

and solid calcareous cliffs of sixty and eighty feet. The Credit, in Caledon, is flanked by similar cliffs, and in the valley of the Nottawasaga, in Mono, the same character prevails. Similar cliffs were observed in Muhmur and Nottawasaga, and in the valley of the Beaver river in Euphrasia and Artemesia the same limestone is at least 120 feet thick.

Mr. Murray goes on to state that huge caverns are sometimes found in this limestone, the roofs and floors being studded with small stalactitic incrustations.

The encrinal limestones are everywhere qualified to make a durable and handsome building stone, and in some parts, when sufficiently removed from atmospheric influences, might be used as a marble for common ornamental purposes. Most of its beds are likewise of good quality for burning lime.

Gypsiferous works were recognized in the Speed, the Irvine, and the Rocky Saugeen, and Mr. Murray observes, that "sharp conical hills and mounds, and large circular sinks or depressions, such as have been described in a former Report, are of frequent occurrence in the gypsiferous country, were observed in the township of Waterloo and in several parts of the Saugeen, and it is extremely probable that as improvement advances, and the hills are cut into where roads happen to intersect them, this useful mineral will eventually be found in many places."

"*Drift*.—It has already been remarked in the Report of 1843 that a great deposit of loose detrital material, consisting of clay, sand, gravel, and boulders, deeply conceals the older strata in a great many parts of Western Canada; and this remark is peculiarly applicable to the Peninsula between the Niagara Ridge and the St. Clair River. The lower portion of the more recent deposits, as exhibited on the shore of Lake Erie, where the cliffs are in many parts over 150 feet high, is a blue calcareous clay, frequently holding pebbles and small boulders of limestone, and small round fragments of granite or gneissoid rock. Clay of an ash-grey colour, when dried, but presenting a light brownish colour in the bed, succeeds the blue clay, and this again is overlaid by pale buff and occasionally yellowish tinged clay. Back from the lake these clays are capped with a stratum of sand, and the more elevated parts present beds of calcareous gravel.

"No organic remains of either marine or fresh-water origin have hitherto been observed among the superficial deposits of the Western Peninsula, with the exception of the shells which constitute the fresh-water shell marls, and the impressions of leaves and moss which are frequently preserved in the tuffaceous deposits around calcareous springs and on the banks of rivulets, both of which are evidently of very recent origin. The marls are only found immediately below the vegetable mould, and contain only shells common to almost all the lakes and rivers of the present day, and in the accumulations of calcareous tufa the impressions are only of such plants as now grow in the immediate vicinity of the springs and brooks, to which the deposits owe their origin.

"The materials of economic importance, connected with the superficial deposits, are brick clays, bog iron ore, shell marl, calcareous tufa, and peat.

"All the clays are more or less calcareous; but some portions of the deposit are, nevertheless, admirably adapted for the manufacture of bricks, and are used for that purpose over a great part of the northern country.

"Bog iron ore is found in many parts of the country in greater or less abundance, along the edges of marshes or on the marshy banks of streams. It usually occurs in rough, irregular, detached masses, and of all sizes under one foot diameter, generally deposited on clay, and concealed by vegetable mould and marsh grasses.

"Fresh-water shell marls were observed at several places in the new townships of Bentinck and Brant. One bed, extending over between two and three acres, with a thickness varying from three inches to one foot, occurs on the property of Mr. Jackson, on the nineteenth lot of the first concession west of the Owen Sound Road, within a mile of the village of Durham. Another bed occurs on the fifty-ninth lot of the first concession south of Bentinck, on the Durham Road, the extent of which was not exactly ascertained, but it shews a thickness in several places on the side of the road of not less than two feet. A

third bed was seen on the seventieth or seventy-first lot of the first concession south of the Durham Road in Brant; this bed is exhibited in the banks and on the bottom of a small tributary of the Saugeen, near its junction with that river, and is in some parts fully three feet in thickness. Indications of the presence of the same substance were observed likewise near the junction of the Rocky Saugeen and the main stream; and it is probable that it will be found to exist in many other parts of the region, where its value as manure will doubtless be sufficiently appreciated as the settlement advances in improvement.

"These marls, which are almost entirely composed of an aggregate of comminuted fresh-water shells, are usually concealed by a rich black vegetable mould or peat. The ground is usually swampy and sometimes assumes somewhat the character of prairie land. I was informed of some instances in which the peat is sufficiently thick and free from earthy matter to be available as a fuel, but none of these came within my observation.

"In respect to the tufa, none of the deposits that came within my notice were of sufficient importance to be deemed of economic value; but indications of it were met with on the banks of many springs and streams; and in consequence of the calcareous nature of the soil, and the adjacent rocks in so great an extent of the Western Peninsula, large deposits of it may be looked for. The material is applicable as a mineral manure, and may be resorted to for lime for mortar.

"Springs of petroleum, commonly known in the country by the designation of *oil springs*, rise in the River Thames, near its right bank, on the twenty-eighth and twenty-ninth lots of the first range of Mosa, where the bituminous oil is frequently collected on cloths from off the surface of the water, and is very generally used in the neighbourhood as a remedy for cuts and cutaneous diseases in horses. Similar springs are known to exist in the township of Enniskillen, and a deposit of mineral pitch or mineral caoutchouc is said to extend over several acres on the seventeenth lot of the second concession of the township."

The Report of T. S. Hunt, Esq., Chemist and Mineralogist to the Provincial Geological Survey, follows that of the Assistant Geologist. Mr. Hunt gives the analysis of several felspathic minerals, which were first discovered in Canada by that indefatigable collector, Dr. Wilson of Perth, and Dr. A. R. Holmes of Montreal, and first analyzed by Dr. Thomson of Glasgow. *Perthite*, Mr. Hunt states, is of the same composition as *Orthoclase*, *Peristerite* he shows to be *Albite*, *Bytownite* to be identified with *Anorthite*; *Pretinite* a compact *Marmolite*. These minerals, suggested by Dr. Thomson to be new species, are thus found to be identical with previously described varieties. Mr. Hunt has however succeeded in discovering a new mineral, which he found in a mass of lime-stone, exposed in constructing the timber slides on the Ottawa, near the Grand Calumet. He has very appropriately named it *Loganite*.

We have not space to advert to Mr. Hunt's admirable series of analyses of mineral waters, with which the Geological Reports for the last two or three years have been enriched. We can only say, in conclusion, that the Reports are of the highest value to the commercial and scientific interests of this Province; and while they reflect great credit upon the Government which provides the means for the prosecution of the researches they detail, they will be a lasting record of the indefatigable industry and rare talent of the gentlemen engaged in the arduous work of discovering and describing the geological treasures of Canada.

American Journal of Science and Arts.—A. H. Armour & Co., Toronto. —This long established Journal, edited by Professor B. Silliman, B. Silliman, jr., and J. D. Dana, aided by Dr. Wolcott Gibbs in Chemistry and Physics, and Professor Asa Gray in Botany, is published at New Haven, Ct., in numbers of 152 pages each, every two months, commencing each year with January, making two volumes a year.—Price, \$5 a year in advance,

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