

# life sciences notes

## ANTHROPOLOGY

### Eskimo study underway

A multi-national effort to study Eskimos before they are culturally submerged by alien influence has entered high gear with an agreement between Canada, Denmark, France and the United States.

Canada will study Eskimos at Iglook, a remote settlement on the Melville Peninsula. Denmark and France will concentrate on Greenland Eskimos, while the United States will examine Eskimos at Wainwright, Alaska.

The idea is to learn how Eskimos have adapted genetically, physiologically and technologically to their widely separated regions, from Alaska to Greenland. Although Eskimos are considered one group racially, genetic differences may have cropped up over years of isolation. If not, any differences between the groups can be attributed to environment. Aspects to be covered include social customs, nutrition and availability of food, disease patterns and contact with Europeans.

A part of the International Biological Program, the Eskimo study should help reveal the human effects of rapid change.

## IMMUNOLOGY

### Powerful immunosuppressant isolated

A potent immunosuppressant has been isolated from the cytoplasm of group A streptococci by researchers at the University of North Carolina. Drs. Artin Malakian and John H. Schwab report in the Feb. 23 *SCIENCE* that as little as 400 micrograms of the material produce 97 percent suppression of one antibody response in mice, provided it is administered before injection of antigen.

Unlike most immunosuppressants the bacterial substance produces its effect with doses far below toxic levels. And while suppression of immune response may be practically complete, there is no suppression of immune "memory." Thus, if the material is administered before an animal's first exposure to antigen, the primary response is suppressed. But on subsequent exposure to the same antigen, the animal exhibits secondary response rather than primary response, indicating that its leukocytes remember the first exposure. Administration of the agent after injection of antigen produces no effect.

The researchers report that the material obtained so far, while not a homogenous fraction, is quite pure. They believe it acts by preventing leukocytes from differentiating into cells able to produce antibodies. Its significance, they feel, is that it is a common, naturally occurring form of immunosuppressant.

## ECOLOGY

### DDT and declining petrel breeding

The world's 100 remaining Bermuda petrels (*Pterodroma cahow*) apparently must be added to the list of birds threatened by DDT and other hydrocarbon insecticide residues in their environment. There is strong evidence that DDT is responsible for a 3.25 percent annual decrease in reproduction of the rare bird observed over the past decade. If this rate of decrease continues the species will become extinct by 1978.

Drs. Charles Wurster Jr. of the State University of New York, and David Wingate of the Bermuda Department of Agriculture report in the March 1 *SCIENCE* that an average of 6.44 parts per million of DDT was found in three dead petrel chicks and two unhatched eggs. The researchers point out that while this does not prove causality, there is a strong correlation between high DDT residues in other carnivorous birds and declining reproduction. Furthermore there are plausible mechanisms whereby DDT may interfere with successful reproduction. Finally, because of isolation of the petrel colony, and rigid protection, there are few other factors that could be responsible for the decline. Inbreeding is ruled out because of the lack of deformed chicks.

The bird *P. cahow* is entirely pelagic, returning to Bermuda to breed. It ranges over the north Atlantic to feed mainly on cephalopods. It must therefore acquire the DDT from widespread contamination of oceanic food chains.

## ECOLOGY

### Nutrients lost through forest cutting

Quite apart from the physical removal of nutrients in the form of plant material, the clear cutting of a forest results in an acceleration of nutrient loss from the ecosystem.

F. H. Bormann of Yale, G. E. Likens of Dartmouth, D. W. Fisher of the U.S. Geological Survey and R. S. Pierce of the U.S. Forest Service report in the Feb. 23 *SCIENCE* that clear cutting tends to deplete the nutrients of a forest ecosystem by reducing uptake of these nutrients from leaching waters. More of the precipitation is available to leach the soil and run off into the streams because of the elimination of transpiration by trees. And clear cutting alters the soil microbiology to favor quicker conversion of organic substrates to soluble nitrates, making the nutrients held in reserve in organic matter available for quick leaching.

The researchers obtained their results by cutting all trees in a small beech-maple-birch forest. The trees were left where they fell. Ion input through precipitation was compared to ion content of runoff waters to determine amounts of nutrients lost to the system.

A side effect of the leaching is pollution of the runoff stream waters by high levels of nitrates.

## GENETICS

### Chromosomes differ in species

Cotton rats from Tennessee and Arizona have been found to have different numbers of chromosomes in their cells, according to a report from the University of Illinois.

Prof. M. Raymond Lee reports that he has found 52 chromosomes per nucleus in three specimens of the eastern variety and 22 per nucleus in three specimens of the western variety. The two groups have not interbred and it is unlikely that they would be able to because of incompatibility. This raises the question of whether they are of the same species, though judging other factors a taxonomist would say they are.

Dr. Lee is continuing research on the problem under a National Science Foundation grant, to find out what shadings of differences may occur between the Tennessee and Arizona rat populations.

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