

Bituminous
sand-rock,
cont.

and homogeneous in appearance, and of a dull, dark brownish-black color. Specific gravity at 60° F. 2.040. At the temperature of 50° F. it is quite firm, barely, if at all, yielding to pressure, and does not soil the hand; at 70° F. it gives somewhat to the touch, and is slightly sticky; at 100° F. it becomes quite soft and eminently soils the fingers. It is scarcely acted on by alcohol in the cold, and but very slightly at a boiling temperature; but ether, oil of turpentine, kerosene, benzine (petroleum spirit), benzol (coal-tar naphtha) and bi-sulphide of carbon, more especially the last two named, readily dissolve the bituminous matter, with formation of dark brown colored solutions, and leaving a pure or almost pure siliceous residuo in the form of sand, of which apparently the bitumen had constituted the sole binding medium.

Analysis of.

The composition of this specimen of the rock was found to be as follows:—

Bitumen	12.42
Water, mechanically included	5.85
Siliceous sand	81.73
	100.

The sand consisted of colorless transparent quartz, not unfrequently presenting the bright glassy lustre of broken quartz crystal, the surfaces were, however, for the most part, more or less dulled by abrasion: it contained a few flakes of silvery mica, and, as Mr. Adams—to whom I handed a small quantity for microscopical examination—informs me, an occasional fragment of felspar. It is on the whole exceedingly fine, 52 per cent. of the same passing a sieve of ninety meshes to the linear inch; 16 per cent. one of seventy-five meshes; 15 per cent. one of sixty-six meshes, and 9 per cent. one of fifty meshes, leaving a balance of 8 per cent. as rejected by the latter.

Subsequent to the foregoing examination Mr. A. S. Cochrane, of this survey, handed me a specimen which he collected, and which differs from the above, in that it does not appear to contain so much water and the bituminous matter partakes more of the nature of asphalt. At the temperature of 65 F. it is quite hard, fragments may be chipped off with a hammer, and it is reducible in a mortar to a non-coherent pulverulent condition; at 100° F. it barely yields to pressure, and is only slightly adhesive: at 150° F. it gives to the touch and is somewhat sticky; at 200° F. it is quite soft, and may be readily moulded.

MALTHA OR MINERAL-TAR.

Maltha or
mineral-tar

From the right bank of the Athabasca, about twelve miles below its confluence with the Little Red River. Collected by Mr. A. S. Cochrane.