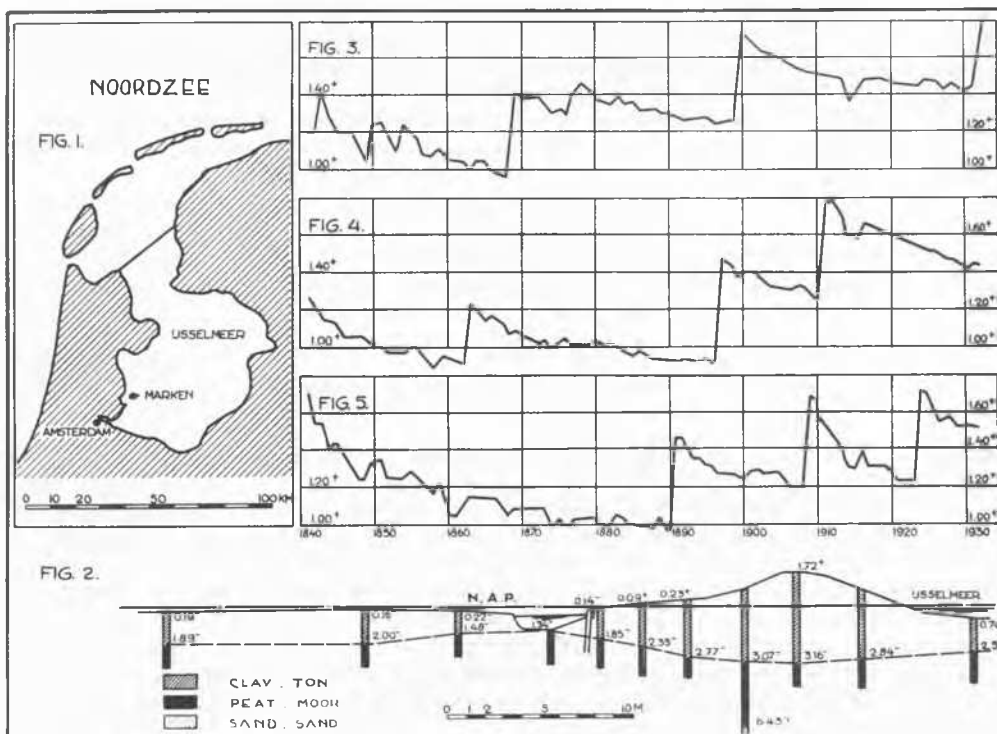
Since 1841 the top of the embankment has been surveyed every year in profiles at distances of 100 m, apparently while a regular settlement of the top had been observed and thus the embankment should be heightened regularly. This was necessary in order to prevent, that the island, before the enclosure of the Zuiderzee, being inundated with high storm floods average once a year, also by common storm-floods should not be inundated.

The embankment of Marken is very old already and has been heightened in the course of ages gradually to greater height, by which lateral displacement of the peat practically has not occurred.

The system of loading which the peat has undergone is very simple, and practically comparable with a sideward enclosed mass, which underwent exclusively a vertical compression.

While the loads gradually increased the shearing resistance; the resistance against equilibrium disturbance of the peat also could increase gradually.

The peat is still compressed--mean 8 mm annually which prove the diagrams of Fig. 3, 4 and 5, which give the time-settlement diagram of the top from 1841-1932 of some profiles of the dike.



Figs. 1, 2, 3, 4 &amp; 5.

No. D-6

## THE CHEMICAL NATURE OF CLAYS

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**Introduction.** The physical characteristics of two apparently identical clays may, as is well known, be very different. In the failure to recognize the essential differences doubtless lies the cause of many accidents which occur in connection with structures built on clay, such as the excessive or unequal settlement of buildings, earth slides, etc.

Beside the so-called clay fraction, which will be discussed in detail below, all clays contain variable amounts of non-plastic material of different grain-size, such as quartz, mica, calcite, feldspar, and rock particles, and frequently humus. The amount of water contained in a soil under a given pressure depends on the humus content, the type of clay mineral or minerals present, and on the material chemically dissolved in the soil (dissolved in the water?)

**Nature of Clays.** The usual practice of designating as clay the fraction smaller than  $2\mu$  is not justified by our present knowledge of the subject. In the past few years, clays from Germany, Denmark, Holland, the