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