

At Bilin, in Bohemia, is a similar stratum, fourteen feet thick, every cubic inch of which contains 41,000,000,000 skeletons of *Gaillonella distans*, now generally regarded as a microscopic plant. The city of Richmond, Virginia, stands upon a stratum of infusorial earth twenty feet thick, as described by Professor W. B. Rogers. There is scarcely a town in New England which does not contain extensive deposits of analogous character.

Formation of Soils.—Animal and vegetable substances, when buried in the earth, or the waters, sometimes undergo an almost entire decomposition; at other times, this is very partial; and sometimes the change is so slow that for years scarcely no apparent progress is made. Different substances will be the result of these different degrees of decomposition.

Berzelius embraces all the organic matter of soils in the generic term *humus*. In some places, as on the western prairies, these organic matters of soils increase so as to form a layer several feet thick; but in general they are so much used in the nourishment of plants, that they rarely become more than a few inches thick.

PEAT.

Peat usually consists of soluble and insoluble humus, with a mixture of undecomposed vegetable matter and some earths. Most of it results from the decomposition of certain mosses, especially of the genus *Sphagnum*, which decay at their lower extremity, while the top continues to flourish with vigor. Trees and whatever other organic matter happen to get into these peat bogs, soon become enveloped and assist to swell the amount. In some instances the beds have acquired a thickness of more than forty feet.

In tropical climates, except on high lands, the decomposition of vegetable matter is so rapid that it is resolved into its ultimate elements before peat can be produced. Hence peat is limited chiefly to the colder parts of the globe. In Ireland, the peat bogs are said to occupy one-tenth of the surface, and one of them, on the Shannon, is fifty miles long, and two or three broad. In Massachusetts, exclusive of the four western counties, the amount of peat has been estimated at not less than 120 millions of cords; and probably this falls far short of the actual amount.

By the long-continued action of water and other agents, the humus of peat is changed into bitumen and carbon, which constitute lignite and bituminous coal. In a few instances the process