

exposed at the surface, and of the exposed part, only occasional localities were visited. However, it has been stated that the greatest thickness of the beds is in the vicinity of the Crowsnest mountain, and also that it is probable that the thickness there is about the maximum, so that the main centre of eruption may safely be considered to have been in that vicinity. There is no evidence to show that there was more than one vent, unless the elongate form of the deposit may be considered as such. However, this may be due to current action in distributing the sediments and further and more detailed study might throw light on this subject.

It is the writer's opinion that there was a linear arrangement of several vents in a north and south direction about the meridian of Coleman, Alberta.<sup>1</sup>

### *Conclusions.*

At the time when the deposition of the Crowsnest volcanics began, the area they now cover was occupied by a shallow sea probably of fresh water, containing low marshy islands. There is no recognized evidence to show whether the vents emptied into the air, or were submarine; any cones that may have been built up above sea-level would naturally be destroyed during the incursion of the sea in Benton time. The thickness of the deposits in relation to their lateral extent seems to indicate that the beds are due to the simultaneous effect of several small volcanoes of moderate activity, rather than to the action of one large vent. The eruptions were of the explosive type, unaccompanied by flows except very locally, and took place in continual sequence during a relatively short period of time. By far the greater part of the ejected material fell into the sea, and there was deposited in more or less well stratified beds.

<sup>1</sup>This statement was written in April 1913, and in September of the same year, Dr. C. H. Clapp informed the writer that he had found a probable volcanic neck at Coleman. It is not improbable that still others may be discovered.