On reaching the planned depth, the diver would begin his work: he would gather animals and plants, count their numbers in a quadrat, look for rare species, and take photographs.

A diver cannot work at great depths for long, as dissolved nitrogen gradually accumulates in his blood. To avoid the problem of having this nitrogen come out of solution and form bubbles in the blood during too rapid an ascent (the "bends"), the diver must be raised to the surface very slowly, and consequently the stock of air in the aqualungs must be carefully monitored.

The entire time of submersion was about 20 to 30 minutes. The next submersion by the same diver would be about an hour after the first. This time, he would not descend below 10 metres and would remain no longer than 40 minutes.

Work was often conducted directly under the lower ice surface, but this was not because of the problems of deep diving. Several years ago, antarctic explorers discovered on the underside of sea ice concentrations of microscopic algae which seemed to find most favourable living conditions there. Algae are the basic source of organic matter in polar seas. Our observations showed many animals in this sub-ice area 10 metres below the surface — particularly a great number of crustaceans and the young of some fish species. These areas attract them not only because of the abundance of food, but also because of the protection offered against carnivores. The lower surface of the ice is covered in winter by a thick layer of ice crystals — the so-called "intra-water" ice. These crystals form "ice flowers" where the animals can hide. In summer, the ice thaws, but in the lower layer there appear hollows and depressions connected by a network of channels where the animals can move and remain hidden. In February, that is at the close of the antarctic summer, the ice is broken up by winds, and drifts out into the sea. The annual cycle of the development of sub-ice fauna is a matter for future study.

Three months' work yielded extensive collections which were brought to the Zoology Institute of the U.S.S.R. Academy of Sciences in Leningrad. However, the main significance of the expedition was the opportunity afforded to study the communities of animals and the regularities of their distribution throughout the sea depths. Few such observations have been made in Antarctica.

Only after similar data for other areas of Antarctica are accumulated will we have the chance to undertake a serious study of the zoogeography of antarctic seas and to begin to compare life on both Poles of our planet in detail.

Another expedition to new, unstudied areas of Antarctica is planned. However, we may say already that the antarctic coast far surpasses the arctic coast, as regards both the wealth and variety of its fauna and the complexity and specific features of its communities.

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## Observations on the Breeding Behaviour of Phalaropes

On 27 May 1967, I reached the settlement of Chesterfield Inlet (Igluliarjuk), Keewatin, Northwest Territories. No phalaropes were seen in the district until 13 June. On that day, red phalaropes *(Phalaropus fulicarius)* in considerable numbers and some northern phalaropes *(P. lobatus)* were seen at sea in the offing of, or flying over, one of the islets in the mouth of the inlet. During the next 10 days, phalaropes of both species used a mainland lagoon near the settlement, but their number here gradually declined and by the end of June they had deserted this locality completely.

Some northern phalaropes nested on the mainland and others of this species at least attempted to nest on Promise Island (Nannuyuma), where 5 pairs of red phalaropes nested and a sixth pair made a nest (but apparently no eggs were laid).

After the local spring passage, red phalaropes were seen only on Fairway (Pitiulaktok) and Promise islands. Breeding may well have taken place on Fairway, but a visit there at the appropriate time was not possible. The apparent definitive departure of the females from Promise Island after egg laying was observed on the night of 9-10 July. The newly hatched young of 1 pair still in the nest and guarded only by a male were found at this breeding station on 20 July. Three other males acted as if they had young hidden near the nests which were, by that time, empty. The eggs in the fifth nest had not hatched and this nest had evidently been deserted by the male. The 4 downy young found were weighed and banded.

Confirming my earlier observations on Wilson's phalarope,[1] no territorial behaviour was shown by red phalaropes on the mainland or on Promise Island. The association of red phalarope nesting with colonially breeding arctic terns *(Sterna paradisaea)*, reported by Løvenskiold,[2] as frequently observed in the Svalbard Archipelago (Spitsbergen), also applied to Promise Island.

Two instances of a brief but emphatic

display interpreted as the prelude to the first mating of the season between individuals not yet firmly paired were seen on the mainland. In one case, this display was mutual and led within seconds to a compete copulation. In the second instance, a male made this display at a female but elicited no response from her and both birds almost immediately took flight and were lost to view. Several matings between the partners of apparent red phalarope pairs, not preceded by the display referred to above, were seen on Promise Island. Instances of paired males "offering" to mate with "strange" females were also seen here. The "strange" females in question, reacted with a mild gesture of rejection, making what may be described as a mere hint of a threat movement with the beak. Still and movie photos of both species of phalaropes were taken.

Local Eskimo bird and mammal names were collected in the Chesterfield Inlet area, and at Baker Lake a list restricted to bird names was made. The Eskimo names for prominent topographic features (on several of which the Canadian Army Survey markers were found) were recorded.

General ornithological observations added 17 species to the local avifauna as it was known from previous published works.[3,4,5] These species are listed below (asterisk indicates that a specimen was collected): yellow-billed loon *(Gavia adamsii)*, Brant *(Branta bernicla)**, white fronted goose *(Anser albifrons)*, mallard *(Anas platyrhynchos)*, green-winged teal *(Anas carolinensis)*, red-breasted Merganser *(Mergus serrator)*, sandhill crane *(Grus canadensis)*, stilt sandpiper *(Micropalama himantopus)*, dowitcher *(Limnodromus griseus)*, thayer's gull *(Larus thayeri)*, glaucous gull *(Larus hyperboreus)*, sabine's gull *(Xema sabini)*, snowy owl *(Nyctea scandiaca)*, cliff swallow *(Petrochelidon pyrrhonota)*, hoary redpoll *(Acanthis hornemanni)*, common redpoll *(Acanthis flammea)**, and Oregon junco *(Junco oreganus)**. Identification of the specimens collected was confirmed in the course of a visit to the National Museum of Canada.

Proof of breeding of the following species, the local breeding status of which was either uncertain or unknown, was obtained: Canada goose *(Branta canadensis)**, pintail *(Anas acuta)*, sandhill crane, black guillemot *(Cephus grylle)**, savannah sparrow *(Passerculus sandwichensis)**. Specimens of some of the rodents of the area were also secured.

The observer is grateful to a number of residents of the area for help with his work.

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[1]E. O. Höhn, 1967. Observations on the breeding biology of Wilson's phalarope *(Steganopus tricolor)* in central Alberta. *Auk*, 84: 220-44.

[2]H. L. Løvenskiold, 1964. *Avifauna Svalbardensis*. Oslo: Norsk Polarinstitutt. 460 pp.

[3]D. O. Savile, 1951. Bird observations at Chesterfield Inlet Keewatin, in 1950. *Canadian Field Naturalist*, 65: 145-57.

[4]G. M. Sutton, 1931. Notes on birds observed along the west coast of Hudson Bay. *Condor*, 33: 154-59.

[5]E. O. Höhn, 1965. Die Wassertreter (The phalaropes). *Die Neue Brehm Bücherei, No. 349*. Wittenberg: A. Ziemsen. 60 pp.

## The Canadian Research Centre for Anthropology

The Centre (C.R.C.A.) was established in the early 1950's by Rev. Joseph E. Champagne, O.M.I., Director of the Institute of Missiology at the University of Ottawa, with the help of the National Museum of Canada. It now forms part of St. Paul University, a small private Catholic university run by the Oblates of Mary Immaculate. The Oblates have a long history of missionary work in the Canadian North. St. Paul University is federated with the University of Ottawa.

Until recently, the Centre functioned mainly as an informal clearing house for anthropological research in Canada. In the last two years, its research and publishing activities have been expanded. It has a particular interest in: social science and community development (socio-economic development and change) with specific emphasis on social, cultural, and applied anthropology; community development in large, sparsely populated frontier areas; and traditional peoples in situations of change and poverty. The geographic regions in which the Centre operates include the Canadian Middle North and Arctic, particularly the Yukon Territory and Northern Ontario. The northern research program is financed almost entirely by a grant from the Department of Indian Affairs and Northern Development under its program of assistance to northern institutes and expeditions.

The Centre has a vigorous publications program. It started in 1955 with the publication of *Anthropologica*, a bilingual journal in the social sciences, and has received support in the past from the Canada Council. The journal has carried a number of papers on the North. A special issue (Vol. V, No. 1, 1963) was devoted to "Community Organization and Pattern Change Among North Canadian and Alaskan Indians and Eskimos." In