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Unusual zircons from the Leinster Pluton

ZIRCONS having elongation ratios greater than 69 have been found in muscovite flakes collected from the Leinster Granite. The greatest recorded elongation ratio known to the author is 32 for a zircon from the Pend Oreille tonalite (Poldervaart, 1956, p. 535).

Six samples of 50 to 80 gms of muscovite were collected, three from the muscovite-rich Type III granite (Brindley, 1954, p. 161) and three from different pegmatites. The zircons were separated by dissolving the muscovite flakes in a mixture of HF and H_2SO_4 (see Larsen and Poldervaart, 1957). The pegmatite muscovites were found to contain no zircon. In contrast the granite muscovites contained numerous extraordinarily elongate zircons. A fundamental environmental difference is indicated (Brindley and Gupta, 1973, p. 426).

The recovered zircons are singly and doubly terminated and show pleochroism from neutral to yellowish green. They are generally simple unimodal prismatic crystals; zoning is common; some of the zircons show a superimposed thin film of one crystal

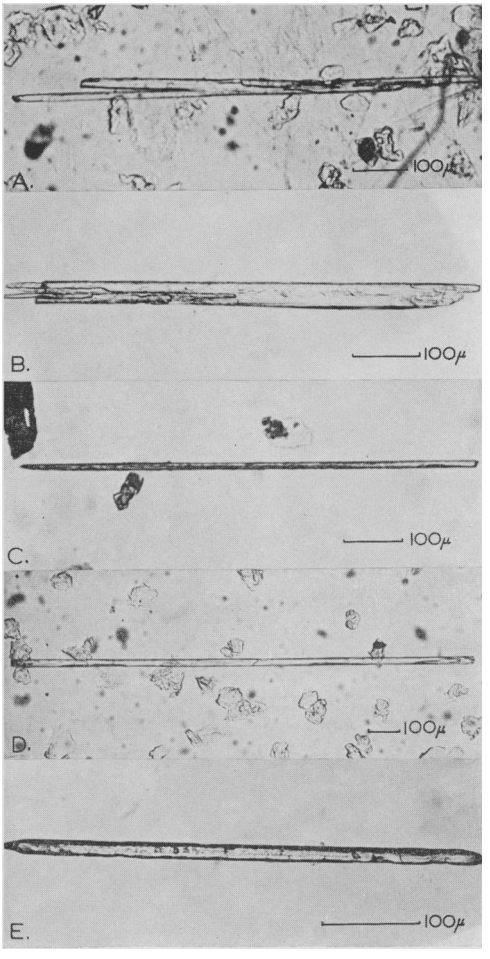

FIG. 1. Photomicrographs of the zircons: A, two crystals grown in optical continuity (maximum total length 880 μm); B, zircon showing corrosion, clouding, and irregularly broken termination (length 711 μm); C, singly terminated zircon having maximum elongation ratio of 69·41 (length 790 μm); D, zircon having the second maximum elongation ratio of 69·20 and transverse cracks (length 1501 μm); E, doubly terminated zircon with elongation ratio of 35·71 and showing a transverse crack (length 500 μm).

over another. Some have possibly grown from two nucleii and subsequently joined to make a single optically continuous crystal (fig. 1A). Occasional zircons show corrosion and clouding (fig. 1B), which appear to be due to acid attack during their extraction. The zircon lengths vary from 480 to 1501 μm, breadths from 12 to 50 μm. The maximum

elongation ratio is 69·41 (fig. 1C), the next greatest is 69·20 (fig. 1D). Elongation ratios of 25–50 are common. Transverse cracks are often seen (fig. 1, D and E).

These zircons, extracted by dissolving demonstrably late muscovites have exceptional dimensions. They contrast strongly with early zircons separated from crushed samples of the same granite (Gupta, 1972), which show normal magmatic elongation ratios of approximately 2. Breakage during whole rock crushing may be the reason why extremely elongate zircons were not recovered in the latter instance and, possibly, why they are only recorded very rarely in the literature.

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Department of Geology,
University College, Dublin–4

L. N. GUPTA

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