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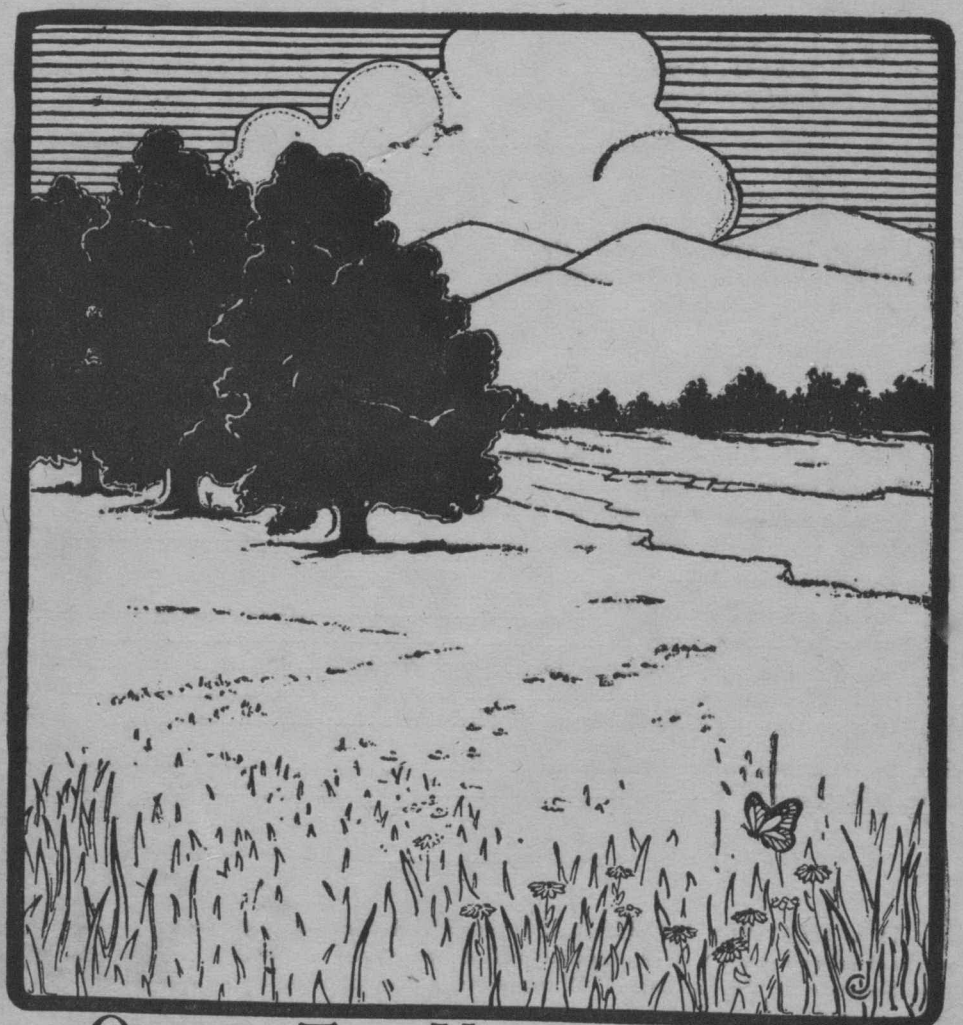

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CONTENTS

THE OTTAWA NATURALIST, established thirty-one years ago, "to publish the results of original research or investigation in all departments of natural history," is issued monthly from September to May, inclusive. All receipts from the publication are invested in the magazine itself. Papers, notes and photographs for publication should be addressed to the Editor. The subscription price is One Dollar a Year. Subscriptions should be addressed to the Treasurer, Mr. F. W. Waugh, Geological Survey, Victoria Memorial Museum, Ottawa.
Notes and Observations:

THE OTTAWA NATURALIST

VOL. XXXII. MARCH, 1919. No. 9.

THE BIRDS OF SHOAL LAKE, MANITOBA.

By P. A. Taverner.

(Continued from page 144)

46. *AMERICAN BITTERN, *Botaurus lentignosus.*

In 1901, Seton found it abundant and breeding. He says: "A conspicuous feature of the landscape—hard at work night and day pumping out the bog". We found it in no such numbers. May 19 to 21, 1917, one was heard each night in a marshy spot behind camp. The next day one was taken but we did not hear the species thereafter. This bird was a male with the skin of the throat greatly thickened with a tough gelatinous tissue inside that I have met with a number of times before in spring males of this species, but have never seen referred to in print nor found ornithologists generally familiar with it. The tissue is very much like that behind the throat puffs of the courting Prairie Chicken and, judging from the dried specimens of breeding spring Pectoral Sandpipers in our collection, probably similar to conditions found in the inflatable sac of that species. As the Bittern inflates its throat while courting or booming it is likely that this deposit is of similar origin in each of these species. It lines the inside of the skin perhaps one-eighth of an inch thick and is soft and rubbery, firmly attached to the skin, and sliding away under the knife in a manner that makes its removal very difficult. In 1918, Young saw occasional birds in May, June and August.

47. GREAT BLUE HERON, *Ardea herodias.*

The Ward brothers say that this species was rare on the lakes even in time of high water and extensive marsh. They rarely observed over one or two each year. In 1918, Young reports seeing two birds on July 10 at the Narrows.

48. BLACK-CROWNED NIGHT HERON, *Nycticorax nycticorax.*

Reported by Chapman as breeding on the ground in reeds two to three inches above water, the record is accompanied by photographs of nests in "Camps and Cruises". It is said by the Ward brothers to have nested in large colonies on the floating debris where the drift of the lake came in at the edge of the marshes. Only a few migrants have been seen of late years. Seton describes a night herony where "scores, probably hundreds of nests, were in the tall quill-reeds; but none at all to the trees". He quotes a resident farmer, G. H. Meacham, as authority for the statement that three years previous (to 1901) there were but twenty pairs present, but remarks that their rapid increase was marvelous, stating, "No doubt this is one of the species whose number fluctuate with the rise and fall of the lake", thus forcasting their present disappearance again.

49. WHOOPING CRANE, *Grus americana.*

We were informed by the Ward brothers that Whooping Cranes used to breed and be fairly plentiful. About 1901 they saw thirty birds together. They have grown much scarcer of late years, but still a few are seen each season. In 1916, three were seen by Frank Ward, and even in 1917, about a week before my return visit, two passed immediately over him flying very low.

50. SAND-HILL CRANE, *Grus mexicana* or *canadesis.*

In 1917, we saw no cranes but a nearby farmer had heard them a few days previous to our questioning. We looked for them but found their old haunts dried up and encroached upon by settlers. The Ward brothers say that, until very recently a few still bred on nearby muskegs and in late summer and early autumn they visit the grain fields in large flocks, but are decreasing. A few days previous to my return visit in the autumn, William Ward saw several, but regarded this as a late date. In 1918, a number were observed shortly before Young's arrival, and he noted one April 25. Small flocks of from three to eight were seen later from August 15 to Sept. 6, usually high in the air. The Ward brothers think they recognized two sizes in the cranes commonly seen, which would indicate that both the Sandhill and Little Brown Crane occur; in which case the former would likely be the breeding form, and the latter a migrant.

51. *SORA RAIL. *Porzana carolina.*

During the spring visit of 1917 there were innumerable suitable places for rails and their voices were heard a number of times, but we saw only a single bird on May 30. The Ward brothers are, quite excusably, uncertain in their identifications of the various species and plumages of the rails. They claim to have found nests of three species; and speak of a small black one which is likely the young of the Virginia. In 1918, Young reports Soras rather scarce in spring but becoming very common in August. On Aug. 2 he counted over fifty in one small wet marsh. After that they gradually reduced in number, and the last one seen was on Sept. 20.

52. YELLOW RAIL, *Coturnicops noveboracensis.*

Though this little rail should be common, it is such an accomplished skulker that we saw none. The Ward brothers tell of nests of very small rail eggs, and during my autumn stay in 1917, Frank Ward, while raking hay, uncovered and forced into flight some small rails with large amounts of white on the wing. He was unable to capture any at the time, and though I later watched haying operations in adjoining localities closely, no more were discovered. In the same vicinity while hiding in the grass near a small pond, I heard a repeated bird voice suggesting a rail close by, but was unable to flush the author. I have little doubt but that they were from Yellow Rails but am unable to substantiate my conclusions. Through the summer and autumn of 1918, Mr. Young watched haying operations closely but was unable to detect any Yellow Rails.

53. *AMERICAN COOT, *Fulica americana.*

Chapman, in his "Camp and Cruises", gives photographs of a Coot's nest taken in 1901. Not seen by us in 1917, but in 1918, Young observed small numbers to May 21 and flocks of 100 to 150 the last of September. Said by Seton and the Ward brothers to have been a very common breeder when the water was high and even up to three years ago, in favorable localities, a few still nested.

54. *NORTHERN PHALAROPE, *Lobipes lobatus.*

A few seen in 1917 among the groups of Wilson's Phalaropes between May 23 and 29, perhaps twelve in all. In the autumn three were seen on Sept. 22 and again on the 24. Specimens were taken during both seasons. Regarded by Ward brothers as rather scarce. In 1918, Young noted occasional flocks, beginning with 20 on May 29, culminating in 100 on June 1, and a few remaining until June 12. In autumn he observed small groups from Aug. 20 to the end of the month with a straggling flock on Sept. 21.

55. *WILSON'S PHALAROPE, *Steganopus tricolor.*

During the 1917 spring visit the commonest and most generally distributed wader. Nearly every little slough had a pair or little group, usually females gracefully swimming about, and a nest of fresh eggs was collected on June 6. Young tells of a flight song he saw executed by a female in the presence of her (prospective?) mate. During it she distended her throat in the same manner as the Pectoral Sandpiper is reported to do. The Ward brothers state that they have seen this courtship flight a number of times. At another time a Phalarope was whirligiging in its characteristic manner in shallow water; upon examination the bottom below it was found to be scratched in semicircles as if with the feet. The Phalarope seem to be entirely surface feeding birds, never dipping down into the water for food. Evidently this graceful spinning is a method of stirring up the water and bringing small particles of food to the surface within reach of the delicate, rapier-like bill. The usual note of the species is a miniature quack, like that of a domestic duck but less loud. From this they are locally called "Grunters". None were seen during the return visit in the autumn of the year. Owing to the progressive drying of the marshes. Wilson's Phalarope was not quite as common in 1918, but Young records a few almost daily from May 7 to Aug. 20 when the species disappeared.

56. *WILSON'S SNIPE, *Gallinago delicata.*

Quite common in 1917 and, though no nests were found, evidently breeding. The sound of its aerial dive and love-making flight could be heard each evening, and occasionally throughout the day. A few were still present during the autumn visit in September. In 1918, Young found it rather less numerous from May to August, but very common in September, and to the time of his leaving on Oct. 2.

57. *DOWITCHER, *Macrorhamphus griseus.*

On May 18, 1917, one was dropped from a large flock as it passed the tent and another was taken on May 30. In 1918, Young saw small bunches on May 22, 25 and 28, and Aug. 9. Of six adult spring specimens but one can be particularly referred by bill size to *M. g. griseus* and two to *M. g. scolopaceus*, the remainder falling into the overlapping measurements of the two forms as given by Howe, (*Auk*, 1901, pp. 157-162). In coloration the birds seem to agree most closely from descriptions with *scolopaceus* but without direct comparison with birds of eastern origin I would hardly like to make a definite determination; on geographical grounds they should be referred to *M. g. scolopaceus.*

58. *STILT SANDPIPER, *Micropalma himantopus.*

In 1917, a flock of twelve were noted wading "knee deep" in the shallows of the Narrows on May

25, and on May 28 twenty-five more were observed in the same place. In 1918, Young observed eight on May 25 and 28. They returned again on Aug. 26, and from four to six were seen to the end of the month. The Wards regard them as common migrants.

59. *PECTORAL SANDPIPER, *Pisobia maculata.*

On May 25, 1917, a small flock of eleven waders that we took to be of this species were seen. On June 2 a single individual was taken. Young did not see the species in the spring of 1918, but on Aug. 24 ten birds appeared and he noted them almost daily, in numbers fluctuating between four and fifty, to the end of September. Only one of these, taken Aug. 27, is adult.

60. *WHITE-RUMPED SANDPIPER, *Pisobia fuscicollis.*

In 1917 a single individual was seen on May 29 in company with a flock of Least Sandpipers, but it was very common on June 2 with large mixed flocks of Least and Semipalmated Sandpipers and Plover. In 1918, Young observed them almost daily from May 22 to June 12, and a later group of four on June 20. On Aug. 7 ten returned and remained in approximately constant numbers until Sept. 12.

61. *BAIRD'S SANDPIPER, *Pisobia bairdi.*

Not recognized in 1917. Amongst the small waders collected by Young in 1918 are individuals taken on Aug. 8 and 9 from companies of White-rumped Sandpipers.

62. *LEAST SANDPIPER, *Pisobia minutilla.*

In 1917, very common until June 6, when it departed with the majority of the other waders. During the September visit, I saw a number of small sandpipers with Semipalmated Sandpipers and Plover that I took to be Leasts, though the presence of more important material near by prevented shooting them for absolute verification. In 1918, Young reports the first Least Sandpiper on May 16, becoming common on the 28th, and remaining so until June 12. Individuals were seen June 20 and July 27, but the species did not return until Aug. 22, remaining until Sept. 7.

63. *RED-BACKED SANDPIPER, *Pelidna alpina.*

Common in the spring of 1917. First noted on May 25. Most abundant on the 28th; they disappeared with most of the other migrant waders on June 5. In 1918, observed from May 22 to June 1 in limited numbers; not noted in the autumn of either years.

64. *SEMIPALMATED SANDPIPER, *Ereunetes pussillus.*

In 1917, we did not note this species definitely amongst the flocks of mixed small sandpipers until May 25 when they were selected from a bunch of Leasts and collected. On June 2 the flocks were composed almost entirely of this species and three solitary individuals were seen after June 5. A few were seen and collected during the autumn visit Sept. 22. In 1918, Young reported them between May 19 and 29, and again in the autumn from Aug. 23 to Sept. 10.

65. *SANDERLING, *Calidris leucophaea.*

In 1917, common in the mixed flocks of small waders from May 28 to June 5 when most of the migrant shore birds left. In the fall several were seen on Sept. 24. In 1918, seen by Young from May 19 to June 12 and again from Aug. 8 to 31.

66. MARBLED GODWIT, *Limosa fedoa.*

Though the Wards recognize two Godwits occurring at Shoal Lake, we were unable to positively identify the Marbled, though several flocks observed the day of our arrival, in 1917, we tentatively ascribed to this species. The Wards do not know of either species breeding.

67. *HUDSONIAN GODWIT, *Limosa haemastica.*

One of the surprises of the 1917 trip was the rediscovery of this fast disappearing species. On May 18, Young took one male from a flock of five and the day after I saw a bird that I was satisfied was of the same species. In 1918, Young saw flocks of 12 and 15, on May 21 and 25, and a single bird on the 29th. On July 31, five more were noted passing over towards Lake Manitoba. Of the specimens taken, two females have considerably more white and grayish feather edgings below than the males and a third shows this sexual (?) character less distinctly. The Ward brothers say that the Hudsonian is the commoner of the two Godwits and that it is more easily approached and shot. The fact is they call this the "Foolish Godwit" and say it can be repeatedly approached after having been fired at. This is quite similar to an experience I had with a bird of the same species at Point Pelee, Ont., in 1915, when I stalked and secured a specimen after having once missed it. In seeking for a cause for the rapid decrease of the species this unwariness should be considered as a factor. It may be that similar habits will also explain the unexpected disappearance of other species. (See *antea*, Trumpeter Swan.)

68. *GREATER YELLOW-LEGS, *Totanus melanoleucus.*

But single birds identified May 27 and 30 in 1917. In 1918, Young found it present in small numbers in a ratio of about one to ten, as compared with the Lesser Yellow Legs, from April 24 to May 15, leaving about two weeks before the latter. In the autumn but casual singles were seen between Aug. 21 and Sept. 12. Said to have been the commoner of the two Yellow-legs when the lake

was high but now much less numerous and growing scarcer.

69. *LESSER YELLOW-LEGS, *Totanus flavipes.*

In 1917 common from the time of our arrival on May 17 to June 5 when most of the migrant waders left. One was taken Sept. 21 on the shore of a small pond some distance from the lake. In 1918, the species was common from April 25 to May 28, and abundant from May 5 to 15. In the autumn stray individuals appeared July 13 to 20, but the bulk did not arrive until Aug. 4, culminating in numbers on the 19th, and remaining until Sept. 7.

70. *SOLITARY SANDPIPER, *Helodromas solitarius.*

In 1917 but single specimens occasionally seen during our spring visit and one noted Sept. 17. In 1918 small numbers were seen regularly between May 8 and 27, and Aug. 5 and Sept. 18.

71. *WILLET, *Catoptrophorus semipalmatus.*

In 1917 one bird was observed from the train between Winnipeg and Erinview, but the species was not noted on the lake. In 1918, Young took single individuals, the only ones noted on the lake, on May 29 and Aug. 10. The spring adult of these two is so decidedly grayer than a Sapelos Island, Ga., bird and both agree so perfectly with comparable material from Saskatchewan and Alberta, that I have little hesitation in referring them both to the Western Willet, *C. s. inornatus.*

72. *UPLAND PLOVER, *Bartramia longicauda.*

Said by Seton to have been "somewhat common" in 1901, "but nearer Winnipeg, where the prairies were drier, it became more abundant". Evidently the drying of the prairie has allowed it to increase its range considerably for we found it a very common bird in 1917, and the Ward brothers say it is increasing. One could hardly go five minutes in any direction from camp without coming across one or more pairs, while its long-drawn whistle was one of the most characteristic and beautiful of the prairie sounds. On the ground the Upland Plover has a very un-wader-like appearance looking more like a long-legged grouse chick, but immediately it takes flight the long sweeping wing strokes proclaim its true relationship. It breeds commonly about the lake, but its eggs, surprisingly large for the size of the parent, are very difficult to find. The parents are very solicitous for the safety of their nests and show great ingenuity in diverting the attention of the intruder. It was not present on my return visit in September. In 1918 it put in an appearance on May 7 and remained common until the middle of August, the last one being seen on Aug. 28. Mr. Young informs me that he looked very carefully for juveniles through the summer but without success. Adults were in common evidence the entire season but even the mowing-machines of the hay-makers failed to discover young or partially grown individuals. How so large and prominent a bird can be raised to maturity without observation is problematical.

73. *BUFF BREASTED SANDPIPER, *Tryngites subruficollis.*

Young met single individuals of this rare species on Aug. 9 and 31, collecting the latter one. The growing scarcity of this species is a matter of some anxiety to those who view with alarm the general decrease in our shore birds.

74. *SPOTTED SANDPIPER, *Actitis maculata.*

This unusually common species was unaccountably scarce on the lake shore in 1917 where conditions seemed ideal for it. We only saw occasional individuals and some days along the lake shore we would fail to see a single bird. In 1918 the species seemed slightly more numerous but still far from common and the greatest number noted any one day was 8 on Aug. 21. It was not noted in spring until May 18 and the last one was seen on Sept. 21.

75. LONG-BILLED CURLEW, *Numenius americanus.*

In 1917 we saw birds in the distance several times that we took to be Curlew. Young did not observe it in 1918. The Ward brothers know of but one species. I include them under this species hypothetically.

76. *BLACK-BELLIED PLOVER, *Squatarola squatarola.*

In 1917 seen from May 26 to June 1, and again on Sept. 22 and 24. Said to be more common in autumn than in spring and to stay very late. In 1918, Young noted small flocks numbering from 3 to 15 on May 22 to June 3. A single individual was seen on June 20. In the autumn similar numbers were seen from Aug. 8 to Sept. 23.

77. *GOLDEN PLOVER, *Charadrius dominicus.*

In 1917 one seen on May 22 and another on the 26th. In the autumn one specimen was taken on Sept. 22. In 1918, four and three were noted May 30 and June 4 and 6 and one on Aug. 21 and on Sept. 21.

78. *KILLDEER, *Aegialitis vocifera.*

Very common and breeding everywhere. One could hardly get out of hearing of its querulous complaining. In the autumn several were seen in 1917 and until Sept. 19, 1918.

79. *SEMIPALMATED PLOVER, *Aegialitis semipalmata.*

First seen in 1917 on May 19, common on the 28th; none observed after June 5. Present in 1918 from May 20 to June 12, and from Aug. 1 to 31, with a single straggler Sept. 14.

80. *PIPING PLOVER, *Aegialitis meloda.*

One or two pairs were usually to be seen on the flats near the Narrows, where they associated with

flocks of Semipalmated Plover and other small waders. Without doubt they breed though we discovered no nests. In 1918 the Piping Plover was present in small but constant numbers continuously from May 15 to Aug. 30, and a single individual noted on Sept. 7.

81. *TURNSTONE, *Arenaria interpres.*

Five seen in 1917, May 25 and 30, and six on June 3; none thereafter. In 1918, the species arrived in large numbers (500) May 28, gradually reducing to 2 on June 12. In the autumn a few individuals were noted on Aug. 7 to 27.

82. *RUFFED GROUSE, *Bonasa umbellus.*

A few Ruffed Grouse still hold out in some of the larger bluffs. Their far carrying drumming was often heard and three specimens taken in 1917. According to Ward brothers, they were once very numerous indeed, but are getting very scarce. They do not seem to have learned the wariness that our eastern birds find necessary to existence, and still allow themselves to be treed by the dogs or shot on the ground in truly primitive manner. This and the unusual number of Goshawks and Horned Owls that invaded the country in the winter of 1916-17 are probably the causes of the great decrease in numbers. Though the Gray Ruffed Grouse, *B. u. umbelloides*, that inhabits the prairies is not a very well marked or stable race these are quite typical of that form. 1918 did not show much improvement in the Ruffed Grouse situation and no increase was apparent. One specimen taken is slightly more red than those of previous years, but we obtained none of the large red phase that Seton mentions as occurring in Manitoba and of which the Wards seem cognizant.

83. PTARMIGAN, *Lagopus (lagopus?)*

The Ward brothers say that they know of five Ptarmigan being killed within a few miles of our camp—always in winter of course. If the Ptarmigan ever occur here they are in all probability Willow Ptarmigan, *L. logopus.*

84. *PRAIRIE CHICKEN, *Tympanuchus americanus.*

The Ward brothers say that this species appeared commonly in the Shoal Lake country some 13 to 15 years ago, though Arnold records nests in 1894 at the south end of the lake and Seton saw one in 1901. They increased to great numbers, but the last few years have died out together with the other grouse both Sharp-tailed and Ruffed. Of this I have more to say under the following species. Throughout the Canadian west the name of this species has been given to the Sharp-tailed Grouse and wherever the term Prairie Chicken is popularly used it is that species that is meant. However, correctly speaking, this is the true Prairie Chicken and has a prior right to the name. Taking into consideration the confusion that has arisen between these two species it might be advisable to apply "Prairie Chicken" to either species of Prairie Grouse indiscriminately and revive the equally satisfactory name Pinnated Grouse for this species. About Shoal Lake the true Prairie Chicken is called "Square-tail" or simply "Grouse". Unlike most of its family this species is partially migratory and most of them disappear from the northern sections of their habitat in winter. The Wards tell about a tame Prairie Chicken they had for several years that returned regularly each spring and was as much at home about the place as a dog or a cat and quite able to protect itself against these natural enemies. Once, during migration, it was noted in the outskirts of Winnipeg where its tameness attracted interested attention, and a newspaper paragraph, while its identity was substantiated by its lack of a toe.

We saw very few scattered individuals during the spring visit of 1917, though their dull booming while love-making could be heard at all hours of the day. This sound has a peculiar intensity and wonderful carrying power and is as easily heard a mile away as just across a field. The constant reoccurrence of this sound in our ears, therefore, was not an indication of large numbers of the species, but of the great extent of the country within auditory range. We probably heard the same individuals again and again. The birds were very wild indeed flushing at a great distance from the intruder and flying a mile or more before alighting. In the autumn I found them considerably more common probably owing to the successful raising of a few broods. Contrary to expectations, Young found the species even less common in 1918 than the previous year. Probably the fall shooting was more than their reduced numbers could stand. A close season of some years on this bird seems expedient to bring them back to their normal numbers.

85. *SHARP-TAILED GROUSE, *Pedioecetes phasianellus.*

This is the original prairie grouse of the Canadian plains. It has been gradually displaced in southern Manitoba by the true Prairie Chicken or Pinnated Grouse of further south. Though generally called "Prairie Chicken" it has no title to that name having a perfectly good and distinctive one of its own as above. About Shoal Lake, we found it even scarcer in 1917, than the real Prairie Chicken which seems now to be the most characteristic game bird of the locality. During the spring visit we saw but two birds and inquiry amongst the farmers elicited reports of but a few more individuals. In the autumn none were seen. In 1918, Young found it still scarcer than the previous year only noting it once at Shoal Lake on Sept. 21, though a flock of

20 were seen on Sept. 29 at Lake Francis at the south-east end of Lake Manitoba when it seems that the species enjoys better conditions. Though undoubtedly overshooting has had a powerful influence in the depletion of the grouse of the prairie provinces it was probably not the whole cause. Throughout the provinces of Manitoba, Alberta and British Columbia we heard practically the same report in 1917. A great abundance of grouse of all kinds followed by sudden disappearance. Coincident with this were unusual numbers of Goshawks and Horned Owls through the late fall and winter of 1916-17 and the failure of the rabbits of all kinds both locally and throughout the north. The connection between all this is obvious. The regularly re-occurring dying of the rabbits through the well known rabbit disease deprived the large raptorial birds of their usual food supply, and they were forced to come into more southern sections and turn their attention to the only food to be found there, the grouse, with the result that the latter were practically cleaned out. The story is remarkably consistent wherever we obtained first-hand evidence, and applied as well to the lonely reaches of the Red Deer river valley, the preserved areas of Dominion Parks, where shooters rarely or never penetrated, as to sections adjacent to dense settlement where the sportsmen would be a most important factor. When limited to animal or steam locomotion the radius of action of the shooter is comparatively small and in the vast extent of the western provinces there remain large expanses where the birds can live practically undisturbed. By use of the automobile, however, there is little chance of retaining sanctity for any purely natural reservation. However, it cannot be doubted that this particular and present low ebb in upland game life is due more to natural causes than to man. Caution must be used in advocating the destruction of large hawks for it is only a few winter species that can be unhesitatingly condemned. The summer hawks do little if any damage† and will be discussed under their proper headings.

86. *MOURNING DOVE, *Zenaidura macroura.*

Not uncommon, they were seen in small numbers on every visit and as late as Sept. 28, in 1918.

87. *MARSH HAWK, *Circus hudsonius.*

This is the commonest hawk of the locality and it was seldom that one or more were not in sight. They seemed to have well defined beats over which they worked regularly at stated times of the day. There were several nests in the vicinity of our camp, one of which was found, though later broken up by some animal of prey of considerable size, as there was evidence of a severe struggle about the nest. A very pretty sight was witnessed several times. One hawk, usually the male, with a mouse or other prey in its talons approached the nesting marsh calling loudly. It was answered by its mate who rose from the nest and came to the call. They circled and manœuvred a minute and then, as the female passed beneath her mate, he dropped what he held and she with a quick reach of her talon, caught it in the air and returned to the nest or an adjoining knoll to feed it to the young or to herself. Sometimes several attempts would be made by the two birds to get into the proper relative position, but the upper bird never dropped the prey until he was satisfied that conditions were favorable nor, when he did drop it, did we ever see his mate miss the catch. Marsh Hawks were still common when I returned in the autumn of 1917 and when Young left in early October, 1918.

88. *SHARP-SHINNED HAWK, *Accipiter velox.*

In 1917, one bird seen on May 25th and other individuals on various days during the September visit. In 1918, Young noted occasional individuals throughout the summer except from June 2, to Aug. 5.

89. GOSHAWK, *Astur atricapillus.*

Though no Goshawks were seen in 1917, Young noted two on Aug. 21, 1918. We received such detailed accounts of the number of "large gray hawks" that visited the country the winter of 1916-17 that there could be little doubt as to the identity. Without question these birds together with Horned and Snowy Owls, were the immediate cause of the scarcity of Prairie Chicken, and Sharp-tailed and Ruffed Grouse. This bird is a brush hunter and doubtless accounted for many Ruffed and Sharp-tailed Grouse in the poplar bluffs by day, while the Horned Owls took many by night that roosted in insufficient cover whilst the Snowy Owl that is largely a diurnal hunter scoured the more open places. The trio made a combination that is difficult for any grouse to escape. As mentioned before, doubtless these birds came from the north in such unusual numbers in search of food on the depletion of their usual rabbit supplies. To date, February, 1919, we have received no notification of another flight of these birds. On the contrary all reports point towards an increase of rabbits, and a decrease of destructive raptorial birds in the more settled communities, and we assume that it will be several years before the latter become a serious menace again.

90. *RED-TAILED HAWK, *Buteo borealis.*

Next to the Marsh Hawk this was the hawk most often seen. They were shy, though still not quite as wary as the individuals we are in the habit of meeting in the eastern provinces. They nest in some of

†See Hawks of the Canadian Prairie Provinces, by P. A. Taverner, Mus. Bull. No. 28, Geological Survey, Dept. of Mines, Ottawa, Aug., 1918.

the smallest trees, and those accustomed to finding Red-tail nests in the tops of the highest and most inaccessible trees, are surprised at the low elevations of many of their nests; we found them as low as twelve feet from the ground. A few birds seen were very dark or entirely black, though the six taken in 1917 were of ordinary light type and four of them indistinguishable from eastern birds; only two would have been identified as Western Red-tails, *B. b. calurus*, if their geographical origin were unknown. Probably some of the birds seen were Swainson's Hawk but except in most typical plumage I fail to see how these species can with certainty be separated in life. While it is evident that the Goshawk and the two large owls do serious damage to upland game, little objection can be made to these large summer Buteos. Through the spring and summer their main dependence is upon the Gophers and Ground Squirrels and the good they do in this direction can hardly be over-estimated. Though we were not in the Shoal Lake district during the summer we had special opportunities of studying the economic effect of these birds on the Red Deer River in Alberta a few weeks later, where the conditions as far as this aspect of the question is concerned are similar. We found them subsisting exclusively upon small destructive mammals. If it is true, as most excellent judges have stated and as was verified to us by several practical farmers, that a gopher will destroy a bushel of wheat in a season, with this grain worth two dollars a bushel, the hawk that takes a gopher a day for three months in the year is of real economic value to the community and should be rigidly protected. It is true that gophers hole up early in the autumn, after which the Red-tails and other Buteos may turn their attention to other food supplies, but only after several months of valuable service to man. These birds are peculiarly mammal-eaters and usually turn to mice rather than to birds. A few individuals occasionally, under certain conditions, develop a taste for poultry and game, but it is comparatively rare for they have not the speed and energy to hunt such game systematically as does the Goshawk or the rare large falcons. However, it would take a great number of chickens and game to counterbalance the good done by the destruction of noxious rodents, especially in the prairie provinces where these pests are a serious hindrance to agriculture. The farmer and other shooters usually plead their inability to separate one hawk from another as extenuation for killing all birds of prey. In truth, when the stake is so important, a modern agriculturist has as little excuse for not learning to discriminate between bird friend and foe, as he has for failing to learn the obnoxious weeds or insects and the methods for their control. Many, also, fail to judge the relative proportions of the case; they are loud with indignation when a hawk takes a partially grown chick, but fail to enthuse when the same bird prevents the destruction of twenty bushels of grain. While an occasional Goshawk does or may remain in settled communities through the summer the majority of the large summer hawks are Buteos and harmless. They depart in the autumn while the objectional ones are mostly winter visitors. Should only winter hawks be killed or such others as are caught in the guilty act, but little mistake will be made.

91. *SWAINSON'S HAWK, *Buteo swainsoni.*

Though we failed to identify this species specifically in 1917, Young took a specimen on May 23, 1918. It is quite similar in color to the ordinary juvenile Red-tail, but more profusely and evenly spotted over with dark on all below except throat.

92. *BROAD-WINGED HAWK, *Buteo platypterus.*

Mr. E. Arnold tells me that he took a set of Broad-winged Hawk's eggs near Woodlands a few miles south of Shoal Lake, June 10 (1895). On May 5, 1918, Young reports flocks of 5 to 10, aggregating 50 or more, passing over every twenty minutes or so, all headed north. Single individuals were noted on the 8th and 22nd, and then no more were observed until Oct. 1 and 2, when three and two were seen.

93. *ROUGH-LEGGED HAWK, *Archibuteo sancti-johannis.*

Mr. Wm. Ward presented us with a specimen he killed on Oct. 2, 1917, which forms our only record for the locality. These large hawks, characterized by having the legs feathered to the base of the toes, are probably the least harmful and most beneficial to man of all the raptores.

94. BALD EAGLE, *Haliaetus leucocephalus.*

The Ward brothers told us in 1917 that four years previously a juvenile was taken. They usually see from three to four eagles a year.

95. PEREGRINE FALCON, *Falco peregrinus.*

In 1918, Young reports the Duck Hawk *F. p. anatum*, several times in May and again on Aug. 2. The Ward brothers seem to know it and report it regular but not common. It is unlikely that it breeds in the locality.

96. PIGEON HAWK, *Falco columbarius.*

Young records the Pigeon Hawk as seen once in early July, several times in late August, and again in September and early October. No specimens were taken but, without doubt, the form is the typical race, *F. c. columbarius.*

97. *SPARROW HAWK, *Falco sparvarius.*

Only occasionally seen in the spring of 1917 and not noted in the autumn, but in 1918 a few individuals noted constantly from arrival April 23 to departure the first of October.

98. OSPREY, *Pandion haliaetus.*

One flew directly over our camp on May 26, 1917. Noted in 1918 by Young, from May 5 to Aug. 6. Said by the Ward brothers to be rare.

99. LONG-EARED OWL, *Asio wilsonianus.*

In 1917 we received descriptions evidently referring to this species and were shown an old nest that seemed corroborative evidence. The supposition is confirmed by Mr. Job who reports finding four young of various sizes in an old crow's nest on opposite side of the lake June 28, 1912.

100. *SHORT-EARED OWL, *Asio flammeus.*

The commonest owl in 1917, seen nearly every evening, and often during the day, beating along the lake shore or over the old reed beds and marshes. In 1918, however, Young only noted single individuals three times during the entire season, April 30 to May 15, taking one on May 2.

101. *GREAT HORNED OWL, *Bubo virginianus.*

In 1917 occasional large owls were glimpsed or heard of during the spring visit and on Sept. 17th one was taken. It is referable to the Arctic Horned Owl, *B. v. subarcticus*, but not absolutely typical and with slight tendencies towards the Western Horned Owl, *B. v. pallescens.* During the winter of 1916-17 a large flight of these birds, together with Goshawk and Snowy Owls, came from the north, obviously driven into new fields by the dearth of rabbits. Without doubt the Horned Owls had an appreciable influence in the destruction of upland game; though as a night hunter, it was probably the least harmful of the trio. Young only noted one individual in 1918, on July 21; by its dates a probable breeder.

102. *SNOWY OWL, *Nyctea nyctea.*

From the accounts of the Ward brothers, it is evident that unusual numbers of this species accompanied the flight of Goshawks and Great Horned Owls in the winter of 1916-17. Being more of a diurnal and open country hunter than the Horned Owl probably this species was largely instrumental in the destruction of the grouse. In 1918, Young saw individuals from April 30 to May 15, taking one on May 2.

(To be continued)

THE ARCHAEOLOGICAL VALUE OF PREHISTORIC HUMAN BONES

BY HARLAN I. SMITH, MUSEUM OF THE GEOLOGICAL SURVEY, OTTAWA, CANADA.

Why do we bring so many human bones into a museum? Why is one skeleton not enough? Such questions are always surprising for it would seem that anyone might think of many reasons why we should collect the bones and why one skeleton would be as unrepresentative as one man is unrepresentative of his race. If we were to describe a tall, bearded man and say that he is representative of the English, it would be untrue, for there are short Englishmen and there are beardless Englishmen. These features of Englishmen are only two of a great many that could be mentioned. Likewise it is necessary, if we are to know an ancient people, to have enough skeletons to enable us to obtain average measurements and a representative series for study of the type.

The age at which an individual died can be determined approximately from his bones. If we have enough skeletons, we can determine how many individuals died in infancy, how many as little children, how many in middle age, and how many lived to be very old. This information regarding a primitive or savage people would be interesting in comparison with the same facts regarding our own people. We are often told that Indians were very healthy and lived to an old age, but in archæological explorations we find the bones of a great many children and young people as well as those of old people, showing that many of the Indians died young.

Fairy tales about the bones of giants and dwarfs are common. One can hardly think of a place he has explored where he has not been told of the finding of the bones of a giant, yet giants are very rare and of all the hundreds of skeletons that I have dug up and of the thousands seen in museums, I have yet to find so large a specimen. In fact, the skeletons are no larger than those of the people with whom we daily mingle.

The bones of children, easily determined, are often mistaken, by those who know nothing of such subjects, for bones of dwarfs.

A human skull that would hold "at least a peck" figures frequently among stories told by people who have probably never dug up a single skeleton, but who tell of what they have seen someone else find. Where all these extraordinarily large skulls are now is a mystery, for certainly they are not to be seen in our excavations, or in museums. The same is true in regard to the story of the leg bone of a man, told at practically every place in North America where I have carried on explorations. One end of the bone was put on the ground and the other end came nearly to the waist; but such bones

are never seen by scientists and have never been produced by the story tellers. Another story that seems to crop up everywhere is of the finding of an immense human jaw so large that it could be placed over the lower jaw of a large man. Practically any v-shaped object can be placed over another v-shaped object, so that any medium-sized human jaw can be placed over the face of any man, but the huge human jaw of the story is never in evidence.

Fine teeth are often attributed to the Indians, and it is stated that savages never suffered from toothache, but in every large collection of Indian bones we are able to observe that they not only sometimes had abnormal teeth, but that they suffered much from toothache and even from large and painful ulcers in the jaws. The teeth of Algonkins are found to have been affected by decay much less than the teeth of Iroquoians who, being agricultural, ate much soft cooked corn food.

Diseased bones are found in large numbers in Indian burial places, many of them among the bones of fairly young people. These show that the Indians were not all healthy. Many diseases do not affect the bones, so that there was evidently a still greater percentage of disease. In a series of only twenty-four skeletons found near Prescott, Ontario, at least three had diseased growths on the spinal column, one so severe that two of the vertebrae were grown together. In the same collection were other diseased bones. When one has a sufficiently large series, say one hundred skeletons, he is usually able to tell what proportion of the people had severe diseases that affected the bones, the various parts of the body that were affected, and the frequency in each part, also whether the bones of an individual were thus affected only in one part or in many. Sores also sometimes leave their traces on the bones to a certain extent. Where the number of skeletons collected is sufficient, statistical studies of all these diseased bones may be made.

Wounds in some cases are indicated by the bones. In a large series from an aboriginal burial place one frequently finds bones that were broken when the individual was alive, which afterward grew together, sometimes as strong and useful as before. Occasionally arrow points are found in bones. Sometimes such a point has been broken off in the bone and healthy bone has grown partly over it, showing that the individual recovered. Frequently these are only found when washing the bones in the laboratory, not having been seen by the excavator because of the soil on the bones. In such cases the facts would never have been known had some particular bone or piece of bone been discarded and reburied.

The uses to which human bones were put and the things done with the body or the skeleton may also be learned from the bones. Disks cut from human skulls and perforated for use as ornaments or charms are found in Ontario. Several lower arm bones have been found in an Iroquoian site at Roebuck in eastern Ontario, which show that one end has been used as a handle while the other has been sharpened for use as an awl or a dagger. Perhaps they were considered to have special virtue because made from human bones or possibly they were for use in practising witchcraft.

Cannibalism may at least be surmised when cracked or burned human bones are found, and cremation where burned bones are found. Scalping is frequently indicated as having been practised in a certain place and at a particular time, by knife-marks found on the bones of the head.

Painting of the bones or body is often indicated by the paint found on the bones. Copper ornaments or implements placed with the dead, even where the metal has completely decayed, often leave a green stain and chemical evidence on bones.

Skulls perforated with conical drilled holes after death or so as to cause death are found in Ontario and suggest that the skulls were suspended as trophies or charms, or had something fastened to them as a death dressing.

The skeleton of a man differs from that of a woman in many respects. If in each of these respects the difference is extreme, it is easy to determine whether the skeleton is that of a man or woman, but if the difference is very slight, or if in one respect the skeleton resembles that of a man and in another that of a woman, it is more difficult to make the determination. For instance, the skeleton of an athletic, outdoor woman in some respects might resemble the skeleton of a man, while the skeleton of a delicate man might resemble the skeleton of a woman. Nevertheless, by careful examination and allowing for error, it is possible to determine approximately the distribution of sex in a series of skeletons and to use this information in many other studies, as for instance to determine whether certain bone diseases were more prevalent among men than among women; and it is possible to compare certain physical features of the skeletons of primitive women with those of our own women who have long been subject to the conditions peculiar to "civilization".

Sutures in the skulls of some old people which have been found had grown almost if not entirely together, so that there was no further opportunity for the brain to increase in size.

The value of large collections of human bones is illustrated by the fact that a dentist living in

Kansas finds it worth while to make a yearly trip to New York to study just the teeth of skeletons received since his last visit in only one museum in that city. This knowledge he uses to advance methods of dentistry, to save not only the teeth of his own patients, but also those of any one going to dentists who derive benefit from his publications. A surgeon visited the same museum and many others solely to measure and study the three large pelvic bones of the female skeletons. This opportunity he expected would result in the saving of many lives. What he learned might be used by many other surgeons who would read of his discoveries. From these facts it is evident that all human bones should be saved during archæological excavations—not merely entire skeletons or only whole bones, but even a stray tooth, a bone of the pelvis, or the broken end of a bone perhaps exhibiting a diseased surface, an imbedded arrowpoint, or a fracture. The humblest bone or fragment may help to increase human knowledge, which in turn may relieve suffering or be useful to mankind in some other way.

It is very desirable that all finds of prehistoric human bones made in Canada be promptly and fully reported to the Museum of the Geological Survey, Ottawa, and the bones, instead of being neglected or reburied, be kept as found until they can be investigated by an officer of the Museum or, where this is impossible, that they be carefully labelled, packed and sent to the Museum.

NOTES ON MIDWINTER LIFE IN THE FAR NORTH.

By E. J. Whittaker.

During the summer of 1917, the writer spent some days at Hay River post, N. W. Territories. This post is pleasantly situated at the mouth of the river of the same name, which flows into Great Slave lake at its western end. While there, we enjoyed the bounteous hospitality of all. We were especially well treated by the English Church mission, the Rev. Mr. Browring, its pastor, and by M. Louis Roy, the trader of the Hudson Bay Company. While awaiting a steamer at the end of the season's work, our stay there was especially pleasant. Fish of all kinds were abundant, and so were potatoes and other garden truck from the mission garden. Such is the rapidity of growth in these northern latitudes where the sun was above the horizon for twenty hours out of the twenty-four, that potatoes planted only forty-five days before were quite large. The brilliant green meadows of the alluvial islands contrasted pleasantly with the sombre hues of the evergreen forest farther back, out of whose depths flowed the brown flashing waters of the Hay, which not so many hours before had flung themselves in a wild torrent over the Alexandria Falls, some fifty miles up the river. This summer aspect contrasts sharply with that of winter, as is indicated in the following paragraphs taken from letters describing the vicissitudes, as well as the pleasures, of life in midwinter in the same region.

In a letter from Mr. Roy, the company trader, the following appears: "We have been very short of goods this winter, and I have been obliged to haul from other posts, and my poor dogs have had no rest at all. I, myself, made three trips, one each to Buffalo lake, Resolution, and Providence. It was terribly cold on that trip to Providence, 65° below, and a head wind. We were unable to use our knives and forks, as they would stick to our lips, and the first occasion we tried it we had a bad time. We would have to put our fingers close to the fire every little while to keep them from freezing. We certainly ate in a hurry then. In the middle of the night, we had to get up to put wood on the fire, as the cold was so intense that the warmest sleeping bag would not keep it out. We would hitch up and '*marche*' at four o'clock. We have had a terribly cold winter and lots of snow. The cold is so intense, and storms so frequent, that the Indians do not visit their traps very often, and there is scarcely any fur being caught. It is the poorest year for fur I have ever seen. They say that east of the Slave river the Indians are living in plenty as the caribou have come closer and in greater numbers this winter than for years past."

Mr. Bowring, according to his letter has been enjoying at his mission a few of the luxuries of a more southerly clime, but has had his troubles too. In his letter, he says: "Lately we have been living quite high. The mission garden gave us a plentiful supply, and we are enjoying lots of beets, carrots, cabbages and onions—not too bad for this out-of-the-way spot. We are getting lots of fish, both trout and whitefish, but the former are very large and almost too fat. I have some parsley growing in the cellar, also some rhubarb. When we run short of provisions, parsley sauce is not bad with whitefish. We are all well now, though most of the workers were down with diphtheretic sore throat, and all had a period of quarantine. Fortunately, it did not get to the village.

"I had the pleasure (?) of a trip with dogs to Chipewayan and back. I do not mind going behind the dogs as a rule, but to get up one morning,

as I did, and find that the dogs had swallowed the grub pile, is no joke. The only thing one can do till he gets to the next Indian house is to 'tighten his belt.' I am now resting up after that trip. I was to go down to Fort Simpson, but there was no food there for the dogs, so I had to give it up. There is no fish for the dogs down the Mackenzie, as many of the nets were lost."

It may be said that the trip from Hay river to Fort Chipewayan is considerably over three hundred miles with but two posts en route, Forts Resolution and Smith. So that the loss of one's provisions in the terrible cold of last winter, would be indeed, as Mr. Bowring puts it, "no joke".

In a letter to Dr. Kindle, dated April 26, 1918, Inspector Anderson, of the Royal North-West Mounted Police, at Fort Smith, tells of a patrol which he made from the latter place to Fort Simpson. He says: "I had a very hard trip on account of the very cold and stormy weather and the unusual depth of snow. I escaped with a few frostbites, a common occurrence in this country. It is not such a picnic travelling in winter time here. I have had some tough trips in my time in the police force, but this last one takes the cake. Snow has been very deep and over 60° below zero on my patrol. I camped at Jackfish Point at the outlet of Great Slave lake without enough wood to keep the fire going all night we had to let it go out; no tent, no stove; it was what you may call cold.

"The caribou have moved away from here. One thousand head in a bunch were seen crossing Great Slave lake in March, going toward the Barren Grounds, all females. The males will follow later. Male stragglers only are left near here, about three or four days out (*i.e.*, days' journey from Fort Smith). If it had not been for the caribou considerable hardship would have been experienced among the natives. The snow is gradually going away, and we look to the opening of Slave river about the fifteenth of May."

At the approach of spring, there comes an interval, when the ice is breaking up, and the snow is melting, when travel either by winter sledging or summer canoeing becomes impossible. This period varies in different places. As noted above, Slave river breaks up about the middle of May. In 1917, there was considerable ice in Great Slave lake on June 28th, preventing the supply boats of the trading companies from proceeding beyond Fort Resolution, but by July 1, none was to be seen. The ice on that portion of the Mackenzie above Fort Simpson breaks up about the beginning of June, but below that point, assisted by the earlier break up of the Liard, the river commences to clear about the middle of May. Farther down the Mackenzie, its tributary, Great Bear river, opens about the first week in June. Great Bear lake however, the other great lake of the north, is not free of ice until the middle of July, according to a memorandum received by Dr. Kindle from Inspector Anderson. The difference in latitude is amply reflected in the dates of opening of Great Bear and Great Slave lakes.

In the winter of 1917-1918 we in Ottawa complained of the bitterly cold weather experienced, though the maximum of our discomfort was a short ride in a cold street car, and a rather constant worry as to fuel. Our experience with sledging was limited to short hauls of a couple of bags of coal on a toboggan. But, as the above letters show, our troubles are rather insignificant, as compared with those constantly encountered by these people of the north, who labor whole-heartedly, summer and winter, in these isolated regions.

NOTES AND OBSERVATIONS.

ANNUAL MEETING OF THE CANADIAN SOCIETY FOR THE PROTECTION OF BIRDS.—We are in receipt of the minutes of the annual meeting of the Canadian Society for the Protection of Birds, held in Toronto, Dec. 31, 1918.

Preceding the business meeting a complementary luncheon was held in honor of the retiring president, Dr. C. K. Clarke, at which felicitous remarks and speeches were made.

The secretary's report showed that though a lack of funds had been felt, considerable work had been accomplished through the year. The society brought Mr. Harold Baynes, of Meriden, N.H., to lecture on April 4 during the convocation of the Ontario Educational Association on "Wild Birds and How to Attract Them." In September a bird fete was organized at which Mr. W. D. Hobson, of Woodstock, spoke. Another lecture was also given by Mr. Hobson on Nov. 19, on "Bird Calls and Bird Ways".

The following officers were unanimously elected for the coming year: President, Frank F. Payne; vice-presidents, Dr. N. A. Powell and Principal Charles G. Fraser; secretary, Miss Laura B. Durand; directors, Miss Barbara A. Ewan, Mrs. L. Clark Macklem, Mrs. Arthur McFarlane, Mr. Herbert Barton.

At the first meeting of the Executive on Jan. 6 Dr. Clarke was elected the society's first honorary president and Dr. A. H. Mackay, Superintendent of Education, N.S., the first provincial vice-president. It is understood to be the policy to have similar representation in the other provinces.

The object of the society is: (*a*) to instruct the public regarding the importance of protecting bird life in the interests of the country, by holding meetings, lectures and exhibitions; (*b*) to publish and distribute literature relating to birds and cooperate with the Federal and Provincial Governments and regularly organized natural history societies throughout Canada in this respect; also to acquire and maintain a library; (*c*) to secure legislation on behalf of bird protection in addition to existing legislation and to assist in enforcing the same; (*d*) to forward the study of migration and all other matters relating to the nature of birds.

The members are of four classes, honorary, life, annual and junior. Life members are those who pay the tsum of $10.00 at one time, annual members pay $1.00 each year. Juniors are children of fifteen years of age or under who are enrolled without fee on signing the pledge.

Branches may be formed in any place and affiliation is invited. County clerks and all other persons are asked to co-operate and report violations of bird protection acts, and the public is asked to limit the number of cats in order that birds may increase, to confine pet cats or keep them under observation during the nesting season, and report to the local Humane Society's officers the presence of stray or unowned cats.

The pledge of the Society is as follows:

"In becoming a member of the Canadian Society for the Protection of Birds, I pledge myself to protect all useful wild birds from their enemies by every means in my power; to promote the study of their lives, and to influence others to do the same".

THE OTTAWA NATURALIST wishes the society every success.

ALBERTA NATURAL HISTORY SOCIETY.—The 13th annual meeting of the society was held at Red Deer, Friday, Dec. 27, 1918. At the afternoon session the usual business was transacted, including the reading and passing upon of the report and financial statement of the secretary-treasurer, and the election of officers for the ensuing year, viz: Hon. president, Hon. D. Marshall; Hon. vice-president, Mr. J. J. Gaetz, M.P.P.; second Hon. vice-president, Mr. H. A. Craig; president, Mr. F. C. Whitehouse; vice-president, Mrs. W. A. Cassels; second vice-president, Dr. H. George; directors, Mrs. George, Mrs. Pamley, Mrs. Root, Miss Cole, Miss Goudie, Mr. E. Wilton; Edmonton—Messrs. K. Bowman, F. S. Carr, D. Mackie.

At the evening session the following papers were read: the executive report, Mrs. Cassels; annual entomological report, dealing with insect pests, etc., Mr. Whitehouse; Alberta mammals of the carnivorous group, Dr. George. Dr. George's paper was fully illustrated by specimens from his fine collection; Faunal zones, Mr. Whitehouse; insects and other specimens, representative of the different Alberta zones, were shown, with maps, defining the areas of life.

During the past two years the following papers have been given:

March 28, 1917—Insect Pests, Mr. Whitehouse.

April 25—Water-birds at Sylvan lake, Mrs. W. A. Cassels.

Birds of Alberta, Dr. H. George.

May 30—Fishes of Alberta and adjacent waters, Mr. Whitehouse.

Sept. 26—Dragonflies, Mr. Whitehouse.

Oct. 26—Nature study in Schools; its difficulties, Miss M. Cole.

Nov. 23—Alberta Beetles, Mr. F. S. Carr, of Edmonton.

Insect collecting Mt. Coliseum, Nordegg, Alta., Mr. Whitehouse.

Feb. 22, 1918—Prehistoric Reptiles, Mr. Wilton.
March 2—Wild Fruits of Alberta, Mrs. George.
May 31—Geological History, Mr. L. J. Williams.

The Society's report is published annually in the Report of the Provincial Department of Agriculture.

A NOVEL MODE OF MOVING A FAMILY.—A unique plan for carrying their families from one place to another is adopted by certain mammals. The method, which is simple but effective, consists in each young one taking such a firm hold of a teat that it is not loosened even after the mother has moved a considerable distance.

The female White-footed Mouse, *Peromyscus leucopus* Raf. is known to carry her family quite frequently in this manner. The following quotation from *A Hermit's Wild Friends* by Mason A. Walton, refers to this mouse: "If the young mice are small in some mysterious way the mother mouse induces each youngster to cling to a teat, when the whole family is removed in this novel manner to a safe retreat beneath the cabin. It is a comical sight to see the old mouse crawling along a log with eight or ten raw, shapeless things clinging to her like grim death."

Several years ago I saw a meadow-mouse, *Microtus pennsylvanicus*, succeed in saving her young by this method. She had been driven from her burrow under a stump by a dog, but managed to escape, trailing her whole litter into another burrow. The young mice in this instance were much more mature than those referred to by the "Hermit".

The muskrat, *Fiber zibethicus* Linn. has also developed this plan of making a quick withdrawal with her family. I have noted this only on one occasion, but at that time the mother swam several yards under water from one burrow entrance to another and towed her youngsters, which could plainly be seen clinging to her. She must also have brought them in the same manner along the burrow from the nest above high-water mark.

A. COSENS, TORONTO.

HABITAT OF CAREX FRANKLINII, BOOTT.—*Carex Franklinii* was collected by the writer at four stations along the Athabaska river in 1917 and 1918 at extreme distances of 20 miles apart and in each case the habitat was the same. Here and there along the Athabaska river there are low boggy areas bordering the river itself. These bogs are caused by seepage from the true bank of the river or by springs and are characteristic of all mountain streams. There is generally a considerable trace of "alkali" in the soil as is indicated by the occurrence of *Ranunculus, Cymbalaria, Triglochin, Puccinellia, Dodecatheon, etc.* Between these bogs, which are often only a few yards in width, and the river there is always a narrow strip of higher ground formed of alluvium which although submerged at high water is generally a few feet above the river bed. It was always on this narrow strip that *Carex Franklinii* was found and of the hundred or more specimens collected all but two or three were on the river edge of this bank associated with the usual plants of such localities.

During parts of two seasons spent at Jasper Park a constant lookout was kept for this species which had not been collected since Drummond's time, but it was seen nowhere else but in the localities indicated. As the old "Athabaska Trail" in many places follows the narrow strip referred to above and this was the trail followed by Drummond, it is reasonable to suppose that his specimens were collected not far from the localities at which *Carex Franklinii* was found in 1917 and 1918. This species is represented in the herbarium of the Geological Survey of Canada by the following specimens from Jasper Park, No. 97,622, along Athabaska river at discharge of Beauvert lake, Alta., 3,300 ft., July 24th, 1917; No. 94,208, same locality, collected by Dr. M. O. Malte, July 31st, 1917; No. 97,621, same locality, July 23rd, 1918; No. 97,623, about three-fourths of a mile above the bridge across Athabaska river, 2 specimens only; No. 97,624, along Athabaska river near Buffalo Prairie, Aug. 3rd, 1918; No. 97,625, north side of Athabaska river across from discharge of Beauvert lake, July 1st, 1918.

J. M. MACOUN.

A FISH SHOWER.—Although there are many records of showers of fishes, frogs and toads, such accounts are commonly regarded as apocryphal, based on mistaken observation or faulty reasoning.

An account of a fish shower in a Toronto paper of February, 1917, seemed to afford an opportunity for investigating one of these surprising phenomena. The fish fell in Durham county, Hope township, concession 9, lot 16. On writing to the owner of the farm I was furnished with the following details: On the last Friday of February, 1917, the fish came down in a shower of rain, that was followed by a soft snow. A mild south wind was blowing at the time. The fish were found, a few yards apart, scattered over a distance of twenty rods. Twenty-five of them were picked up from the surface of the snow, which was soft and deep in that locality.

A specimen of the fish sent to me is two and three-quarter inches in length. After comparing it

with a small Gaspereau herring in the collection of Mr. C. W. Nash, Provincial Biologist, there is no reasonable doubt but that it belongs to that species.

Surprising as the conclusion is, there seems no other possible explanation but that the fish were carried from Lake Ontario, the shore of which is approximately twelve miles from where the specimens were found.

A. COSENS, TORONTO.

DIRCA PALUSTRIS L. IN NEW BRUNSWICK.—In the summer of 1918, while visiting at Loggieville, a small town at the mouth of the Miramichi river, and four miles below Chatham, I met with a strange shrub growing in small open spaces among white spruce and balsam firs, which clothe densely the low sandy plain, that everywhere skirts the shore and extends many miles inland. It grew in small dense hazel-like clumps, and rose to the height of four or five feet. No flowers were to be seen, nor was any fruit found, either on the bushes or on the ground beneath. Samples were taken and submitted to Mr. J. M. Macoun, head naturalist to the Geological Survey, who pronounced it this species. The large ovate leaves of a pea-green colour, the pale ashy bark, the stout stems branching freely and tree-like, and the jointed branches themselves were all somewhat universal and attracted the attention. Familiar with the botany of northern New Brunswick for many years, and having collected all over it, I readily spotted the stranger. It must be very rare. The light spongy snow-white wood and the thick tough bark that easily separates into thin lace-like layers of a delicate complex structure, recalling that of the Lace Tree of the West Indies, to which the Leatherwood is a near relative, were exceedingly interesting features whose examination afforded me a very enjoyable afternoon. Authorities assign a swamp habitat to this species, as its specific name implies, but these slightly undulating plains are largely dry, indeed very dry, in midsummer; at all events the clumps I found were upon a parched sandy soil.

Though common in central and eastern Ontario and in the valley of the St. Lawrence as far as Ste. Anne, Champlain Co., it is rare eastward. In "Preliminary List of the Plants of New Brunswick," Bull. No. IV, Nat. Hist. Soc. of N.B., 1885, by the Rev. (Dr.) James Fowler, professor emeritus of Queen's University, Kingston, the author assigns two stations to N.B., namely, Keswick Ridge, York Co., and Hillsboro, Albert Co. In "Catalogue of Canadian Plants," published the following year, Prof. John Macoun was able to add no further stations to its distribution in the Maritime Provinces. It does not seem to have ever been reported from Prince Edward Island or Nova Scotia.

PHILIP COX.

University of New Brunswick,
Fredericton, N.B.

A LATE RECORD FOR HORNED LARKS.—On January 8, while on a C.N.R. train, I saw a crow in a sheltered ravine about five miles east from Ottawa. A little farther on I was surprised to see two horned larks, feeding on seeds of exposed weeds in the vicinity of a farm building. The larks were plainly seen, both on the ground and in flight. Later, near L'Orignal, I saw a more familiar bird at this season, a horned owl. I have heard of no crows in the vicinity of Montreal since Nov. 24, although it is not unusual for a few to winter in favourable localities, but the presence of horned larks seems worthy of recording, as I have no record of their occurrence at Montreal during December and January. Possibly they remain later at Ottawa. Of course I was unable to determine the subspecies, but my notes show that the more northern birds *O. a. alpestris* never stay as late as our summer resident *O. a. praticola*, and that late November records of *praticola* are for single birds or couples, while *alpestris* has always been found in considerable flocks.

L. McI. TERRILL.

BOOK NOTICES AND REVIEWS.

THREE YOUNG CRUSOES, published and for sale by Wm. Alphonso Murrill, A.M., Ph.D., Bronxwood Park, New York City. Price $1.50.

This book which contains a story of the Life and Adventures of Three Young People on an Island in the West Indies, was written for the entertainment of children between the ages of twelve and eighteen years. The characters are fictitious, but the natural history is reliable and visitors to any part of the West Indies may find the book helpful. It consists of thirty-two chapters with eighty-three illustrations and two colored plates.

Teachers will also find this work useful, as it describes the animals, trees, flowers, fruits, birds, fishes and minerals to be found on the Island.

R. M. G.

The *Auk* for January, 1919, contains a number of articles of interest to Canadians.

THE BIRDS OF THE RED DEER RIVER, ALBERTA, by P. A. Taverner, pp. 2-21, 4 pl. This is based upon explorations and collections made by the Geological Survey in the Red Deer Valley in 1917, but in addition includes all other ornithological matter to hand on the district. After a general introduction, description of the region and sources of information, is an annotated list of 79 species, from the grebe through the birds of prey. A second instalment is to continue and conclude the list. The plates give typical river views and nesting sites of Ferruginous Roughleg Hawk and Prairie Falcon.

FURTHER NOTES ON NEW BRUNSWICK BIRDS, by P. B. Philipp and B. S. Bowdish, pp. 36-43, 2 pl. This gives the results of ornithological investigations in Northumberland Co., N.B., in the summer of 1917, being additional to papers on the same locally published, *Auk*, 1916, pp.1-8, and *ibid*, 1917, pp., 265-275. Annotations are given on 43 species. Most of the notes are on life-history and oological subjects, but the distributional data included is of considerable assistance to an understanding of Maritime Province conditions. Probably the most striking result obtained was the finding of four nests of the Cape May Warbler which as a breeding bird remains one of the very rarest of the warblers. The plates are admirable and show nests of the Cape May Warbler and Arctic Three-toed Woodpecker, a Wilson's Snipe on the nest, and a remarkable fine portrait of a Three-toed Woodpecker itself.

On looking over the list one cannot help wondering at the basis of the subspecific designations. There is nothing to indicate either that specimens were taken, or if taken, who is responsible for and upon what grounds they were diagnosed. The internal evidence suggests that the writers merely followed "common report", a very common practice nowadays, but not a scientific method and one that should be reformed. The great majority of the determinations are probably correct. One case at least gives force to this protest. *Dryobates villosus leucomelas*, the Northern Hairy Woodpecker is given as the local form. Though this race has become firmly fixed in current southern Canadian literature, according to all exact data available to the reviewer this is, in the nest, a high northern form and its occurrence in summer south of the Gulf is a questionable assumption. The authors may possibly be correct in this case, but without further evidence than the mere statement of a name we are warranted in stating doubt. It is the view of the reviewer that the use of the subspecific name and trinomial is only warranted when specimens have been critically examined and identity established by competent authority. Otherwise the specific binominal answers every purpose and is just as exact as hypothetical trinomial.

NOTES ON SOME BIRDS OF THE OKANAGAN VALLEY, BRITISH COLUMBIA, by J. A. Munro, pp. 64-74. This paper gives extensive annotations on twenty species of this interesting section. It contains a great amount of life-history and breeding notes on some interesting species. The remarks regarding the food of some of the hawks is specially interesting to the reviewer. The Big Red-tails are noted as feeding on various small mammals such as Ground and Pine Squirrels and Pikas; and some interesting data is given upon Swainson's Hawk coming in in numbers to feed upon a plague of large black crickets that were eating every green thing in sight near Vernon in 1915. The Magpies are said to be the worst egg thieves of the corvidæ and are showing undue increase. The description of Richardson's Grouse is particularly interesting and introduces much new information into our literature. On the whole, this is an admirable article. A criticism similar to that above would apply equally here. Though we happen to know that Mr. Munro has specimens of all or most of his species and has given them critical examination, this is not evident from the context and its "inside information" that gives us confidence in his subspecific determinaitons. Even then I would like to ask if he is certain it was *Planesticus migratorius propinqua* that was seen from a distance teasing the Red-tail (p. 68). As described, the conditions of observation do not seem all that could be desired for the recognition of this poorly defined form. Without doubt Mr. Munro regards this as the breeding Robin in his section, but we fail to see the necessity of advancing a hypothetical subspecies where the species does just as

well and is, under the conditions, all that he can be confident of? I would say that neither Mr. Munro or the above authors are specially singled out for this stricture as the practice is a well nigh universal one amongst ornithological writers. It is only by calling attention to an indefensible general practice that it can be corrected.

In GENERAL NOTES, p. 100-101, W. L. McAtee under title "Further Notes on the 'Fishy' Flavor of Birds", shows that this is not caused by the eating of fish. That fish-eating birds are not necessarily fishy in flavor and many species that eat little or no fish are often so characterized. He does not doubt that the food eaten influences the flavor of the eater but regards "fishy" in this connection as a loose term for flavors that have nothing to do with fish.

Under NOTES ON NORTH AMERICAN BIRDS, pp. 81-85, H. C. Oberholser discusses the proposed reduction of our American Green-winged Teal of subspecific relationship with the European form as endorsed by the Committee of the British Ornithologist's Union. He finds that the two are separated by constant characters and show no indications of intergrading. He, therefore, decides that the two are specifically distinct as at present regarded in our Check lists. On contrary grounds he supports Hartet's contention that the American Marsh Hawk is only superficially distinct from the European bird and should stand as *Circus cyaneus hudsonius*. Similarly he also lumps our Short-billed Gull with the Common Gull of Europe, calling it *Larus canus brachyrhynchus*. He also finds that the North-west Crow hitherto regarded as a distinct species intergrades with the Western Crow which is only subspecifically distinct from the eastern bird. If this is demonstratable the North-west Crow will have to be called in future *Corvus brachyrhynchos caurinus*.

P. A. T.

FOOD, FEEDING AND DRINKING APPLIANCES AND NESTING MATERIAL TO ATTRACT BIRDS. By Edward Howe Forbush. The Commonwealth of Massachusetts. State Department of Agriculture. Departmental Circular No. 2. September, 1918.

In an attractive little pamphlet of 31 pages, with 30 figures, drawings, and halftone illustrations, Mr. Forbush gives an interesting summary of most of the successful devices which are being used by bird-lovers to attract birds to the vicinity of their city homes and country estates. First and foremost he recommends the elimination of the house cats. As extirpation of the neighbor's felines is not always practicable, he recommends enclosure of the yard by a cat-proof fence. The only always successful fence for this purpose is a fine-meshed wire netting 6 feet high, with a fish-net suspended from slim poles at the top. Tangles of vines and shrubbery are recommended as places of shelter and retreat for small birds.

The first and greatest need of birds, however, is food, and by judicious and systematic feeding many winter birds may be induced to come around the house and often become so tame that they will eat from the hand. Many birds' lives may also be saved by feeding at exceptional times in spring and autumn, when the weather is unusually cold or wet, or sleety, so that the birds become chilled and weakened and cannot find sufficient food. Whole grain, which can be used for human food, for farm animals or poultry, is unnecessary for small birds, but may be used for game birds. Where weeds are abundant, the smaller seed-eating birds need little else, but where weeds are kept down, or where they are covered with snow, other food should be provided. Many cultivated flowering annuals, such as asters, portulacas, California poppies, etc., bear seeds attractive to seed-eating birds.

Chickadees, nuthatches, jays, and some other birds are fond of nut meats, as well as fatty bits of meat, suet, skinned carcasses of small animals, and the like. Suet should be enclosed in crocheted bags, or tied to the branches of trees to prevent greedy crows or jays from carrying off the whole piece at once. Grits, sand, broken plaster, etc., are attractive to birds as an aid to digestion, and they sometimes have difficulty in satisfying their desires for it when the ground is covered with snow. Ground-feeding birds are often necessarily fed on the ground at first to accustom them to food receptacles, but ground feeding is wasteful, the food being spoiled by rain or covered by snow and ice unless it is under cover.

A feeding shelf or table may be set at a window on the south side of the house and supplied from inside, or a moving food-shelf may be hung on a near-by tree. The birds may be watched at close range from within if the window is protected by a sash-curtain. The weather-vane food house is considered the most perfect device for outdoor feeding, and should have a hopper on top that can be filled with seed. The weather-vane food house swings with the wind and always keeps the opening away from wind and storm. Various anti-squirrel and anti-sparrow devices are recommended to those who do not care to feed English sparrows or squirrels. For instance, two pieces of suet may be suspended by a piece of string. Native birds will readily cling and feed, but the sparrows find it difficult. The method employed by Mr. W. E. Saunders, of London, Ontario, is to pour melted tallow mixed with sunflower seeds upon a flat board with a perch to which the native birds can cling, the board being fastened up in an inverted position.

In summer, shallow drinking pools, bird baths, and fountains are attractive to birds. Bird baths should preferably be placed in the shade, with no cover immediately about them to hide the approach of cats, which soon learn where the birds congregate.

To attract wild fowl, a pool, lake, or stream is necessary, but these may be made more attractive by propagating various species of wild water-plants which are eaten by such birds. Grouse are best attracted by feeding them in winter and protecting them against enemies. Nesting places, nesting material, bird-houses, and bird sleeping-places are also discussed.

Each family or group of birds has certain preferences of habitat and certain favorite foods, and Mr. Forbush gives special notes on the fancies and foibles of about forty of the more common species which are susceptible to human attentions, and the whole will repay the study of any person who enjoys the presence of birds around his home. Many of the devices and hints described, would be useful to teachers of nature study or manual training in schools where the pupils are encouraged in the building and setting up of bird-houses and refuges.

R. M. ANDERSON.

"POSITION TERRIFIANTE" DES ANIMAUX. *Siedlecki, Michel, 1919.** Comptes Rendus, Societe de Biologie. Tome LXXXII, No. 2.

It is a well known fact that when certain animals are suddenly surprised by their enemies or by passers-by which appear dangerous, they assume extraordinary positions, which are most often called positions of combat or terrifying positions. The best common examples are those of the cat pursued by a dog, or of the corba raising up and spreading its neck. Savants have considered this attitude as a voluntary conscious action.

The object of this attitude would be to protect. Weismann mentions, *Chaerocampa elpenor*, a caterpillar, which he believes frightens the animals which prey on it.

My idea concerning these attitudes is that they accord with the generally admitted theories.

Certain animals such as the large spiders, *Selenocosmia javanica*, or the scorpions, *Heterometrus javanicus*, when they put themselves in a terrifying position present their weapons of offence (chelicerae or venomous hooks) they place them in an easy position for attack.

Other animals behave in a totally different manner. The corba in striking its prey does not lift itself up or swell its neck. The brown mantis, *Deroplatys desiccata*, when it sees a lizard spreads its wings and lifts up its anterior legs, but when it is about to capture its prey the wings remain closed and the pincer-legs are folded on the thorax.

The European mantids when they are about to fight among themselves seldom assume the terrifying position (Fabre).

The terrifying position is most often without value as a means of defence. We have seen a large lizard, *Gecko verticillatus*, devour a mantid without hesitation, which had assumed a terrifying position. We have also seen a mantid which was catching a caterpillar, *Papilio demolion*, assuming a position which resembled closely that of *Chaerocampa elpenor*, studied by Weismann.

Often this terrifying attitude is assumed even when the animal is not in danger. We have seen a mantis, *Mantis laticollis*, assume a terrifying position the minute that we lightly jarred the cage in which the animal was held captive. On the contrary, a mantis placed with a scorpion in a large container defended itself in vain with its strong anterior legs, but did not assume the attitude which is called combative.

One of the most interesting things concerning an animal which assumes a terrifying position appears to be the relation which fatigue bears to this phenomenon.

NOTE.—The first time we noticed the connection between the terrifying position and that of fatigue was exemplified by a large lizard, *Varanus salvator*, 1m40 in length, which had been brought to us in a basket by a Malayan coolie. The animal was very weak and made no resistance when we placed it in a basin. For three days he was kept there without food; and did not move when touched with a stick. He was taken out of the basin to be chloroformed, but at the moment when the laboratory helper was putting a sack over his head with the chloroform, the animal suddenly assumed a terrifying aspect. The anterior feet were lifted up, its throat swelled, its mouth was open, showing rows of teeth, the tail was lifted up rigid ready to strike and the position it assumed was certainly imposing. But despite all this, the animal was in so feeble a condition that there was no difficulty experienced in capturing him.

The same animals, which in a full state of vigor do not assume the terrifying attitude, make use of it as soon as they become weak. We have observed the females of the large yellow spiders, *Platythomisus octomaculatus*, which after they had laid their eggs and had constructed their large cocoons upon which they rested: it was then only necessary to approach them to immediately provoke the terrifying position. Resting firmly on the cocoon with the four posterior legs, the animal extended its anterior extremities and produced with these an oscillatory movement of such rapidity that they became nearly invisible. The

*Translated by S. Hadwen.

spider resembled somewhat an enormous wasp; but far from being dangerous, she had become completely weak and impotent. Before egg-laying these females never assume the terrifying position, and it is only after egg-laying, when the organism has becomed weakened by the immense drain on its materials, that this bizarre position becomes manifest.

In certain cases, we have been able to provoke the apparition of the terrifying position by causing animals to become fatigued.

A mantis, *Mantis laticollis*, when it is frightened is in the habit of spreading its wings and its anterior extremities, resting on its four posterior legs. It swells its abdomen which at this moment produces two hernias formed by two little sacs placed between the two anti-penultimate abdominal rings. These sacs are of a very striking color. The anterior pairs are dark blue, and the posterior are red. It is not always easy to force the animal to take on this bizarre position. We have succeeded by shaking the animal, by dragging it by one leg, and by brusquely approaching it with the hand when it was on a limb. This position only lasts about thirty seconds and appears to necessitate a great effort. We have fatigued the animal by forcing it to run inside a cage until it was so weak that it could not stand up. It was then that it assumed the terrifying position, it swelled out its abdomen, and died without changing position.

Similar effects have been observed with flying lizards *Draco volans* and *Draco fimbriatus*. These animals, when pressed, tried to run away; when they were forced to jump they spread out their parachute membranes and vol-planed for a long distance. But finally when over fatigued and when they could no longer run they assumed the terrifying position, opening their mouths and spreading their lateral membranes. When they were still further forced to run and jump they died of fatigue, still holding the terrifying attitude.

From the observations cited, and from others it results that—in the majority of cases the terrifying position is nothing else but a reflex provoked by a general irritation of the entire organism. One cannot exclude the fact that this irritation is provoked by sensations derived through the intermediary of the senses; in these cases the terrifying position has all the appearances of a voluntary action; but the same effect can be obtained by the action of other agents which affect the entire organism (such as fatigue). The terrifying position in our judgment is not a voluntary or conscious action.

SATURDAY AFTERNOON EXCURSIONS FOR 1919.

May 10—Geology; Leamy's Lake, just east of Hull; meet at the end of the Chelsea road electric car line.

May 17—Zoology; Catfish Bay, just west of Hull along the Ottawa; meet at Eddy's office, end of city street car line in Hull.

May 31—Economic entomology; Aylmer Park; by Mr. C. B. Hutchings, Department of Agriculture.

June 7—Ornithology; Beaver Meadow, just west of Hull, along Aylmer road; meet at Eddy's office.

June 14—Zoology; general; across the Gatineau from Gatineau Point; meet the ferry at Rockcliffe Park.

June 21—General; Black Rapids by steamer Wanekewan (consult steamboat time-table—starts about 1.30 p.m.); a reduced rate for the trip will likely be arranged.

Sept. 20—Fungi and fall botany; Billings' woods; meet at end of Bank street car line on Bank street.

Sept. 27—Ferns and Mosses; woods about three-quarters of a mile east of Billings' Bridge; meet at end of Bank street car line.

The time of meeting at the points indicated will be 2.45 p.m., except in the case of the Black Rapids excursion.

Leaders conversant with the subjects mentioned will be on hand to render assistance.

Local members and any others interested are given a most cordial invitation to attend.

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The February 1919 issue of The Ottawa Naturalist was mailed on March 16, 1919.

SUBSCRIPTION BLANK

The Membership Committee of the Ottawa Field-Naturalists' Club is making a special effort to increase the subscription list of The Ottawa Naturalist. Every member of the Club is urged to assist in this campaign by showing this number to a possible subscriber and endeavoring to have the attached blank filled in and forwarded to the Treasurer.

F. W. WAUGH, Treasurer, O.F.N.C.,
Geological Survey, Victoria Memorial Museum, Ottawa.

I enclose herewith One Dollar, subscription to The Ottawa Naturalist for one year.
