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THE SNOW-BUNTING, AN ARCTIC STUDY IN BLACK AND WHITE.

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In his far polar home, a thousand miles beyond the Arctic Circle, the snow-bunting (*Plectrophenax nivalis nivalis*), a pretty study in black and white, is the only songster of all the birds that come so far North. In the vast reaches of the lonely rock-bound islands of the Arctic Archipelago and northern Greenland, the only sound that breaks the all-enveloping silence for months at a time, is the snow-bunting's sweet vibrant song, happy and musical as the tinkle of the mountain brook. To those of us who know him only in winter, when he comes to us in his brown and buff overcoat, silent except for his plaintive call-chirp, the striking beauty of his black and white suit, and the compelling sweetness of his voluble song would indeed be a pleasant surprise.

No shore seems too desolate, no rock ledge too bare, for the snow-bunting. Everywhere throughout the North, wherever man has been in summer, the snow-bunting has greeted him. Even the explorers who have crossed the great ice-cap of Greenland have reported hearing his song, or seeing him, as they have sledged along their lonely, dreary way. The snow-bunting, and the poppy, and the Eskimos, are all alike in their fearlessness, their cheeriness, and their love of the North.

The snow-bunting comes to the Far North in late April or early May; when the heavens are so blue that they can't be bluer; when the stars have all been gone out of the sky for a month; when the midnight sun has risen far enough above the northern horizon to peep over the highest mountains on the rim of the world, and to bring a suggestion of spring into the Northland; when for two or three days the sun-warmed southern wind has blown. and the Eskimos say they can feel the balminess of summer coming, though they still wear their heavy caribouskin kooletas, or fox-fur kapetahs; then all at once, out of the very sky, it seems, falls the joyful song of the snowbunting. Only a few moments later, a pair of the songsters, coming from how many miles southward nobody knows, drops cheerfully upon one of the snow-bare rock ledges near an Eskimo village.

A shout of joy greets the little travelers, for "koopenook" is a favorite with the people. His coming is the signal for them to abandon the crowded little stone-igloos in which they have lived a semi-troglodytic life through the winter, for the fresher, roomier skin-tupiks in which they spend the summer. Often the snow is still deep about the village site when they put up their tupiks and move "out-of-doors," where they stay until the snow-bunting leaves again. Undoubtedly the freedom from tuberculosis and pulmonary illnesses, so characteristic of the Smith Sound Eskimo in contrast with their disease-ridden relatives farther south, is due to their custom of accepting the snow-bunting's invitation to come out-of-doors to enjoy the fresh air with him.

The snow-bunting and his mate do not wait long to select their nesting-place and to build their nest. They make themselves busy at once examining every cranny and crevice about the rocky slopes and ledges for a place where they can be safe from prying eyes or hungry foxes. Usually they decide upon some crack in a steep ledge, but

often they choose a niche under a rock that lies upon the ground. Nearly always it is well concealed.

The nest is most cunningly made of grasses and sedges, usually lined with the white feathers of ptarmigan, the white fur of the hare, or the white hairs of the polar bear. In Ellesmereland, where the muskoxen are numerous, the nest is usually lined with the long black hairs of that animal. Apparently the birds prefer certain localities, for I have found a dozen or more nests of different years' construction placed about one rock ledge. Whether or not the birds return to the same nesting site I could not determine with certainty; but the factor at Sondre Upernivik, in North Greenland told me that a pair built in a niche in the eaves of his station three years in succession. Naturally he thought it to be the same pair.

June has barely come when the first eggs are laid. The eggs are constantly brooded, most of the time by the female, but sometimes by the male, until they hatch in ten or twelve days. Then both parents are busy all the twenty-four hours of the day catching enough crane-flies, gnats, spiders, flies, and moths to keep their nestful of five or six youngsters from hunger. The youngsters grow so fast that in less than two weeks they leave the nest, and begin fluttering about the rocks near their home. Only a day or two passes before they begin flying about, and in a few days they have begun to shift for themselves. Rarely the mother bird broods a second set of eggs so far north, though sometimes, if her first clutch of eggs be destroyed, she makes a new nest and tries again to bring forth a family.

I am not sure that the snow-bunting sleeps at all as long as his youngsters demand food. Early and late he is busy, for his food-supply is not so abundant that he can find it easily or in very great quantity. I have come upon him apparently cuddled away on a sunny ledge, but never in the time when he has young ones to care for. It may

be that his mate and he have some arrangement whereby one or the other broods the young for some time of the day, but of that I am not sure.

In the summer of 1917 a pair of snow-buntings made their nest in a crevice in a rock-ledge less than fifty yards from our headquarters at North Star Bay. carefully studied throughout their nesting period, and until their young flew. While the young were being fed I was for a time surprised to note that the male bird fed the voung about twice as often as did his mate, rather unusual, according to my observations on other birds. Then I found that he had come upon a particularly good hunting-ground, where the flies gathered about our refuse heap and our blubber-barrel near the shore. Here he could catch a mouth full of flies in half the time his mate could gather her bill full of the rarer and more scattered craneflies and moths, for which she had to search far afield. Whether or not the youngsters derived more nourishment or "vitamines" from the flies, or the moths and crane-flies. it would be hard to state.

The Arctic sledge trail would be lonely indeed without the cheerful, companionable snow-bunting to greet the
explorer from every sunny slope or warm rock-ledge, and
to come inquiringly about the sledge or tent to pass the
time of day. In my traverse of Grant Land, the snowbuntings came to our camp at the head of Canon Fjord on
April twenty-eighth, and afterwards hardly a day passed
that we did not see them or hear their song. All the way
down the Veery River and Lake Hazen from the divide of
Grant Land the snow-bunting frequented every cliff and
slope. About the ruins of old Fort Conger a dozen pairs
were making ready to nest.

A snow-bunting's song would attract attention even in the Southland. It is as thrillingly sweet as the song-sparrow's as vibrant as a thrush's; and as exultant and exuberantly happy as the mocking bird's. Sometimes he gives voice to

his song while perching; but on calm sunny days he rises from his perch to sing, singing as he rises, and then drops back to his favorite rock still singing. Often a pair of males appear to engage in competitive antiphonal concert, and then the mountain-side rings with ecstatic melody.

Along in August, when the midnight sun no longer glorifies the North, the snow-buntings don their warmer buff and brown plumage, and begin to assemble in considerable flocks on the grassier slopes for the journey southward. Quiet and still, as if sad to leave their northern home, they feed about the rocks, lingering even until November, when the night comes on, and the sun no longer shines even at noonday. Then the North is silent until they come again.

MIGRATION RECORDS FOR KANSAS BIRDS.

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[Continued from March Issue.]

FAMILY MNIOTILTIDAE—WOOD WARBLERS.

This family lives upon foliage insects; a few, however, have flycatcher habits. They come late and leave early. Field observation is rarely dependable because there are so many kinds, and these kinds have many variations; the immature ones differing, in many cases, from the mature in plumage. Then, too, for most part, they keep to the tree tops. The data for most species is based on museum records. Many seen in field but positive identification not possible for above reasons.

636. Mniotilta varia-Black and White Warbler.

A fairly common summer resident. Field and museum records give May 1, 3, 5, 9. Lane County, September 14, one specimen. 637. *Prothonotaria citrea*—Prothonotary Warbler.

This warbler is a common summer resident in eastern Kansas wherever swamps are found. Field observation May 1. It is quite likely that they arrive considerably earlier. They probably return south in July and a few, if any, remain till September. Last museum records August 6, 11, 13.

639. Helmitheros vermivorus-Worm-eating Warbler.

A rare migrant. One museum record May 6.