

SUMMARY.

The various cries and calls of the Kingbird, as well as the flight song, are all built up from the simple call notes, which are best represented by the syllables *kitter* and *kit*, and differ from one another in grouping, length and intensity. The flight song may be regarded as a true song, and is given only during the mating season. The matin song is seldom heard; is more musical in character than the flight song; possesses a definite song-rhythm and two new, true song-notes; is delivered only during the morning twilight hours; and is sung from an elevated perch.

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SOME NESTING HABITS OF THE BELTED
PIPING PLOVER.¹

BY GAYLE PICKWELL.

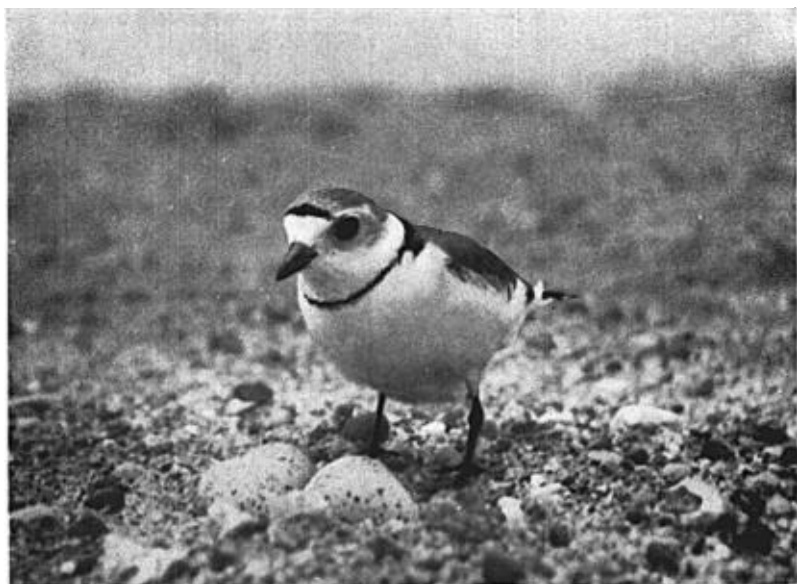
Plate XVI.

ON Saturday, May 20, 1922, the Nebraska Ornithologists' Union, on its annual bird hike, located a Belted Piping Plover's nest (*Charadrius melodus circumcinctus* Ridgway), on a strip of sandy beach at Capitol Lake near Lincoln. The nest of this bird had been reported only once before in the vicinity of Lincoln and that several years previously.

Within the last year or two a sand dredging outfit was erected on the south shore of the lake and, when operations were suspended, a large sloping beach of sand and gravel was left in that locality. This condition seemed ideal for the Plover and it was in this stretch of sand that the nest was found.

The day following the discovery of the nest, and for several days thereafter a great deal of rain fell and this prevented any detailed study of the birds or their habits. Mr. Frank H. Shoemaker, a member of the Nebraska Ornithologists' Union and an expert in bird-nest photography, visited the vicinity the following

¹ Studies from the Zoological Laboratory of the University of Nebraska, No. 144.



1. BELTED PIPING PLOVER BESIDE ITS NEST.
2. NEST AND EGGS OF BELTED PIPING PLOVER.

Tuesday, May 23. Not knowing the exact location of the nest he searched the region thoroughly and found not only the original nest but a second one as well. The second nest was about one hundred yards from the first. In addition to these two, a Killdeer's nest was located by Mr. Shoemaker on the same stretch of beach. This is interesting for the later opportunity it gave for comparison of the habits of this species and the Piping Plover.

The beach on which the nests were located extends about two hundred yards back from the water and is a large half-moon in shape. At the inner edge of the half-moon and away from the water are two or three little dunes of sand left by the operators of the sand excavator. Immediately back from the shore, some thirty or forty yards, is a stretch of smooth, fine sand. It is upon the inner edge of this stretch that the two Plovers' nests were located. Beginning within a few feet of the Plovers' nests is a strip of coarse grass and other herbage. This strip in turn fades out into another area of uneven, coarser sand and gravel. It is in this second strip that the Killdeer's nest was located.

On Wednesday evening, May 24, Mr. Shoemaker visited the nests again for a short time and rephotographed them. The following day, Thursday, May 25, a party of four, including the writer, visited the vicinity and made extended observations. The writer, secured a number of excellent photographs at this time also.

We were exceedingly surprised to find that there were a number of pairs of Piping Plovers in the vicinity—at least three, some claimed to have noticed four. Certain it is that there were more birds than nests accounted for. A thorough search of the entire beach was made and, although a large number of depressions were found in the sand that the birds had made, evidently, in their nest-making activities, no nests were found with eggs in them other than those already located.

The following day, May 26, Mr. Shoemaker and the writer visited the nests about two o'clock in the afternoon prepared to take photographs of the birds themselves. Observing very carefully through a high-powered glass we noticed both birds leave their nests while we were yet over a hundred yards distant. In all subsequent trips the birds behaved in the same manner: invariably leaving their nests upon our first approach, while we were

yet at a distance, in spite of any demeanor they might exhibit later in the same day or the same visit.

In our preparations to photograph the birds we proceeded very cautiously. A large block of wood that was lying upon the beach was first set up near the nest to accustom the bird to foreign objects. Retreating to a dune about a hundred yards away we prepared ourselves for a long siege, but, to our genuine astonishment, the bird was back upon the nest almost before we had seated ourselves.

Greatly encouraged, Mr. Shoemaker set up his tripod within six feet of the nest and ran a linen thread from the focalplane shutter about fifty yards back upon the beach. Compared to the water-soaked log, for which we had substituted the camera, this machine must have been very conspicuous to the bird. Any concealment, however, was out of the question in that large slope of bare sand.

We hoped that the bravery of the little bird would force her back in spite of the ogre in her front yard. Mr. Shoemaker pulled out his watch and we made preparations to wait at least twenty minutes before moving the camera; a longer wait might seriously chill the eggs. In exactly fifteen minutes, the writer with glass in hand, gave the signal to pull. The noise of the focalplane shutter, in crossing the front of the plate, was too much for the fear-tensed bird. She flew like a flash from the nest. This was the only time that the Plover was observed to fly from the nest under any provocation. Incidentally, it might be mentioned that the reaction of the bird was so exceedingly rapid that the resultant picture showed only a blur though the shutter was speeded to 1/10 of a second.

The plate was changed and the camera lowered to a new position. In spite of her scare, the bird returned in less than ten minutes. Again she leaped, but did not fly, as the shutter unrolled across the plate. Again the plate was changed. Thus, with intervals during which the bird was allowed to warm the eggs, six exposures were made. By repeating this process with a smaller camera at the other nest the writer succeeded in getting six more exposures.

Saturday, May 27, we went again to the beach and secured a number of photographs by the same tactics we had employed the

previous day. On this and the preceding day Mr. Shoemaker had brought with him a Graflex camera hoping to get photographs of the birds while they were simulating accident. Our efforts in this line were unavailing for, although the little Plovers would approach within a few feet in their anxiety, they were so small that to get good pictures by this method was impossible.

Sunday, May 28, the vicinity of the nests was visited and photographs were made of the little Killdeers which had hatched since the preceding afternoon and were yet in the nest at ten o'clock in the morning. The Plovers came out to greet us as usual and did their utmost to beguile us away from the vicinity.

Thursday, June 1, the writer visited the Plovers' nests alone and a series of photographs was taken of the birds as they came up to the nests. The nests were approached from the northwest and presently one of the little birds dropped down out of the sky onto the sand with his sharp "kee-wee, kee-wee" and ran briskly along before me. Shortly the long-drawn dismal "whooaah, whooaah" of another bird was heard and soon the six were made out that had been observed upon previous occasions. All had deserted their nests and were intent upon leading me astray. Efforts to locate the nest of the third pair of birds were unavailing.

On June 6, I was surprised when the Plovers did not come out with their usual vociferous greeting but soon found that the answer lay in that the eggs of one nest had hatched and the young had gone and the eggs in the other were pipped. Only three adult birds were seen and they did not evidence the solicitude that they had upon previous occasions. The camera was arranged for photographs. The birds, however, did not seem concerned about the safety of the eggs (it may have been because of the extreme warmth), and so, after waiting thirty minutes, the camera string was wrapped and I left.

June 7, at 9:00 A. M., Mr. Shoemaker visited the Plovers' nests and found one young bird out of the shell in the occupied nest. At 4:00 P. M. the writer visited the nest, saw the young bird and the remaining eggs. It was noted that the pipping of the egg shell was all at the larger end of the egg—at the greatest curvature. The pipping of the unhatched eggs had not increased beyond that of the preceding day. No egg shell belonging to the hatched bird was found about the nest.

Arrangements were made for photographs about 5:00 P. M. and while thus occupied one of the eggs heaved and cracked noticeably. While we watched the second bird hatched.

The egg had been merely cracked about the point of the bill previously and all subsequent cracking was done by the efforts of the bird to free itself from the shell. The head was cramped down into the larger end and it was here that the pipping had first started. After that first noticeable heave the convulsions continued at intervals of every few minutes until a wing was free and slipped out of a crevice made in the shell. Another struggle and the second wing appeared on the other side and then the large end of the shell was sufficiently loosened to see the doubled neck of the imprisoned bird. At the end of fifteen minutes the large end burst off and the bird stretched out its neck.

While yet the egg was largely intact it was noticed that the young bird was breathing violently. It may be suggested that this need for air causes the struggles which break the shell. Photographs were taken of the hatching process.

The bird first to hatch began to show response to the excitement about it and evidenced a desire to get up and run. It soon refused to remain in the nest. Finally, it left and while it was tottering insecurely away the parent bird came running up with little chuckles of solicitude. The young bird was enticed farther and farther away and finally it was left under the care of the male (presumably), and the female returned to watch over the nest.

The following day, June 8, the young Plovers were all out of the nest and, with the adult birds, had left the vicinity. Subsequent trips to the lake in the summer would occasionally show an old bird but the youngsters were never seen again.

The Piping Plover is so protectively colored on the sand that, were it not for its restlessness and the conspicuous black band across the throat, it would be invisible at thirty feet. As a consequence a good glass was absolutely essential to follow the Plovers' movements.

The nests themselves were merely tiny depressions in the sand lined with small pebbles that had rolled back into the bottom of the cup. No foreign material of any kind was used. The eggs are so spotted and mottled that their resemblance to the sand is

truly remarkable. Their markings are finer and more even than those of the Killdeer. This is very suggestive when one considers that the Killdeer, upon this same beach, was nesting back where the pebbles were considerably larger and more conspicuous. The eggs are sharply pointed as are all shore birds' eggs and are grotesquely large in comparison with the birds which lay them.

The most interesting thing about the Piping Plovers was their activities when one was near the nest. As an observer approached the nest he would be met by one of the Plovers dropping down out of nowhere, uttering its sharp "kee-wee, kee-wee" and striving its utmost to lead one away. It would then run briskly across the sand and disappear suddenly from sight when it stopped to crouch down and utter its long-drawn "whooaah, whooaah."

The solicitude of the birds increased as the observer approached near the nests and very soon the six birds would be made out all uttering a medley of cries and lamentations in a concert. When one was actually at the nest the distress and anxiety of the birds was piteous to behold. The bravery of these little Plovers in the defense of their nests was wonderful.

Upon the writer's first visit, when the party consisted of four or five, the Plover came within a very few feet of the visitors, her head low against the ground (I infer that it was the female), her wings beating up and down in a steady blur. Then, when assured that our attention was distracted from the nest, she turned and assumed a pose of complete distress: drooping upon the sand apparently with broken back, or broken wings, utterly helpless. At such times the bird uttered throaty croaks such as one would expect from a dying bird. The simulation was perfect.

If pursued, she fluttered off across the sand for a hundred feet or more. While we remained quietly by the nest both birds came up within a few feet and then turned in expectancy of immediate pursuit. Time after time they repeated this while we were near. Numbers increased their anxiety and their bravery. Rarely would they come nearer than twenty or thirty feet while one person examined the nests but when the number of people increased to three or four they would come up within a very few feet.

The variety of their cries and calls was amazing. At almost any period, while we were in the neighborhood, one of the birds

could be observed flying here and there with slow, wide wing beats, uttering a rapid "*kuk, kuk, kuk, kuk,*" It would shortly alight and wind it up with a long-drawn, weird "whooaah, whooaah" that seemed to come from no where in particular. The distress cries while one was near the nest were confined chiefly to a sharp "kee-ah, kee-ah." The reason for their name of "piping" became very apparent at such times.

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LEONARD BALDNER, SEVENTEENTH CENTURY
SPORTSMAN AND NATURALIST.

AN UNRECORDED COPY OF HIS BOOK, CONTAINING HIS PORTRAIT.

BY JOHN C. PHILLIPS.

Plate XVII.

I CANNOT do better than begin with a passage from the last part of Baldner's quaint introduction, for it shows the real spirit of the man better than any modern effort. Let this fine old naturalist, who deserves the name of the Gilbert White of Rhineland, speak for himself.

"To the end that God Almighty be praised and acknowledged by us, we must not forget the benefits of the three Rivers which we, God be blessed, do here at Strassburg enjoy, viz., the Rhine, the Ill and the Breusch; in which there is no want of Fishes, Crab-fishes and Fowls and all other things that live in the water, either in summer or in winter, which we are abundantly blessed with. In consideration of this and the delight I took therein, I was led to procure among these wonderful works themselves all fishes, crab-fishes, water-fowls, four-footed water beasts, insects, worms, and chafers and all living creatures that move in the water, as many as I could get which are found about Strassburg in fresh waters, and all of which I had in my own hands. I caused them to be painted in lively colors and every one called by its name; and as much as I could learn by diligent examination I described briefly every one according to my own experience.