



Eskimo child, Clyde, Baffin Island. Photograph by Fred Bruemmer.

The International Study of Eskimos

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The aim of this five year program is to elucidate the biological and behavioural processes responsible for the successful adaptation and slow population growth of approximately 70,000 Eskimos in an arctic environment. These studies represent an integral part of the International Biological Program (IBP), to which scientists of fifty nations have currently subscribed.

Eskimos, similar in race, language and culture across a distance of over 4,000 miles at the top of the world, represent one of the greatest linear dispersions of a group of closely related peoples in the history of mankind. Their habitat, snow-covered for two-thirds of the year, is characterized by low temperatures, seasonal extremes in light and darkness and relatively meagre ecological resources. Despite these environmental constraints, Eskimos have occupied the Arctic for generations. Their long-term occupancy in small, kin-based hunting groups provides human biologists with a marvellous opportunity to study certain aspects of human adaptability in detail. Prior to *c.* 7,000 B.C., most of our own evolutionary development occurred under similar circumstances in a more southerly setting.

This program will involve multi-disciplinary teams from four nations (Canada, Denmark, France and the United States of America), financed by their own countries, cooperatively and simultaneously studying their own Eskimo citizens (excepting France) at Wainwright, Alaska; Igloolik, Northwest Territories; and Upernavik and Angmagssalik in Greenland. Methods to be used, which were previously approved by IBP working groups following, in many cases, the recommendations of the World Health Organization, will be strictly comparable to simplify a synthesis of results.

THE INTERNATIONAL BIOLOGICAL PROGRAM

There is an apocryphal story that the IBP was conceived on a railroad train between London and Cambridge early in 1958. This program was to be the biological analogue to the successful and still continuing International Geophysical Year, which served as a catalyst for arctic and antarctic research in the physical sciences. The growth and maturation of the IBP has been chronicled in a number of publications. As a working model for the nation with which I am the most familiar, I might briefly describe the program for the United States.

The U.S. Program focuses on two major components: the problem of human

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adaptability and that of environmental management. Our main interests are those in the first category. These are concerned with the mechanisms of human adaptation to environmental extremes and to urbanization. Research on these problems will be carried out within a framework of five integrated research programs and with appointed program directors, both approved by the U.S. National Committee for the IBP (USNC) within the National Academy of Sciences. These programs are as follows: The International Study of Eskimos (F. A. Milan), Population Genetics of South America Indians (J. Neel), The Biology of Human Populations at High Altitudes (P. Baker), Nutritional Adaptations to Environment (G. King), and The Ecology of Migrant Populations (A. Ostfeld).

PLANNING FOR THE ESKIMO STUDY

Professor W. S. Laughlin, an original member of the Human Adaptability Subcommittee of the USNC, and a productive researcher on the prehistory and human biology of Eskimos and Aleuts for 30 years, foresaw the advantages of working within the IBP. The IBP could provide a management structure to assure continuity of research over five years. Dr. J. S. Hart, Chairman of the Canadian Human Adaptability Subcommittee, concurred. Planning meetings were held in Ottawa in 1966 and Winnipeg in 1967 for a joint U.S./Canadian study. Finally, a working party conference was held at the Naval Arctic Research Laboratory at Point Barrow, Alaska, in November 1967. Present at this conference were over forty participants from Canada, France, Japan, Norway, Sweden and U.S.A. Representatives of four nations agreed to international participation at the working level and established a committee for implementing The International Study of Eskimos. Members of this committee consist of the appointed project directors from the four nations and it will be chaired by the U.S.A. These directors are Prof. R. Gessain (France), Prof. D. Hughes (Canada), Dr. J. B. Jørgensen (Denmark), and Dr. F. A. Milan (U.S.A.).

The general research categories outlined were: 1) *General Health and Performance*, with special attention to the cardiovascular system, work capacity, chronobiology and antibodies in serum; 2) *Child Growth*, including long-term studies of the size, form, and composition of the body at different ages, the dentition, and bone mineral content *in vivo*; 3) *Genetics*, including genetic markers; the population structure and demography; 4) *Behaviour*, including cognition, psychomotor and expressive behaviour and behavioural genetics; 5) *Ecology*, including quantification of nutritional energy flow through the ecosystem of which the human population is a part, and 6) *Prehistory*.

A free exchange of data between projects is envisioned. The projects commenced in the summer of 1968.

THE U.S.A. PROGRAM

Financial support is being provided for the first year by the U.S. Air Force Office of Scientific Research, the National Institute of Dental Research, The Wenner-Gren Foundation and the Ecology Office of the Smithsonian Institute.

Research categories and investigators are as follows: *General Health and Cardiology*, D. Rice and D. Robinhold (Wisconsin); *Serum Epidemiology*, F. Pauls (Wisconsin State Lab of Hygiene); *Radiology*, C. Dotter, J. T. Pegg, T. Bates (University of Oregon Medical School); *Work Physiology*, D. Rennie and R. Fitts (SUNY at Buffalo) and P. DiPrampiero (Milan, Italy); *Chronobiology*, J. Bohlen supervised by F. Halberg (Wisconsin and Minnesota); *Anthropometry*, W. S. Laughlin plus two graduate students, Steve Zegura and Paul Jamison (Wisconsin); *Bone Mineral Content*, R. Mazess (Wisconsin); *Dentition*, A. Dahlberg, J. Mayhall, R. Owen and T. Dahlberg (Chicago); *Demography*, F. Milan (Wisconsin); *Salivary Amylase*, B. Boettcher (W. Australia); *Population Genetics*, R. Osborne (Wisconsin).

Complete logistic support is being provided by the Office of Naval Research through the Naval Arctic Research Laboratory at Point Barrow. The Bureau of Indian Affairs has made the school house available to serve as a clinic and the Alaska National Guard has granted permission to use the Armory. The Alaska State Division of Public Health is supplying an X-ray unit and the services of Margaret Crawford, R.N.

CANADA'S PROGRAM

The Canadian studies are being financed directly by the National Research Council and the Canada Council. The Department of Indian Affairs and Northern Development, through G. Rowley, the Arctic Coordinator, has provided a house and will construct a research laboratory at Igloolik in 1969. Research categories and investigators are: *Health and Epidemiology*, J. Hildes (Manitoba), O. Schaefer (Northern Medical Services), J. Maynard (U.S. Arctic Health Research Center); *Growth and Constitution*, J. de Peña and assistant (Manitoba); *Population Genetics*, D. Hughes and E. Reed (Toronto); *Nutrition*, H. Milne (Toronto); *Demography and Social Structure*, E. Burch and T. Correll (Manitoba); *Dentition*, J. Mayhall (Chicago); and *Ecology*, D. Foote and four assistants (McGill).

DENMARK'S PROGRAM

The Danish investigations will be carried out at Upernavik and Augpilagtoq. Research categories and investigators are: *Growth and Constitution*, J. B. Jørgensen and Sanjai Sangvidrien (Thailand); *Demography*, K. Hansen; *Genetics*, K. Sørensen and A. Eriksson (Finland); *Ophthalmology*, H. Forsius (Finland); *Dentition*, J. Jacobsen; *Work Physiology*, B. Schmidt-Nielsen and assistant; *Cold Adaptation*, J. Krog and assistants (Norway).

FRANCE'S PROGRAM

The French, who have been working in Angmagssalik since the 1930's, are analyzing data obtained in earlier studies and do not plan to participate in actual field investigations until the following year.

CONTRIBUTIONS

These multidisciplinary studies of the Eskimo inhabitants of four different communities across the Arctic will have at least two immediate and several long-term results. For example, they will provide dental and health benefits to Eskimos in some localities where they are not readily available. Growth norms will be established. They will encourage international cooperation. They will train future scientists through the active participation of graduate students. Finally, they will contribute to the basic knowledge of small group population genetics, human survival in a harsh environment, and relations within a small human population isolate between genetics, stress, environment and disease entities.