



FIG. 3.—Alkalinity ratio plot for Ross Volcano analyses, dots, and Mull alkaline magma series, crosses (from Bailey *et al.*, 1924). The alkalinity ratio has been used (Wright, 1969) to identify mixed petrographic provinces, and shows how silicification of intermediate lavas in the Ross volcano has induced an apparent swing towards calcalkaline affinities compared with the Mull alkaline lavas.

so fine-grained as to escape detection under the microscope. Some of the salic Hooker Saddle lavas may also contain occult silica in addition to microscopically recognisable phases (Wright, 1966).

Low-pressure hydrothermal silicification ("opalisation") of lavas is a common enough phenomenon (e.g., Höller, 1968; Thompson, 1967), but it is not clear here whether the silica was introduced from outside or released by partial alteration of silicates (especially feldspars) under the influence of dilute alkaline aqueous solutions (Höller, 1968).

### Obsidians

As in other volcanic associations, the glassy rocks are appreciably more hydrous and potassic than their crystalline equivalents (Table I), probably as a result of postmagmatic processes (e.g., Ewart, 1964; Aramaki and Lipman, 1965; Walker, 1969). In view of possible compositional changes induced by hydration, leaching, and perhaps silicification, it may well be fortuitous that the two analysed obsidians from Group III and the Hooker Saddle suite fall so close to Huber and Rinehart's (1966) "average" silica *v.* refractive index curve (Fig. 4).

### The "Daly Gap"

The proportion of salic rocks (Hooker Saddle suite) and of the basal (Group I) basalt, in the lower differentiated series of the Ross volcano, is very much less than