(1956) from the fluviatile New Haven arkoses of Connecticut. The aggregate maximum thickness of the Triassic of Connecticut is given as rather more than 15,000 ft and the laumontite is reported to occur sporadically in the lower part of the section. Cements of authigenic albite and potash feldspar are abundant throughout the column, although they occur in traces only in the laumontite-bearing rocks. There is minor secondary quartz in the cement and sporadic sericite. Heald considers that since the laumontite occurs as interstitial fillings, part of its material, as of the secondary albite, must have been introduced. Derivation from the Triassic diabases was suggested. It may be pointed out, however, that the alteration of calcic plagioclase to laumontite involves an equation such as:

$$\underset{101\ \mathrm{cm^3}}{CaAl_2Si_2O_8} + \underset{45\ \mathrm{cm^3}}{2SiO_2} + \underset{72\ \mathrm{g}}{4H_2O} \rightarrow \underset{207\ \mathrm{cm^3}}{CaAl_2Si_4O_{12}.4H_2O}$$

Hence, if this type of alteration occurs, some of the laumontite constituents must migrate from an altered plagioclase crystal at least as far as the nearest pore space (cf. Antun, 1953, p. 69). Such a cement does not require an outside derivation. Whatever the chemical origin of the laumontite or of the authigenic albite, the assemblage of interstitial minerals, albite, potash feldspar, laumontite and quartz, suggests conditions very similar to those prevailing in the middle and lower parts of the Taringatura section of southern New Zealand as reviewed above.

More recently Ross (1958) has described laumontitized tuffs from wells in Clinch County, Georgia, which are remarkably similar in texture and mineral assemblage to those of Taringatura. The alteration of celadonite to chlorite and its association with saponite are to be noted.

3.1.3. *Australia.* Gill (1957) has recently reported laumontite replacing wood in richly feldspathic Jurassic arkoses from East Gippsland, Victoria, and observations by one of us (D. S. C.) show that the mineral occurs in the groundmass and as a replacement product of plagioclase in the same series of rocks. Gill (personal communication) suggests an original cover of about 3000 ft for the rocks concerned. Coombs (1958) has shown that glass in Carboniferous volcanic ashes of the Kuttung Series, near Seaham, New South Wales, has been altered to clinoptilolite coexisting with quartz, celadonite and sphene. Joints in the same rocks are coated with stilbite, but sometimes contain laumontite as well.

3.2. *Formation of zeolites in active thermal areas*

3.2.1. *Wairakei, North Island, New Zealand.* At Wairakei, a hot-spring and fumarole area in the volcanic region of New Zealand, numerous wells have been drilled to provide steam and hot water for electric power generation. These wells provide an unusual opportunity for studying the mechanism and properties of an active hydrothermal system. From drill cores and cuttings, Steiner (1953, 1955a, b) has demonstrated the following zones of hydrothermal alteration (Fig. 4) caused by the action of steam and hot solutions on a sequence of rhyolite tuffs and breccias interbedded with minor mudstones and claystones. The hot solutions are saturated in silica which precipitates at all levels.

(a) Surface acid leached zone: The characteristic minerals are kaolinite, alunite and opal.