News of Science

Indians in the Peruvian Andes

Biological studies of an isolated human group of some 1700 Vicos Indians who live in a high, cold valley in the Peruvian Andes, the Callejon de Huaylas, have been carried out during the past 6 months at a 36,000-acre hacienda rented and operated by Cornell University. These studies, made possible by Cornell's field facilities and by National Science Foundation and U.S. Public Health Service grants, were organized by Marshall T. Newman, associate curator of physical anthropology at the Smithsonian Institution.

He made physical studies on the Indian school boys and men and found them to be very small—almost dwarfed in stature and especially low in body weight. The adult man averaged less than 5 feet 1 inch in stature and 114 pounds in weight. The boys were puny and underdeveloped. On the other hand, many of the men were sturdy and well muscled and had very large lung capacity, enough to supply oxygen for heavy work at 10,000 to 12,000-feet altitude. Only one or two out of more than 200 men could be considered fat by our standards. In large part their inadequate diet, the heavy work, and the cold, high environment may account for the small average size of these people and the poor development of the boys.

The adequacy of the diet was tested by Carlos Collazos, head of the department of nutrition in Peru's Ministry of Public Health. He studied the signs of dietary inadequacies in the schoolboys, and his laboratory is making vitamin analyses of their blood. In addition, a Peruvian dietitian, Carmen Carceres, weighed and analyzed what a sampling of Indian families ate each day, and a Peruvian anthropologist, Hector Martinez, added a supplementary study of the food customs and habits of the people.

These studies have not been fully analyzed, but provisionally the schoolboys seem to be principally lacking in vitamins A and B_2. This will be tested by blood analyses. The family food study, which is now complete, suggests that the greatest deficiencies are in calcium and vitamin-A intake and that the diets are universally very low in fats.

Fred H. Allen, Jr., associate director of the Blood Grouping Laboratory, Boston, Mass., made studies on the Indians' blood types and ran hemoglobin tests on the schoolboys. Among other things, the blood types indicate that the Vicos Indians are almost completely pure in a racial sense. Provisionally, the hemoglobins seemed low. The serum provided by Allen is being analyzed for extra information on vitamin deficiencies, and the Public Health Service is making a study of the cholesterol level of the blood as part of the heart study. Judging by the fat-deficient diet, the cholesterol levels should be low. Along with the low blood pressures shown by Newman's study, and the apparent almost complete lack of heart disease among the Indians, low cholesterol levels should be especially significant.

A final study, made possible by the cooperation of Ramon Vallenas, subdirector of Peru's Department of Industrial Hygiene, consisted of x-rays of the schoolboys' hands. These x-rays will provide information on bone density, likely to reflect poor calcium intake, and on bone development, which, for dietary and other reasons, may be considerably retarded.

The purpose of these studies is to correlate the poor soils, inadequate diet, cold living conditions, and poor sanitation—most of the people have intestinal worms—with the physical and medical status of these Indians, who are forced to eke out a bare subsistence in a relatively inhospitable environment.

How Many Chromosomes?

Strong evidence now indicates that generations of biology students have been erroneously taught that the number of chromosomes in normal human cells is 48. In a paper delivered at the First International Congress of Human Genetics which met in Copenhagen in August, J. H. Tjio and A. Levan showed exceptionally fine microphotographs of chromosome configurations in human embryonic lung fibroblasts. Their findings have been published in *Hereditas* [**42**, 1 (1956)].

Tissue cultures from four embryos were subjected to a mild hypotonic treatment to spread the chromosomes apart, and then to a colchicine solution to stop cell divisions in metaphase; next they were smeared under light pressure in acetic orcein stain. The count of chromosomes, in 261 out of 265 undamaged cells, was 46. In four cells there were 47 or 48, the extra chromosomes having perhaps been displaced from adjacent cells in the smearing process. There are ten pairs of chromosomes with median or submedian kinetochores (spindle attachment points), ten pairs with subterminal kinetochores, and three pairs, all relatively small but not the smallest in size of the chromosomes, with almost terminal kinetochores.

These findings will of course require extensive corroboration, from counts on germ cells as well as on a variety of somatic tissues. Many persons have tried in the past to make a definitive count of the human chromosomes, but until the new spreading technique, discovered by T. C. Hsu, was available, it was no easy matter because of the large number of chromosomes and the frequency with which they tend to overlie each other. Only last year C. D. Darlington and A. Haque reported in *Nature* a count of 48 chromosomes in a human bone-marrow cell. As for the anthropoid apes, there has been no reliable study of the chromosome number in even a single species.—B. G.

International Cooperation in Uranium Exploration

A program for continuing and extending cooperation with friendly nations in the field of uranium exploration has been approved by the Atomic Energy Commission. It is believed that the rapid increase in the scope of atomic progress, especially the potential development of nuclear power, will stimulate the development of uranium resources in many nations to meet their own future requirements for civilian uses of nuclear energy. The United States offers assistance to those nations in their uranium exploration programs along the following lines:

1) Access to information on uranium geology and exploration techniques. The United States has made substantial contributions to world knowledge in this field. (Several hundred reports on various aspects of uranium exploration and ore recovery are included in the technical libraries that, to date, the United States has given to 42 countries.)

2) Geologists and technicians in interested countries will be encouraged to visit the United States and study uranium deposits and commission exploration and laboratory projects.

3) AEC geologists, upon request, may

make brief visits to other nations to discuss uranium geology and exploration techniques and make brief preliminary investigations of known uranium deposits and favorable areas.

These activities may develop into cooperative foreign exploration projects similar to those approved by the commission over the past several years. Since 1951, projects varying from a month to several years in duration have been or are being carried out with Australia, Bolivia, Peru, Venezuela, Colombia, the Philippines, and Turkey, with brief preliminary appraisals made in a number of other countries.

National Seed Storage Laboratory

The U.S. Department of Agriculture has announced that Colorado Agricultural and Mechanical College, Ft. Collins, has been selected as the site of a new National Seed Storage Laboratory—a facility to store valuable germ plasm for future use in developing better crops. Funds totaling $450,000 for construction of the laboratory were included in an appropriation bill passed by Congress this year. The laboratory site, donated by the college, will be deeded to USDA.

Lack of an adequate national seed-storage facility has in the past resulted in partial or complete loss of potentially valuable breeding stock. Existing state and federal laboratories and experiment stations can handle plant material needed in current breeding programs, but they are not equipped to provide adequate storage of the thousands of different plants introduced from abroad or developed in this country that might have value in future plant-breeding research, even though not required for immediate use.

U.N. Exhibit to Commemorate Geneva Nuclear Conference

A permanent exhibit that is to serve as a reminder of the historic significance of the atomic energy conference held at Geneva last summer has gone on display at United Nations Headquarters in time for the conference that has convened there to establish a new world atomic energy agency. The exhibit is intended to commemorate the first International Scientific Conference on the Peaceful Uses of Atomic Energy, which brought together 1428 delegates and scientists from 73 nations, as well as 1334 observers.

Invitations were sent by the Secretary-General last November to the seven governments that had exhibited models of atomic reactors or power plants at the Geneva conference. The governments concerned accepted the Secretary-General's suggestion that they send displays to form the principal parts of the new exhibit at U.N. headquarters. The seven governments are Canada, France, Norway, Sweden, the U.S.S.R., the United Kingdom, and the United States.

Archeology in Alabama

The National Geographic Society has announced that a record of human life in North America reaching back 8000 years has been unearthed in a limestone cave near Bridgeport, Ala. The society and the Smithsonian Institution have jointly excavated the cave.

Layer by layer, a cross section of bones, tools, and weapons has been peeled from the floor of the cave (Russell Cave). It shows human occupancy from 6200 B.C., or earlier, to A.D. 1650. Instead of sweeping out their litter, the cave dwellers buried it under fresh layers of earth, leaving a record that is easy to read.

Led by Smithsonian archeologist Carl F. Miller, the expedition has dug down 14 feet. Remains of a man-made fire at that point have been dated by radioactive carbon tests as being 8160 years old, plus or minus 300 years. At the 6-foot level the group found a skeleton of a cave Indian who died about 4000 years ago.

The topmost Indian deposits, under a layer of debris left by modern picnickers, show no trace of white man's objects, dating them to about 1650, before the first white traders appeared in northern Alabama. Below, the small stone arrowheads of the Woodland period, roughly A.D. 1100 to 1000 B.C., give way to earlier spearheads and knives that represent a time before the bow and arrow were known. Changes in the quality of pottery fragments, and their disappearance beneath the 5-foot level, mark the line between the Woodland culture and the older Archaic Age, when only baskets and skin vessels were in use. The Geographic Society has reported that no other site in North America has yielded such a detailed record covering so long a period of occupancy.

Organized Labor and the New Michigan Reactor

Two international labor unions have filed petitions with the Atomic Energy Commission aimed at blocking construction of the neutron-breeder reactor that is to be built at Lagoona Beach, Monroe County, Mich., for which the AEC has granted a "conditional" permit [*Science* **124**, 358 (24 Aug. 1956)]. The International Union of Electrical, Radio and Machine Workers (AFL-CIO) says that the reactor would be a "catastrophic threat to the . . . citizens of Detroit and . . . of Toledo, Ohio, both 30 miles from Lagoona Beach. [The danger] lies in the possibility of the reactor exploding or otherwise going out of control." The United Automobile Workers of America (AFL-CIO) maintain that the AEC has violated the Atomic Energy Act of 1954 in issuing the conditional construction permit without holding formal hearings. The UAW petition states that the plant as planned raised questions as to "reasonable assurances" of the safety of the project.

Borneo Zoological Expedition

Robert F. Inger, curator of amphibians and reptiles at Chicago Natural History Museum, has returned to this country after having led a zoological expedition to Borneo that has been in the field since March. On two occasions he was the house guest of Iban families in their apartments in the tribal longhouses—huge wooden structures on stilts that are as much as 1000 feet long. These buildings house a whole village of 300 or more people.

Inger collected about 1000 frogs, 5000 fishes, and several hundred snakes, lizards, mammals, and other specimens for the museum. He traveled for hundreds of miles on the Rejang, Kinabatangan, and Kalabakan rivers in dugouts equipped with outboard motors. The tribesmen acquire the motors by going off for several months and working for wages in British-owned oil fields and timber camps. When they have enough money saved to buy an outboard, they quit their jobs and return to a motorized version of their old way of life.

TB in the United States

Approximately 80,000 new cases of active tuberculosis are being reported in this country each year, despite the great advances that have been made in the effort to combat tuberculosis, according to the Annual Report of the National Tuberculosis Association. Outstanding among the advances cited by the report is the revolution in treatment that began 10 years ago with the introduction of effective new drugs. But the report points out that, at best, the victory over the disease is only a partial one:

"According to latest estimates, there are more than 1,200,000 people with active or inactive tuberculosis in the United States. They need either treatment or medical supervision. About 800,000 have active cases of infectious tuberculosis. Perhaps 250,000 of these are not under treatment and are exposing others in their communities. About 55 million