less-steel balances, high vacuum and smooth-operating vacuum pumps, electrical measuring instruments, electronics teaching devices, Densichron for measuring optical density, color saturation, paper chromatograms, and so forth. Many charts and other visual aids for teaching science, mathematics, and physiology, as well as preserved specimens, synthetic skeletons, and other biological models, will be shown.

Yellow Springs Instrument Company, Inc.

Booth 56. Yellow Springs Instrument Company will display our thermistor temperature-measuring devices, our new thermistor regulator, and some of our psycho-physiological equipment. The single-channel and multiple-channel telethermometers with a full display of interchangeable thermistor probes will be featured. Special noninterchangeable probes mounted in hypodermic needles, and for use in catheters and tissue implantation, will be shown. Personnel will be on hand to answer questions on special temperature-measuring problems. The model 63 temperature regulator, a new low-priced, thermistor-based regulator sensitive to ±1°F will be demonstrated. H. W. Trolander, president, and Raymond I. Schiff, sales manager, will be in attendance.

News of Science

Habitat of Early Vertebrates

The first vertebrates appear in deposits of the Ordovician period, which is dated some 450 million years ago. They were unquestionably aquatic forms; but the nature of their original habitat—whether marine, brackish, or fresh water—has been a moot subject. Some students—perhaps most—have favored a fresh-water, fluviatile origin of vertebrates. Others, however, have argued for a marine origin. Still another view is that which adopts an intermediate position and regards the matter as debatable, believing that the widespread ostracoderm group of jawless fishes—the oldest and most primitive of known fossil vertebrates—had both fresh-water and marine representatives.

J. D. Robertson [*Biol. Rev.* **32**, 156 (1957)] has recently reviewed the evidence bearing on this problem, considering both the geological and the morphological and physiological data. He regards the following points as indicating a marine habitat for the early vertebrates: (i) geochemical estimates that the early Ordovician seas were very similar in salinity and ionic composition to present-day seas, indicating that the first marine and fresh-water vertebrates likely were subject to the same physicochemical environmental stresses as those affecting present-day fishes and other marine chordates; (ii) common occurrence of the remains of early vertebrates (both Ordovician and Silurian) in association with those of marine invertebrates; (iii) the fact that all three existing protochordate groups (Hemichordata, Urochordata, Cephalochordata) are marine; (iv) the high salt concentration of the internal medium in the cyclostome marine order Myxinoidea—equivalent to that of the surrounding sea water, as in marine Urochordata and marine invertebrates—possibly a primary character acquired directly from ancestral marine chordates; and (v) the presence of well-developed glomerular kidneys in the marine myxinoids and elasmobranchs, which suggests that this type of kidney probably existed in marine protovertebrates, subsequently becoming a useful preadaptation for life in fresh water.

Robertson thus concludes that the vertebrates were originally a marine group. The arguments that have been advanced for their fresh-water origin he rejects as either erroneous or improbable.

Although Robertson presents an interesting case for a marine origin, the evidence which he advances appears to be somewhat short of completely convincing, although, perhaps, no less convincing than the evidence which has been advanced for a fresh-water origin. The resultant dilemma is probably inevitable, since, as the author states in his introduction, any conclusions concerning the original vertebrate habitat "must always remain in the realm of probability."

—W. L. S. Jr.

International Physiological Expedition

The stress of antarctic weather on the human body will be studied by an international team of scientists from the University of California, Great Britain, and West Germany this winter. A six-man group left Berkeley early this month to participate in the International Physiological Expedition to Antarctica, which is a merger of separate American and British research groups and which is being financed by the Office of Naval Research.

An American expedition, organized by Nello Pace, professor of physiology, and also financed by ONR, started a series of studies on Naval personnel in the "Deepfreeze I" expedition to Antarctica 2 years ago. The Berkeley group plans to follow up the earlier work, study personnel who have wintered in the polar region, and determine the effects of long exposure to the cold environment.

Meanwhile, in Britain, an expedition to make the first land crossing of Antarctica has been planned. The crossing will start from the Luitpold Coast of the Weddell Sea and proceed across the South Pole to the U.S. base at Ross Island in the Ross Sea. A New Zealand party led by Sir Edmund Hillary and based at Ross Island will act in support, traveling inland to establish a supply depot on the Beardmore Glacier on the last leg of the route.

The British Medical Research Council Laboratories has set up a program for physiological studies of the 15-man expedition. One British physiologist, Alan Rogers, will actually make the trek with the party. Two others, L. G. C. Pugh and James Adam, British Army medical officer, will meet the expedition at the terminus and carry out tests on the trekkers as well as on members of the New Zealand support group.

Other members of the International Physiological Expedition are Jack W. Millar, commanding officer of the U.S. Naval Medical Research Unit No. 1 at Berkeley; William E. Siri, of the Donner Laboratory, who is experienced in expeditions and will serve as operations director; and Gerhard J. Hildebrand, physiologist from Karlsruhe, Germany, who is joining Pace's laboratory staff.

The work of the expedition consists of two parts. First, detailed physiological observations will be made on personnel in Antarctica. For example, tests will be