

500 Ma PAN-GONDWANA EVENT AND ITS
TECTONIC SIGNIFICANCE: ANTARCTICA
AND THE HIMALAYA (ABSTRACT)

Kazunori ARITA¹, Yoshiyuki KOIDE² and Kazuyuki SHIRAIISHI³

¹*Department of Geology and Mineralogy, Faculty of Science, Hokkaido University, Kita-10, Nishi-8, Kita-ku, Sapporo 060*

²*Kanagawa Prefectural Museum, 5-6, Minaminakadori, Naka-ku, Yokohama 231*

³*National Institute of Polar Research, 9-10, Kaga 1-chome, Itabashi-ku, Tokyo 173*

Recent geochronological studies have revealed that an early Palaeozoic (around 500 Ma) heating event is recognized in the Himalaya in addition to those in Tertiary age (Eocene and Miocene), late Proterozoic age (700–600 Ma) and early Proterozoic age (2000–1800 Ma). The early Palaeozoic event is mainly associated with granitic intrusions at the northern margin of the Indian continent, that is, in the Lesser Himalaya and Tethys Himalaya along the whole Himalaya from Sikkim in the east to Pakistan in the west (LE FORT *et al.*: *Sci. Terre, Mem.*, **47**, 195, 1986). These granites are mainly tourmaline-bearing mica leucogranites with or without cordierite and garnet, and have often changed into orthogneiss by later metamorphism in the Tertiary. Major element chemistry suggests the rocks to be S-type granites, and plots near minimum melting composition in the normative Qz-Ab-Or system. Chondrite-normalized REE patterns for the granites from the Nepal Himalaya and from the Yamato Mountains and Lützow-Holm Bay, Antarctica show a similar pattern: $(La/Lu)_{cn} = 1.5-16$ and clear negative Eu anomaly.

In the Himalaya the sedimentary basin has been shifted from the Lesser Himalaya in the south to the Tethys Himalaya in the north in the early Palaeozoic age (HASHIMOTO *et al.*: *Geology of the Nepal Himalayas*, 257, 1973). The Palaeozoic granitic intrusion appears to have occurred along the boundary zone between these basins, and to have been coeval with the shifting of the basin. Such early Palaeozoic orogenies with intensive acidic magmatism associated with slight metamorphism have been known to occur not only in East Gondwana (the Ross orogeny in Antarctica and the Adelaide orogeny in Australia) but also in West Gondwana (the Pan-African orogeny in Africa). Therefore, we propose to designate these orogenies in the whole of Gondwanaland as the Pan-Gondwana event which has been attributed to the final amalgamation of Gondwanaland in the early Palaeozoic age.

(Received April 27, 1993; Revised manuscript received June 2, 1993)