arctic regions. A specimen, *Pagetopsis macropterus,* was caught unexpectedly in a trap off Hut Point at McMurdo Station last November. The fish was kept in an aquarium at about −1°C. for three weeks, during which time several determinations of its oxygen consumption at rest were made. It was found that its rate of oxygen consumption was about one-third that of most cold-adapted fishes possessing hemoglobin. More striking, however, was the fact that the oxygen consumption was not markedly affected by the oxygen tension of the water. It remained constant when the oxygen tension was reduced from 150 to 30 mm Hg, indicating a very efficient system for oxygen uptake. Further physiological studies of these fishes are being planned.

Social Behavior and Acoustics of the Weddell Seal

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During the three austral summers preceding that of 1966-1967, the author and his co-workers observed that social activities of the Weddell seal, *Leptonychotes weddelli,* occur mostly underwater and that sound is an important means of communication between individuals.

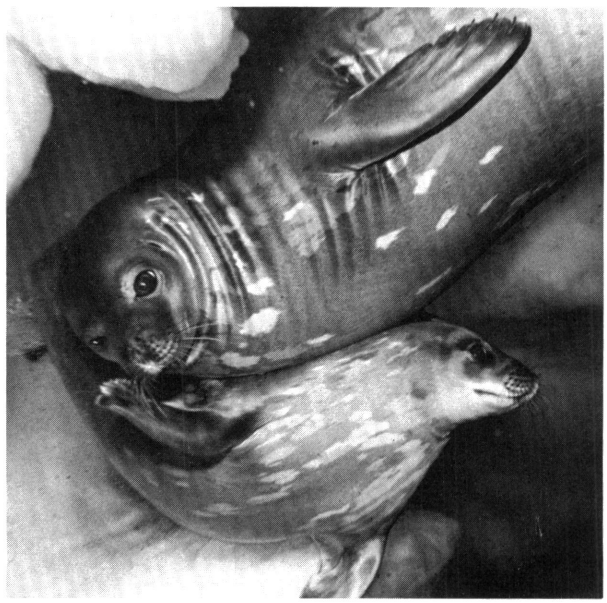
In the 1963-1964 season, underwater observations of seals and the sub-ice environment were made for the first time by means of scuba diving in Antarctica (Ray *and* Lavallee, 1964), and recordings of the animals' striking underwater trill were made for subsequent analysis (Schevill *and* Watkins, 1965). During the next season, studies were conducted in cooperation with W. E. Schevill of the Woods Hole Oceanographic Institution from two huts and the sub-ice observation chamber (SOC), which were set up over 300 m of water on the sea ice adjacent to Castle Rock on Hut Point Peninsula (Ray, 1965). Detailed analyses of the acoustics and some social interactions of the Weddell seal were made, but it became obvious that most social behavior was still hidden from view. In January 1966, underwater recordings were made from McMurdo to Cape Adare in the western Ross Sea with equipment set up aboard the icebreaker USS *Burton Island* (Ray, 1966), but they revealed few or none of the trills heard during the courtship season of October and November. This observation confirmed our suspicion that the species uses sound in connection with its breeding behavior in the spring.

In October and November 1966, diving and acoustic huts and the SOC were set up at Turtle Rock in Erebus Bay, the site of a small colony of breeding seals 11 km from McMurdo Station. With the author were David O. Lavallee, a veteran of two previous seasons in Antarctica, and Michael A. de Camp, a diver.

From the first week in October, when the first Weddell seal pup was born at Turtle Rock, until late November, when the arrival of the icebreakers at McMurdo forced us to break camp, data were gathered regularly on the following conditions: surface population numbers and sex ratios, incidence of pupping and behavior of pups, pup weights, seal phonation, and weather. In addition, observations were made from the SOC and by scuba divers of seal behavior and environmental conditions, and benthic and a few planktonic organisms were photographed and collected.

The behavior of the Weddell seal, as revealed by these observations, is outlined in the following paragraphs:

The trill is probably voiced exclusively by mature males in the establishment and maintenance of underwater territories around naturally occurring tidal or pressure cracks. Subordinate males are allowed within each territory, but their activity is restricted by the dominant male. Occasionally, when trill warnings are not heeded, fighting breaks out. Females also claim territories, individually or jointly with other females, for themselves and their pups. These territories are less well defined and smaller than those of the males; nevertheless, the females

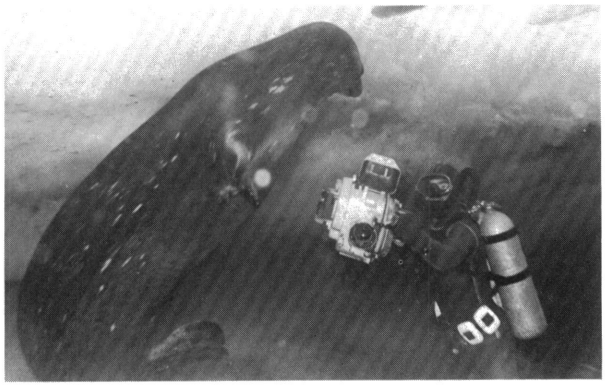


(Photo by M. A. de Camp)

Female and pup Weddell seals under ice near Turtle Rock.

(Photo by M. A. de Camp)

A dominant male Weddell seal threatens a subordinate under the ice near Turtle Rock.



(Photo by M. A. de Camp)

A diver and a Weddell seal under the ice near Turtle Rock.

defend them by a variety of sounds. Relatively few males were observed on the ice at the height of the courtship season, probably because most of them were engaged in courtship activity underwater.

Females actively lead their pups to water in the first week or so after birth. The first swims by the pups are short, but by the time the lanugo is lost, they are made over distances of several dozen meters and to depths of at least 10 m. In late November, mother and pup separate for the first time and perhaps permanently. Presumably, mating by adult females follows this separation, since, prior to that time, mating was not observed and females drove males from their immediate vicinity by means of both sound and fighting.

A detailed report is in preparation on the social interactions of the Weddell seal and the role of its wide array of sounds in the course of such behavior.

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Prostigmatic Mites and Other Terrestrial Arthropods of Antarctica

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This investigation of arthropods was restricted to the area within a 160-km radius of McMurdo Station. Collections were made as far south as Moraine Bluff on Skelton Glacier, latitude 78°47′S., and as far north as Point Retreat on Mackay Glacier, latitude 76°55′S.

Mites invariably were found only in areas moistened by melting glaciers or snowbanks. Algae are probably their chief food. Mosses and lichens were not always present and did not appear to be the source of food when they were. Three species of mites and two species of Collembola were present, frequently all together under the same pebble. The mites were *Stereotydeus mollis* Womersley and Strandtmann, *Nanorchestes antarcticus* Strandtmann, and *Tydeus setsukoae,* sp. novo. By far the most abundant species was *Stereotydeus mollis,* a red mite almost 0.5 mm long. It is interesting to note that there were no oribatid or predaceous mites. The absence of predatory mites was particularly interesting because they have been found both farther north, at Hallett Station, and farther south, at Beardmore Glacier. Why none occurs in this area is still a mystery. Of interest also was the fact that in the dry valleys, mites are most abundant near a melting glacier and become less and less numerous downstream. This pattern was particularly noticeable in Wright Valley, where mites and Collembola were very abundant close to Goodspeed, Hart, and Meserve Glaciers and progressively less numerous downstream. Along the Onyx River, which collects the runoff from these and other glaciers, no mites were found, possibly because of a lack of insulative snow cover there in the winter.

The thriving mite populations that occur in the dry valleys could not very well depend upon aerial

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