

they are encountered. These data provide an estimate of the nonproductive female segment based on multiple recapture methods and also serve as a yearly index to the numbers in the other sex and age categories which are only counted. During the tagging operation, we also obtain a toenail from each animal tagged, and this is used to aid in age classification of the marked individuals. These data are being evaluated.

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Anatomical studies of antarctic seals

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This year we continued our field collection and laboratory analysis of anatomical materials from antarctic seals. Our 1972-1973 field operation was in two parts: the first, in October-November, at McMurdo, was a follow-up of the work of last year (Felts, 1972) on the Weddell seal; the second, in January-February, dealt with the other three species of seals and was based on the USCGC *Burton Island* operating off the Oates and Pennell Coasts.

In the first phase of field operations, Dr. R. E. Coalson (leader) and Messrs. R. B. Boyd (graduate student, this department) and R. J. Sinclair (graduate student, Department of Physiology and Biophysics), arrived at McMurdo Station on October 31. They had been joined at Christchurch by Mr. Alistair Watson, senior veterinary medicine student at Massey University, New Zealand. In the ensuing 3 weeks, four Weddell infants (the oldest in early moult) were embalmed. These were formalin-perfused and were stored and shipped unfrozen. The oldest of these was retained in New Zealand for Mr. Watson's study of the peripheral vascular system, and the other three were shipped to Oklahoma for a more general analysis.

Three adult Weddell seals (two females, one male) and a female pup (neonate) were autopsied. Although these autopsies were a generalized supplement to the collections of 1971-1972, emphasis was put on fixative-inflated lungs (to give maximum resolution of the terminal air spaces) and perfused hearts. In addition, heads were bisected longitudinally to ensure fixation of the brain halves (and, incidentally, oral tissues).

The McMurdo party completed their work in time to depart on November 20. Mr. Watson remained behind for a brief period to work with his countrymen at Scott Base and to make further observations on the Weddell seal. All materials retrograded to Oklahoma arrived in good order by the first of the year.

On December 29, Dr. Felts departed the United States for New Zealand, where he was joined by Dr. Michael Bryden of the Department of Anatomy, University of Queensland, Australia. They left Lyttleton on USCGC *Burton Island*, on January 10. This vessel afforded an ideal opportunity for the collection of pelagic seal material, for its primary mission was furthering the seal population study of Dr. Albert Erickson (University of Idaho) and his associates in the pack ice off the Oates and Pennell Coasts. Rapport with and support by the Idaho team were excellent.

Specimens of the crabeater, leopard, and Ross seals were narcotized on the ice and transported to the icebreaker by helicopter. Embalmings and autopsies were carried on within the confines of the cradled landing craft adjacent to the ship's crane and the flight deck. One specimen from each of these species was embalmed and retrograded unfrozen. Autopsies were made of three crabeater seals, two Ross seals, and two leopard seals. This procedure covered all tissues and organ systems, with special consideration being given to the respiratory tract and brains. Subsequently, the autopsied bodies were removed of their individual muscles by Dr. Bryden in order to compile muscle-weight data for an interspecies analysis of muscle groups and actions.

Three other species of seals were observed without the collecting of anatomical material. These were the New Zealand fur seal (*Arctocephalus forsteri*) and the southern elephant seal (*Mirounga leonina*) observed in habitat on Campbell Island, where the scientific personnel had a brief time ashore during a resupply visit by the *Burton Island*, and the Weddell seal seen on the ice-free beach in the Balleny Islands during a survey and landing late in the cruise. During the Balleny landing, some chinstrap penguin anatomical material was collected for comparative study.

The cruise terminated at McMurdo Station on February 1 with Dr. Felts departing by air on February 3 and Dr. Bryden on February 10. Collected materials have been received in good order in Oklahoma and Brisbane.

In the home laboratory work has been progressing along lines projected in the report of last year. This year, Eastman (1973) and Boyd (1973) presented reports at the American Association of Anatomists meeting in New York. At the symposium on seal biology at Guelph, Ontario, in July, 1972, a photographic display of our preliminary results was presented. This study was supported by National Science Foundation grant GV-23557.

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