



Figure 2. Arthropod nerves, conduction velocity versus temperature. Combined regression for isopod (*Glyptonotus antarcticus*) leg nerves (circles) and ventral nerve cord (hexagons): $V = 1.06 + 0.063T$. Pycnogonid (*Colossendeis robusta*) leg nerves show extremely low velocities: fast fibers (squares), $V = 0.33 + 0.014T$; slow fibers (triangles), $V = 0.04 + 0.007T$.

up to 34° (leg nerve) and 38°C. (ventral nerve cord). Isopod nerves showed some recovery on cooling, particularly in the ventral nerve cord. As leg nerves were very fragile, the observed limits may be too low. Following failure at high temperatures, both fish and invertebrate nerves contract and become relatively stiff and inelastic, suggesting collagen denaturation.

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Foraminiferal ecology: R/V *Hero* cruise 75-1a

NICOLAS K. TEMNIKOW and JERE H. LIPPS
Department of Geology
Institute of Ecology
University of California, Davis
Davis, California 95616

The main goals of our program aboard R/V *Hero* during the 1974-1975 austral summer were to complete a sampling program for zoogeographic studies of benthic shallow-water foraminifera along the western coast of the Antarctic Peninsula, to ascertain the relationship between the shallow-water and deep-water assemblages, and to determine the spatial and vertical distribution of living foraminifera found in soft-bottom communities. These goals were accomplished by scuba diving and bottom sampling with van Veen, orange peel, and Dietz-Lafond grabs.

During the season our group participated in

three legs of *Hero* cruise 75-1a. Two were north of Palmer Station to sample in the South Shetland Islands, and one was in the southern part of Marguerite Bay.

During the two legs north of Anvers Island (January 19 to 30 and February 28 to March 4), many bottom samples were collected. The earlier leg was shared with three Chilean biologists (Gallardo, 1975). Port Foster (Deception Island) was resampled (see figure 2 of Lipps and DeLaca, 1974) to determine the yearly succession of foraminifera since the recent volcanic eruptions, and to provide further data on the distribution of foraminifera. Bottom samples collected during 1974-1975 from Deception Island have been processed (Finger, 1975). Detailed sampling was done in Discovery Bay (Greenwich Island) and Admiralty Bay (King George Island). One transect was done in the sound off Omega Island (Melchior Islands). Samples were taken with Dietz-Lafond, orange peel, or van Veen grabs (deeper stations). A new and improved method of preserving and staining the foraminifera, described in detail by Walker *et al.* (1974), was used with success.

During a February 8 to 20 leg, bottom samples were taken as far south as Terra Firma Island at Mikkelsen Bay (Marguerite Bay). Continuation of the leg southward was halted because of impenetrable pack ice. The van Veen grab was occasionally used to obtain relatively undisturbed mud samples, which were immediately subsampled with Thiel's "Meiostecher" cores (Hulings and Gray, 1971). M. Erskian, Bodega Marine Laboratory, University of California, is using these samples to determine the horizontal and vertical distribution of foraminifera and the effects of bioturbation of these distributions. All Meiostecher cores were frozen aboard ship and later X-rayed at Palmer Station. In general, samples shallower than 200 meters showed both vertical and horizontal burrows, mostly made by worms or bivalves, whereas deeper samples were less disturbed by burrowing organisms. Fish were also collected with an otter trawl for R. Daniels' studies of their food preferences.

In addition to remote sampling, we routinely did scuba dives at various places along the Peninsula during the three legs to complete our studies of the biogeography and vertical distribution of shallow-water marine communities. Sediment and algal samples were collected by hand, and each site was photographed to document the organisms present. These dives confirmed the impression we had from last year's work that the vertical zonation of rocky assemblages varies considerably depending on the degree of exposure to ice abrasion. Severe abrasion affecting the entire nature of the assemblages was noted to depths over 40 meters on coasts that were congested with large, deep icebergs.

Hero was used almost daily between legs by our group in the vicinity of Palmer Station. Reconnaissance dives, which included collection of sediment, invertebrates, and macroalgal samples, were made in the Joubin Islands, near the British bases on Galindez Island (Argentine Islands), and at Port Lockroy. Detailed sampling was done in the Arthur Harbor vicinity to obtain more data on the distribution of foraminifera and to determine the possible relationship between the foraminiferal fauna and the type of substrate. Over 255 bottom samples were successfully collected during 1974-1975 and returned to the University of California, Davis, for later study. A total of 19 scuba dives were made from *Hero* at 17 locations.

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