

The molt of the Emperor Penguin. (*Plate 8.*)—The change of plumage through molt—the shedding of the old, weather-beaten feathers and their replacement by an entirely new suit—occurs in some birds once a year, although in others, at least in some parts of the plumage, it takes place twice a year or even three times. The growing of new feathers is a most severe strain upon the individual, at times more detrimental than the temporary absence of food.

The various degrees of molt are many. Whereas the molt is sometimes briefly described as a feather-shedding phenomenon with the growing of new feathers, in some forms it includes a general renewal of other parts of the integument. This occurs in some species of the Tetraonidae where the long winter claws are shed or worn off as spring arrives. The North American White Pelican sheds the horny, ridge-like projection on the beak that it carries during the breeding season, and the puffin molts its horny beak-sheath.

The species of the family of penguins, Spheniscidae, undergo a most peculiar molt. The scaly feathers are not shed in special order but come off in flakes. The National Zoological Park, Washington, D. C., has in its collection of living birds three Emperor Penguins (*Aptenodytes forsteri*) collected by the U. S. Antarctic Service Expedition of 1939–1941. I was a member of this expedition and collected and observed the Emperor Penguin in Antarctica and have supervised the care of the species in captivity.

The first of these penguins obtained by the expedition was observed through binoculars, and appeared like a small man dressed in black, standing amidst a snowstorm. I left the ship and went out on the ice with three members of the expedition picking my way through pressure ice toward the bird, which proved to be in full molt. It offered little resistance as I put a rope around it and stuffed it into a bag that I then shouldered and carried back to the ship. I relate this story of the capture to indicate that, while molting, the Emperor Penguin takes little interest in what is going on around it, does not swim, and remains on the ice.

For a period of twelve months I have recorded the molts of our three Emperor Penguins in captivity. Birds A and B, in January, underwent a partial molt which lasted sixteen days. Bird C, in February, also went into a partial molt terminating in twenty-five days. In March, all three birds went into a complete or full molt that lasted thirty-two days. Bird B, in August, underwent a partial molt that ended in twenty-two days. The horny covering of the lower mandible was shed during this molt, revealing a new dark yellow sheath. In the course of these molts the birds refused to eat their full ration of fish during the latter stages of the transformation, the stage when the new feathers are in the process of forming. Other activities, such as that of pacing the cage in single file and occasionally swimming, largely ceased.

The shedding of feathers begins on the postero-ventral portion of the body, and progresses in an irregular manner over the body of the bird. As is shown in *Plate 8*, the dorso-anterior regions hold their feathers until the last. During the full molt it is possible to catch the birds and pull the feathers out in large handfuls. This 'picking alive' hastens the growing of the new coat of feathers, and is desirable if an individual appears unable to complete the molt and refuses to resume feeding after a reasonable time of fasting.—MALCOLM DAVIS, *National Zoological Park, Washington, D. C.* [Published with the permission of the Secretary of the Smithsonian Institution, Washington, D. C.]



KIMBALL.—LOUISIANA HERON IN VIRGINIA IN DECEMBER.



DAVIS.—THE MOLT OF THE EMPEROR PENGUIN.