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ON THE NESTING GROUNDS OF THE SOLITARY SAND- PIPER AND THE LESSER YELLOW-LEGS.

BY J. FLETCHER STREET.

Plates XXXI-XXXV.

It is a rare adventure to visit the nesting haunts of the Solitary Sandpiper and the Lesser Yellow-legs. In the early afternoon of the 28th of May of the present year, Mr. George H. Stuart, 3rd, of Philadelphia, and the writer left the train at the little town of Bowden, in central Alberta. Here we were awaited by Mr. Evan Thomson, who drove us across country some eight miles to his home at Red Lodge, our route lying in full view of the splendid snow-capped peaks of the Canadian Rockies some seventy-five miles to the westward.

The country about Red Lodge is one of foothills with an average elevation of 4000 feet. Formerly converted more or less into a grazing country it presents large areas of rolling plains partly covered with willows and sage brush, where the Sharp-tailed Grouse is at home, and where the little streams break through, the Clay-colored Sparrow abounds, nesting in the willows. The rest of the higher ground is densely covered with second growth poplar and cottonwood while the lower, marshy areas are marked by extensive muskegs and spruce swamps.

Mr. Thomson many years ago took up a quarter section of land under the Canadian Homestead Act, built himself a log cabin at the edge of a muskeg and commenced the arduous task of clearing the land. Living alone in this wilderness without neighbors and



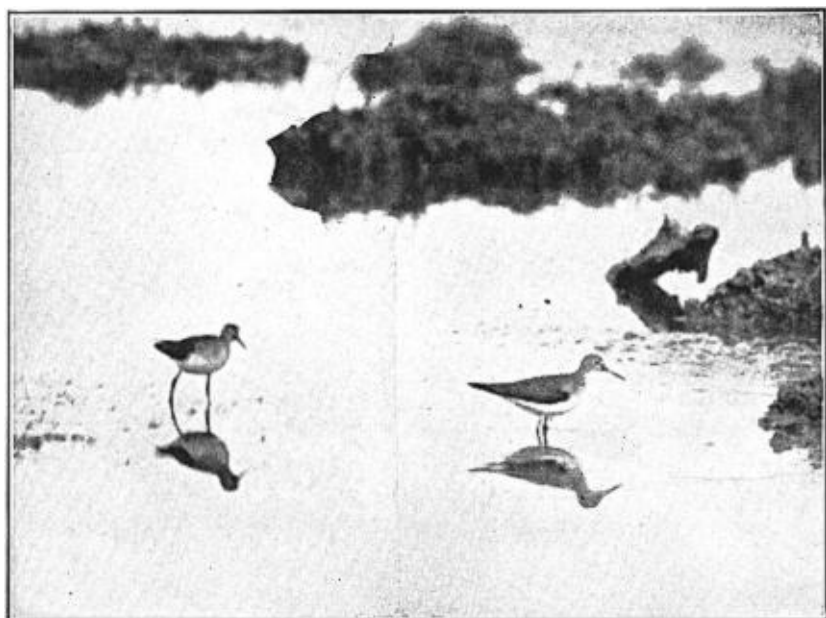
Photos by J. Fletcher Street

OLD ROBIN'S NEST WITH EGGS OF SOLITARY SANDPIPER,
RED LODGE, ALBERTA.

possessing a keen love for nature and a particular interest in the abundant wild life about him, he came to devote his spare moments to the study of birds, counting as his immediate associates such hermit species as the Great-horned Owl, Long-eared Owl, Saw-whet Owl, Goshawk and a large host of water fowl and waders. Seated one day before his cabin he noticed a bird fly to a low tamarack and enter a nest. It was ostensibly one of the waders, and great was his surprise upon examining the nest to find it the structure of a Robin. It contained four beautiful eggs, greenish white in ground color and heavily spotted and blotched with reddish-brown. Thus, on June 16, 1903, the first authentic eggs of the Solitary Sandpiper were taken but it was not until a year later that the identity of the bird was definitely established. It was indeed interesting, twenty years later, to be shown the cabin and to view the original tree from which the eggs were collected. Subsequent to the finding of this nest many others have been located, the bird evidencing no particular choice of nest in which to deposit its eggs, the list including those of the Bronzed Grackle, Brewer's Blackbird, Cedar Waxwing, Kingbird, Robin and Canada Jay. These have been found at an elevation as low as four feet and as high as forty and in locations contiguous to water and as far away as two hundred yards.

Due to a lack of rainfall during the last four or five years the amount of water in the country about Red Lodge has considerably lessened and what were once shallow ponds are now dried up muskegs. This scarcity of water has had its influence upon bird life. In places where the Solitary Sandpiper was once numerous it is hardly to be found at all, and I have never been in a locality where a dearth of lesser birds is so marked, a scarcity, I believe, partly to be attributed to the marauding habits of numerous Crows and Magpies.

On the morning of the 29th Mr. Thomson drove us to a chain of small lakes, northwest of Red Lodge, where we encountered for the first time the Lesser Yellow-legs, some six or eight birds being present at the margins of the sloughs in association with Dowitchers and Wilson's Phalaropes. Here they fed in the shallow water but gave no indication of nesting. We devoted much time to searching the bordering grass lands for their nests



Photos by J. Fletcher Street

1. NESTING SITE OF SOLITARY SANDPIPER, RED LODGE, ALBERTA.
2. SOLITARY SANDPIPERS AT CAPE MAY, N. J.

and the adjoining higher ground as well, for Mr. Thomson had advised us that he had found the species breeding upon sloping hillsides in rather open woodland. But our particular concern this day was to obtain the nest of the Solitary Sandpiper, so we made a careful search among the spruces and tamaracks of the muskeg swamps. There was a dearth of suitable nests as there was a dearth of nesting birds and the morning so far had contributed but a single Sandpiper to our list of birds noted.

At length we were taken to a likely area bordered with dense spruces and tamaracks with isles of trees towards its middle. We instituted a careful survey of all of these. The muskeg afforded rather precarious footing and our only safety in traversing it lay in the supporting layer of ice still persisting at a depth of a foot below its surface but the softness of the spongy moss-like vegetation rendered our progress tiresome and difficult.

Mr. Thomson had left us at this time returning to the wagon for our lunch and while I was hunting some distance away I heard the alarm note of the Solitary Sandpiper ring out and I knew that Stuart had located a nest. Crossing over to him I looked into a Robin's nest set four feet from the ground in an eight foot spruce which contained four of the most beautiful eggs that I have ever seen. Apparently quite large for the size of the bird they possessed a ground color of pale, greenish white and were heavily blotched and spotted, chiefly about the larger end, with vandyke brown, chestnut-brown and underlying pale purple. A few black, thread-like lines were also evident. These eggs proved to have been incubated for about six days.

The bird upon leaving the nest flew to the open bog about fifty feet away calling vociferously and tilting its body as it worked along through the vegetation, first towards us, then away, at all times giving voice to a sharp "seep," "seep," which it indulged in continuously while on the ground or from nearby trees. Its flight from tree to tree was erratic and more or less suggestive of that of a Swallow. At no time did the male bird come to join its mate. At length we withdrew and concealed ourselves among nearby trees and shrubbery. After half an hour of the most cautious maneuvering, flying from tree to tree, the Sandpiper returned and settled upon its nest. I approached ever

so cautiously to obtain a photograph of the bird but was unable to do so as she flushed while I was yet twenty feet away. Fearing injury to the eggs no further attempt was made.

This Robin's nest was one of the year before set close to the trunk upon a horizontal limb. No additions had been made to it by the Sandpipers, the eggs being deposited upon the mud lining just as the winter storms had left it.

On the following morning we visited another lake to the northward and although from twenty-five to thirty Yellow-legs were present at its borders we could determine nothing as to their nesting grounds.

Leaving Red Lodge on the morning of May 31, we arrived in the evening at Belvedere, Alberta, where we spent several pleasant and profitable days as the guests of Mr. and Mrs. A. D. Henderson. Mr. Richard C. Harlow had preceded us there by about a week. We found Mr. Henderson a delightful host in every way. His knowledge of woodcraft, his familiarity with the nesting habits of birds, particularly those of the water fowl and birds of prey, his knowledge of the surrounding country, all contributed largely to the success of our enterprise. The assistance of Mrs. Henderson, in conveying us by automobile to distant hunting grounds, and returning for us at all hours of the night marked a kindness and cooperation never to be forgotten and rendered possible several excursions which it would have been impracticable to attempt afoot.

It was gratifying to learn that Henderson and Harlow had already secured the eggs of the Solitary Sandpiper, as rare a species about Belvedere as it was at Red Lodge, and we found also that Harlow with his analytical, ornithological mind had been successful in solving the secret of the nesting of the Lesser Yellow-legs. Already two nests had been found on May 24 and the succeeding days were largely devoted to the pursuit of this species.

As Mr. Thomson had told us we found the chosen nesting site of the Yellow-legs to be on relatively high ground at an elevation from a few feet to a possible thirty feet or more above the level of the ponds. Invariably the nests were found not closer than one hundred feet from the water's edge and sometimes as far away as two hundred yards. Generally a sloping bank, a ridge or a level plateau was chosen for the immediate nesting site. No nests



Photo by J. Fletcher Street



Photo by G. H. Stuart, 3rd.

1. NESTING SITE OF LESSER YELLOW-LEGS, BELVEDERE, ALBERTA.
2. NEST AND EGGS OF LESSER YELLOW-LEGS.

were noted in the heavily forested areas; all of those secured in the region about Belvedere being found among broken hills covered with burnt and fallen timber with a second growth largely of low poplars, the burnt stubs affording excellent perches for the birds. Therefore the assumption would be that amid normal conditions the species would select rather open and high woodlands with sparse, low undergrowth within a reasonable distance of marshy or grassy ponds.

Harlow early determined that before actual incubation has commenced the birds are about their nesting grounds only at certain periods of the day, spending the greater time at the border of the ponds. On account of this it is most difficult to locate the nest. One may watch a pair of birds for hours and gain nothing from their actions indicating where the eggs are concealed. If he is particularly fortunate he may note a bird fly up and course swiftly inland to alight at length upon a stub. More than likely this action will give an index to the nest location. If the bird is intent upon gaining it, particularly if it feels it is unobserved, it may fly to a nearby stub, and then, by easy stages, approach its nest and at length fly down upon it but more than likely the bird will return to the lake without going to the ground, remaining inland only for a short period. While upon the stub it is apt to reveal its presence by giving voice to a series of calls "kip," "kip," etc., particularly if it senses that it is under observation and that its nest is in danger. It will then fly from stub to stub over a wide area, calling repeatedly and nervously picking at its breast feathers. If its anxiety is great, unconsciously, it will face in the direction of its nest far more frequently than in other directions. Again the stub nearest to the nest may be covered with a greater amount of excrement than the others.

These observations, insignificant as they may at first appear, are the only indications as to the location of the nest vouchsafed at this period of the nesting, yet they proved to be invaluable for one may hunt at random for hours over a prescribed area without success since the eggs possess a degree of protective coloration that renders them indistinguishable from their background.

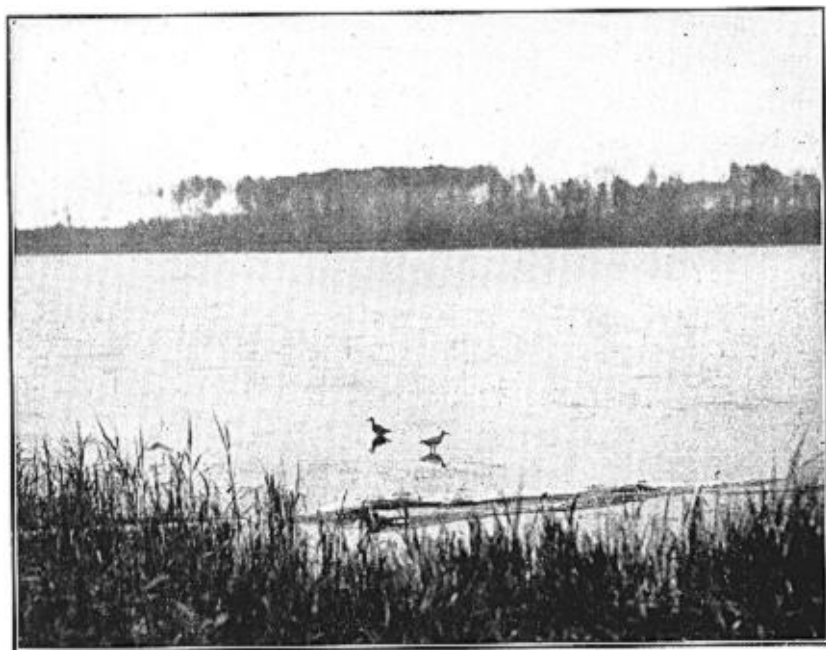
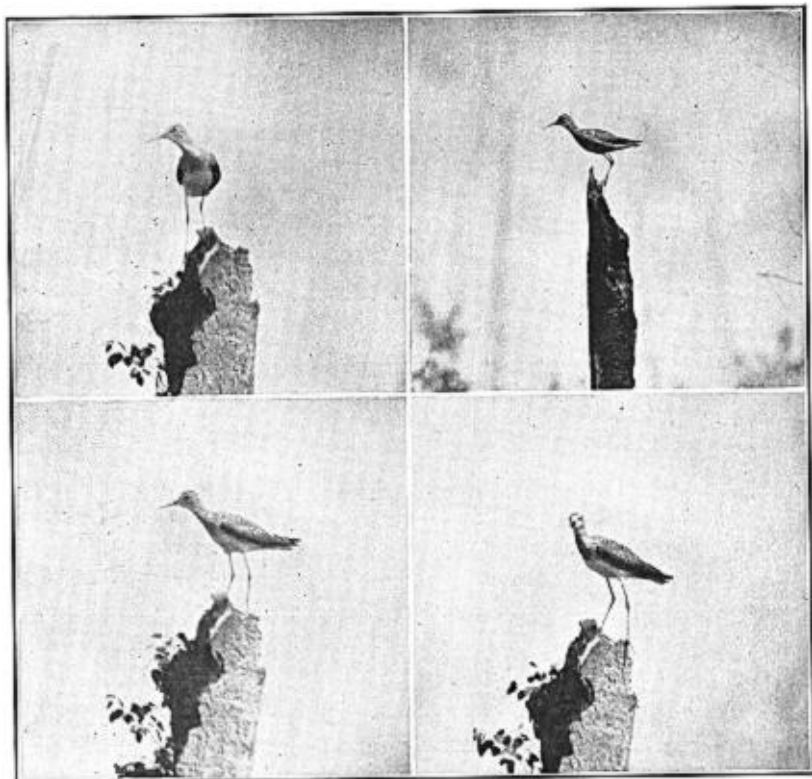
The birds at the margins of the ponds are at all times interesting. Whether there be two or a dozen a few minutes observation is

likely to reveal the mated pairs. They feed together; their interests are common interests, although the female bird may fly back to the nesting grounds unattended. They feed generally in shallow water picking particles of food from the surface or they may entirely submerge their bills as they wade in water up to their flanks. When tired of feeding one may preen its feathers with its bill or scratch its head with its foot. Again, it may sleep with its head tucked away on its back, yet no one attitude is assumed for long. There is a nervous watchfulness at all times. Either bird may give the mating call, a musical "cur-dle-lee" which is repeated very rapidly and persistently during the period of copulation as well as when the male is poised over the female on fluttering wings.

It is not until the full clutch of eggs is laid that the birds show that degree of concern which leads to their undoing. Then there is great excitement on the nesting grounds. The female bird will fly about with drooping legs and tail, keeping up an incessant "kip," "kip," and alighting upon nearby stubs. In this the male will join her, but not to the same degree, frequently, after the initial rally, flying away to the lake. His darker breast markings and slightly larger size readily identify him. If the observer retires and conceals himself the excitement of the female will gradually subside, she will fly from stub to stub, at length become silent, look about inquiringly and take a short flight to the ground and run to the nest. After settling she may be approached within four feet before flushing which she does with a loud call of alarm. While on the nest she sits low and close.

The nest is a mere depression in the ground, lined with a few leaves or a small amount of dry grass, the cup having a diameter of 3.5" to 4.00" and a depth of 1.25" to 1.50". It may be located next to a stub, along a prostrate log or in the open. Four eggs compose a normal set, yet some birds lay but three. These eggs have a ground color of pale olive-green or through greenish-buff to coffee-brown, spotted and blotched with reddish-brown, dark chocolate and underlying pale purple.

Young were found for the first time on June 4. Both male and female at this time were highly excited, the female approaching within ten feet of us. All the young had left the nest and had



Photos by J. Fletcher Street

LESSER YELLOW-LEGS, BELVEDERE, ALBERTA.



Photos by J. Fletcher Street

NESTS AND YOUNG OF THE LESSER YELLOW-LEGS.

taken refuge in the shade of a log to escape the burning rays of the sun. In length they measured 2.75", with bills half an inch long and bluish black in color. The head was buffy white marked with patches of dark brown and black. The wings and back were deep buff with patches of dark brown and black; the underparts were soiled white. The legs and feet were very long and well developed, grading in color from ochre to olive-brown. No eggshells were found in the nest or nearby. As we retired from the immediate locality the female flew down to the ground and softly "kipped" as if to rally the scattered young. On the succeeding day a nest was found which at 10 A. M. contained one young and two eggs. At 12.30 P. M. all the birds had hatched and had left the nest being found quite a distance away. One bird was walking, readily indicating that the migration to the water must start within a few hours of the time that the young are out of the eggs.

After June 6 all the same excitement that characterized the action of the adult birds at the nesting site was transplanted to the meadow lands. One uninitiated in the ways of the species might easily suppose that he was now upon the breeding grounds for the young keep well concealed and are difficult to discover. Perhaps the exhibition of the adults at this time and the secretive habits of the birds during the early days of the mating have tended to keep the nesting habits of the Lesser Yellow-legs so long a mystery.

The "wheu," "wheu," "wheu" rally call which characterizes the species along our New Jersey shore marshes in the fall migration is an infrequent note upon the nesting grounds and is only given when the bird is in sustained flight.

By the 1st of July the Lesser Yellow-legs is to be seen upon the coastal marshes of the Middle States while fifteen days later the Solitary Sandpiper appears on the fresh waters nearby, indicating that both species occupy the breeding area for the period of nidification only.

Beverly, N. J.