

that of the lake, since it has evidently picked up certain inorganic, as well as organic, substances in its passage from the lake to the sea, the movement having apparently been made when the mineral was in a somewhat plastic condition. In composition the asphalt contains about 40 to 50 per cent. of bitumen, about 30 per cent. of water, the remainder consisting of the impurities mentioned.

The mines of manjak, located near San Fernando, are also exceedingly interesting. The mineral is also an altered petroleum, and now occurs in fissures which traverse the shales and sandstone of the oil-bearing series in the same way as the albertite mines in New Brunswick have been formed. Their position is near the crest of an anticline, and the fissures have been formed in the period of disturbance or crushing by which the anticlinal folds were produced.

The mineral manjak is a very pure variety of asphalt, carrying from 90 to 95 per cent. of bitumen. A certain amount of impurity is found in the form of clay particles, evidently detached from the sides of the fissures in the process of vein formation. It is jet black, glossy, and brittle, and can be lighted in the flame of a match, dropping like sealing wax and taking readily the impression of a seal. In this respect it differs somewhat from New Brunswick albertite which does not fuse readily, but splinters on the application of heat. Manjak is largely used in the manufacture of high grade black varnishes, insulating paints for electric conductors, waterproof paints, etc. The veins vary greatly in size, the principal one worked having increased from a width of about seven feet at the surface to over 30 feet at a depth of 200 feet. Much of the mineral in the upper 100 feet is what is known as columnar, as if the vein matter had been shattered by pressure, but at lower depths the massive form comes in and forms the greater portion of the deposit. In its conchoidal fracture it resembles strongly the albertite of New Brunswick as also in general aspect. The difference in the mineral is apparently due to metamorphism on the part of the latter, which occurs in Devonian rocks while the manjak is found, both in Trinidad and Barbados in the soft Tertiary clays and is comparatively unaltered from its pitch condition, in this respect presenting analogies to anthracite and lignite in the coal series. The limit of the veins in depth has not been ascertained at any one point, with one exception in Barbados where in a shaft at a depth of 150 feet the manjak became soft and soon passed into a thick, asphaltic oil which could be removed by bailing. The Barbados mineral is somewhat purer and apparently softer than that of Trinidad and commands a higher price in the market, some portions of the output realizing as