

tinct in August, but which, I was informed, had been ploughed by the ice in the past spring. At the distance of 326 paces from the abrupt edge of the marsh, and about 25 feet below the level of the highest tides, which here rise in all about 40 feet, I saw the first of the rooted stumps, which appear in a belt of sand, gravel, and stones mixed with mud, which intervenes between the slope of mud already mentioned and the level of the low tide. Beyond the stump first seen, and extending to a depth of at least 30 to 35 feet below the level of high tide, other stumps were irregularly scattered as in an open wood. The lowest stump seen was 135 paces beyond the first; and between it and the water level there was a space of 170 paces without stumps, but with scattered fragments of roots and trunks, which may have belonged to rooted trees broken up and swept away by the ice.

"On digging under and around some of the stumps, they were found to be rooted in a soil having all the characters of forest soil. In one place it was a reddish, sandy loam, like the ordinary upland of Fort Lawrence; in another place it was a black vegetable soil resting on a white, sandy subsoil. Immediately over the soil were the remains of a layer of tough bluish clay, with a few vegetable fibres, apparently rootlets of grasses, which seemed to have been the first layer of marsh mud deposited over the upland soil. All the rootlets of the stumps were entire, and covered with their bark, and the appearances were perfectly conclusive as to their being in the place of their growth.

"Of thirty or forty stumps which I examined, the greater number were pine (*Pinus strobus*), but a few were beech (*Fagus ferruginea*); and it is worthy of note that these trees are characteristic rather of dry upland than of low or swampy ground. The pine stumps were quite sound, though somewhat softened and discolored at the surface. The beech, on the other hand, though retaining much of the appearance of sound wood in the interior, was quite charred at the surface, and was throughout so soft and brittle that large trunks and roots could be cut through with a spade, or broken with a slight blow. Owing to their softness, the beech stumps were worn down almost to the level of the mud, while some of the pines projected more than a foot; even these last were, however, much crushed by the pressure of the ice, which, with the tides, must eventually remove them. The largest stump observed was a pine, two feet six inches in diameter, and showing more than

two hundred annual rings of growth. I was informed by respectable and intelligent persons that similar appearances have been observed on the opposite side of the La Planche, and in various other places in the Cumberland Basin. It is only, however, in places where the marsh is being cut away by the current that they can be seen, and the stumps, when laid bare, are soon removed by the ice. Similar beds of stumps and vegetable soil are also occasionally disclosed in digging ditches in the shallower parts of the marshes, and there appears little reason to doubt that the whole of the Cumberland marshes rest on old upland surfaces. A submarine forest is also said to appear at the mouth of the Folly River in Cobequid Bay; and peaty soils and trunks and stumps of trees are of frequent occurrence in digging in the marshes of King's and Annapolis counties. It would seem, therefore, that these appearances are somewhat general throughout the marsh country."

"PLANTS AND CLIMATE OF THE COAL PERIOD.

"The modern flora of the earth admits of a grand twofold division into the *Phenogamous*, or flowering and seed-bearing plants, and the *Cryptogamous*, or flowerless and spore-bearing plants. In the former series we have, first, those higher plants which start in life with two seed-leaves, and have stems with distinct bark, wood, and pith—the *Exogens*; secondly, those simpler plants which begin life with one seed-leaf only, and have no distinction of bark, wood, and pith in the stem—the *Endogens*; and, thirdly, a peculiar group starting with two or several seed-leaves, and having a stem with bark, wood, and pith, but with very imperfect flowers, and wood of much simpler structure than either of the others—the *Gymnosperms*. To the first of these groups or classes belong most of the ordinary trees of temperate climates. To the second belong the palms and other trees found in the tropical climates. To the third belong the Pines and Cycads. In the second, or *Cryptogamous* series we have also three classes—(1.) The *Acrogens*, or ferns and club-mosses, with stems having true vessels marked on the sides with cross bars—the scalariform vessels. (2.) The *Anophytes*, or mosses and their allies, with stems and leaves, but no vessels. (3.) The *Thallophytes*, or lichens, fungi, sea-weed, etc., without true stems or leaves.

"In the existing climates of the earth, we find these classes of plants variously distributed as to relative numbers. In some, pines predominate; in others, palms and tree-ferns form a considerable part of the