

the Lower
(Figure 2,
andesites
top (Plate
out north
and altered

the strike
0, 12, 13

ness in feet.

30

to 100

to 10

25

15

95

30

50

20

10

5

to 15

to 20

15

30

36

15

(?)

150

15

15

701

From this point west the material is mostly covered except for outcrops of a few beds of comparatively unaltered lava.

21. Two or three hundred yards to the southwest, down a gully, there are nearly flat-lying outcrops of a dacitic ash of the same character and probably the same bed as No. 16. This is in the trough of the fold.

Although the Tranquille beds were not seen in this part of the area, the Upper Volcanics, consisting of nearly flat-lying basalts, occur.

From Soda Creek to a point above Quesnel, a similar succession can be observed, namely, disturbed and folded lavas overlain by a sedimentary series and this, in turn, by flat-lying basalts.

A series of volcanic flows that dip at high angles and are much brecciated in places, outcrops in Fraser canyon just north of Soda Creek, where they are apparently of great thickness. About 5 miles north of Soda Creek near the road, are platy olivine basalts striking from north 67 degrees east to north 80 degrees east with dips of 55 to 70 degrees to the north. Four miles farther up, from a cliff of much brecciated basaltic rock, large blocks have rolled from the railway cut to the road. Stringers of epidote and chalcadonic silica cut through the rock which has in places a pisolitic texture. Farther north on the east side of the road, a volcanic rock shows columnar structure. Just below the mouth of Australia creek, on the west bank of Fraser river, is an amygdaloidal basalt, much brecciated and altered to clay. Beds of clay derived from this basalt are interbedded with lignitiferous clay or sand at this place. A bed of lignite is said to outcrop nearby but was covered at the time of our visit and its relation to the basalt could not be observed. About 1½ miles below Quesnel, on the west bank of Fraser river, there is a series of augite andesites and other lavas of nearly the same composition, occurring with white, finely banded, dense, glassy lavas (Figure 12, locality 12). The rocks are much faulted and brecciated, and altered to clay, while nearby are beds of arkosic sandstone derived from them and carrying carbonaceous material. Similar lava beds outcrop on the west bank of the river about 2 miles farther down (Figure 12, locality 14) and in the road west of the river between these two localities. The very much faulted, brecciated, and altered condition of these lavas indicates that they are much older than the much less disturbed, topographically higher, strata of the Fraser River formation. This conclusion is strengthened by the finding of clay and carbonaceous beds of undoubtedly later age close to the lava outcrops.

FRASER RIVER FORMATION.

Sediments of Tertiary age were observed along Fraser river from the Big Bend 8 or 9 miles above Quesnel, to and beyond Australia creek (Figure 1). They outcrop also on the river below and above Prince George. Dawson¹ mentions occurrences on Blackwater river about 30 to 40 miles northwest of Quesnel and there are probably other occurrences of the same age near the main Fraser valley. The sediments consist of gravels, sands, and clays, and beds of lignite and diatomaceous earth.

The gravels of this formation are yellow to brownish and in many cases well cemented. Their pebbles are well rounded and composed for the most part of quartz and of metamorphosed sediments and lavas. The clays are generally grey in colour; some of them are nearly white, and

¹Dawson, G. M., Geol. Surv., Can., Rept. of Prog., 1875-76, pp. 253-256.
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