

overlaid by about seventy feet of drift clay or "till," full of small pebbles and passing into gravel toward the top. Much of the lignite retains a distinctly woody nature, and some of the tree trunks are two feet in diameter. When dry it makes a good fuel, but contains a little iron pyrites. At a point nineteen miles below Coal Brook there is a deposit two and one-half feet thick, and again, nine miles above the Opazatika or Poplar River, there is a bed of shaly lignite six feet thick. Other deposits are to be found in various localities.¹ From this it is evident that this material occurs throughout an extended area of country.

The two specimens numbered 46 and 47 represent lignite of a dull black, having a somewhat lustrous fracture, but under the saw yielding a chocolate-brown surface. The transverse fracture gives no evidence of structure, but the radial fracture shows the medullary rays in a very prominent manner. Great difficulty was experienced in getting good sections of this material, since it would not yield to boiling, and its very friable character necessitated saturating it with balsam before it could be ground. In this way we finally succeeded in securing sections which, while far from satisfactory, gave enough to permit a study of all the details which the state of preservation would admit of recognition. The specimen represented by number 45 consisted of loose vegetable matter of a peaty character, but much broken up and suggesting either the action of water or the effect of rough handling. It readily yielded to the action of boiling water, through the influence of which the component vegetation was brought into a condition well adapted to study. Specimen 44 consists of broad, flaky masses, having a superficial area of about 9 square centimetres, and showing that considerable clay and sand is mingled with the much compacted vegetable matter. These flakes readily yielded to the action of boiling water, and, like the previous specimen, thereby became readily adapted to study. Between two of the large flakes of peat I found a splinter of wood 8 cm. long, 15 mm. wide, and 2 mm. thick through its central portion. This has been designated by laboratory number 44a. It readily yielded to the action of boiling carbonate of soda solution, and sections were then prepared by the paraffine method. From a detailed study of the material thus described, the following data have been obtained.

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The woody lignite described under numbers 46 and 47 was found to have been much compressed, and thereby greatly altered. This alteration had also been increased by the operation of decay, so that in transverse section nothing was recognizable beyond the demarcation of the growth-rings. Localized oval or rounded masses of resin were somewhat common, especially in number 47, and seemed to indicate the former

¹ Geol. Surv. Can., 1877-78, 4c.