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

made to determine the effect of the cross-continent hike on the heart, on body fluid volumes, body heat balance, and sensory perception. Second, fluid samples—blood and urine especially—will be taken from subjects, frozen, and returned to Berkeley for analysis. The analyses are expected to reflect the extent to which the environmental stresses derange body metabolism. In addition, saliva samples will be frozen for shipment to Berkeley, where studies of associations between certain types of oral flora and upper respiratory disease in cold environments will be made.

These studies will be important in the large program conducted by Pace and his colleagues to study human stress of many kinds. Many of these studies are carried out in the unviersity's White Mountain Laboratory (14,250 feet) under the conditions of stress at extreme altitude.

British Group Signs Manifesto

Forty-three British scientists have issued a manifesto urging all scientists to join them in using science for peaceful purposes only. The 43 are all members of the Religious Society of Friends. The British scientists take note of the recent statement by 18 German scientists [*Science* **125**, 876 (3 May 1957)] and the Pauling petition [*Science* **125**, 1190 (14 June 1957)]. Then they say: "We go further in refusing to cooperate in the production of any weapons of war."

First Geological Map of Asia

A group of senior geologists, mainly from Asian countries, convened by the United Nations Economic Commission for Asia and the Far East, began a series of meetings last month in Calcutta, India, in order to complete the compilation of the first regional geological map of Asia and the Far East for publication next year. On the basis of this map, other maps will be prepared showing the distribution of mineral resources in the Asian region. At the first meeting, the group elected Sultan Ahman Popal of Afghanistan as chairman and U. B. Singh of Burma as vice chairman.

Federal Funds for Medical Research

In contrast to the $33,147,224,106 voted by Congress in fiscal year 1956 for military defense, only $102,224,000 was voted for research against the major diseases in this country. This comparison is made in the 1957 edition of a study of heart diseases, cancer, mental illness, arthritis, blindness, nerve disorders, and other health problems compiled by the National Education Committee, Inc., New York. The Federal allocation of $102,224,000 which was made through the five National Institutes of Health, was compared by the committee with these Congressional appropriations: $267,139,000 for design and testing of atomic weapons; $116,000,000 for agricultural research service; $51,000,000 for development assistance to Asia; $62,980,000 for survey and construction of the Inter-American highway; and $45,029,300 for the National Park Service.

Paris Fuel Element Conference

Scientists from a number of countries recently participated in an unclassified conference on the technology of reactor fuel elements sponsored jointly by the atomic energy commissions of France and the United States. In addition to the host French scientists and a team of 20 U.S. specialists, representatives attended from the 17 nations comprising the Organization for European Economic Cooperation and also from Canada and Israel. The primary purpose of the Paris meeting was to assist the European participants in their current and projected nuclear power and research programs.

The agenda provided for a review of practices of fuel-element fabrication and of the behavior of fuel elements in reactor operation. Major topics included the manufacture of various types of elements, corrosion and irradiation problems, and recent advances in applied metallurgical research. All conference papers are unclassified; the proceedings will represent a compilation of the latest data and experience in fuel element technology.

NSF Report on Research by Agricultural Experiment Stations

The National Science Foundation reports that expenditures for research by agricultural experiment stations increased tenfold from $7 million in 1920 to more than $74 million in 1953–54—$17 million for basic research and $57 million for applied research. Research funds for the stations came, for the most part, from the state governments and supplemented the core of support provided by the Federal Government. The states accounted for $45 million; the Federal Government for $13.5 million; and other sources, such as sales and royalties, for $16 million. These findings are from an NSF survey of 53 agricultural experiment stations and are contained in a recent bulletin entitled "Funds for Research in Agricultural Experiment Stations, 1953–54," No. 8 in the series *Reviews of Data on Research and Development.*

The 53 stations, practically all administered by the land-grant colleges and universities, are the fountainhead of this country's agricultural research. The largest amounts were devoted to animal production and field crops; the smallest, to genetics and farm forestry.

The stations accounted for 55 percent of the $134 million research budget of the associated land-grant colleges and universities. As determined from the 41 stations that reported on faculty, the stations employed 45 percent of the total faculty engaged in research, or, in terms of full-time equivalents, 56 percent. Copies of the report may be obtained by writing to the National Science Foundation, Washington 25, D.C.

News Briefs

A committee of the faculty of the department of biology, University of Notre Dame, will edit *The American Midland Naturalist.* George R. Bernard has been appointed chairman of the editorial committee.

* * *

The National Committee on Aging of the National Social Welfare Assembly has announced that it will make a study to find out how the United States can insure the best use of the later years of its scientists. The study also will determine how retirement policies affect scientists. The 2-year project will be financed by a grant from the Dorr Foundation and will be directed by Edward N. Saveth, a social scientist and writer.

* * *

The National Health Council has established a special fund in honor of the late Alan Gregg, formerly vice-president of the Rockefeller Foundation and a valued adviser to the council. Contributions to the Alan Gregg Fund will be used to support the council's Health Careers Program, designed to help meet the acute shortage of qualified health personnel in the United States.

* * *

The Foundations' Fund for Research in Psychiatry has announced that *1 February 1958* is the next deadline for the submission of applications for research fellowships in psychiatry, psychology, sociology, neurophysiology, and other sciences relevant to mental health. Interested persons and departments are invited to write for details to: Foundations' Fund for Research in Psychiatry, 251 Edwards St., New Haven 11, Conn.

* * *

The Public Health Service has announced that reported new cases of syphilis increased by 7.1 percent during