Subsidence and Durability of Reclaimed Peaty Lands

By

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The subject of durability of peat land subsequent to drainage and cultivation was brought clearly to attention upon the occasion of a visit to the Littleport-Downham Drainage District pumping plant within the English Fens near Ely, when informed that the soil surface had subsided 100 inches in as many years. The original pumping plant there was built upon a foundation extending below the peat formation a century earlier or 1830. Subsequent search for records, correspondence and experiments have brought together information which is summarized herein in the hope that it may prove of interest and stimulate further correlated studies of the subject.

Existing Records:

Okey (5) cites (Skertchly) to the effect that in 1848 a graduated iron column was sunk in the Fenland near Whittlesey Mere through the peat to solid clay so that its top was the level of the surface. When measured August 25, 1870, subsidence was 7' 8" and again in 1875 it was 7' 9". He further reports that in 1876 one year after erection of pumps made necessary by a total subsidence of 8' a drop of 3" occurred in one year due to the lowering of the water table. In 1913 the total subsidence was again observed and found to be 10'. The initial peat depth was 18'. The mean annual compression from 9 records of from 9 to 60 years' duration in the Fens is given as 2.2 per cent with a range of from 93" in 27 years with an 18' depth of peat to 24" in 60 years with an initial peat layer 6' deep. The total compression for the 9 observations averaged 34.6 per cent.

Moisture control by drainage and cultivation of peat soil may increase the fire hazard, unless supplemental irrigation is included, may hasten oxidation, and cause fairly permanent shrinkage of colloidal constituents upon drying. Liming, regulation of soil temperature, improvement of the nitrogen-carbon ratio, and supply nutrients favor accelerated activities of decomposition microorganisms. Compression may be caused by pasturing animals or by machinery.