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By THOMAS S. ROBERTS, M. D.

Curator Zoological Museum, University of Minnesota

Extracted from the

“Biennial Report of the State Game and Fish
Commission of Minnesota, for the Biennial
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THE WATER BIRDS OF MINNESOTA: PAST AND PRESENT.

BY THOMAS S. ROBERTS, M. D.

Curator of the Zoological Museum, University of Minnesota.

A RETROSPECT.

When the region that is now included within the boundaries of the state of Minnesota was first invaded by white men the wild-life conditions were vastly different from those that exist at the present time. The earlier explorers found great herds of Buffalo and Elk grazing along the bluffs of the Mississippi River, Deer filled the woodlands, Beaver abounded in all the streams and lakes and the primeval forests of the north sheltered great numbers of Moose, Caribou, Black Bear and other mammals that are now little more than a tradition. The diversified and fertile uplands and the equally varied and bountiful waters supported a bird population that astonished and tested the descriptive powers of the early narrators. Ducks of many species bred in vast numbers and rose in dense clouds before the voyageurs' canoes. The honk of the Canada Goose resounded far and wide throughout the summer months and legions of Wavies, Speckle-bellies and Blue Geese passed to and fro spring and fall. The prairies in the nesting season were alive with Upland Plover, great Sickle-billed Curlews, Willets, the beautiful Avocet and countless thousands of great, noisy Marbled Godwits; while as migrants came an innumerable host of other shore birds, conspicuous among which were great flocks of Golden and Black-bellied Plovers and Eskimo Curlews. About the margins of the many shallow lakes, majestic Trumpeter Swans reared their young and big flocks of Whistling Swans settled on the open waters to rest and feed on their long flights to and from the far Northland. Great snow white Whooping Cranes and thousands of the more sombre hued Sandhill Cranes built their huge nests in the marshes, paraded and danced in stately fashion on the prairie upland or trumpeted loudly from on high. Vast flocks of Passenger Pigeons obscured the sun and filled the woodlands with their noisy roostings and their eager scramble for the fallen acorns.

If reports are true the whistle of the Bob-white was a rare sound in those early days but the Sharp-tailed or White-breasted Grouse—the Prairie Chicken of all this region at that time—abounded in the open country and the “drumming” of the Ruffed Grouse echoed everywhere through the woodlands. The “booming” of the Pinnated Grouse came later with the advent of the settlers' grainfields and followed the Sharp-tails as they retreated westward and north-westward before the advancing harvest that had lured the Prairie Hen from its original home on the great prairies of the Middle States.

Hawks and Owls, Eagles and Vultures were then far more abundant than now and performed unmolested the role for which they were created, of maintaining the natural balance and well being of the animal hosts among which they lived.

Of the long list of insectivorous and seed-eating birds that go to make up the great bulk of our avian population, only a few have survived in their former abundance and still fewer have been able so to adapt themselves to altered conditions that they have actually increased in numbers. The latter group comprises

Nest and Eggs of Ring-necked Duck.
—Photo by Thos. S. Roberts.

Nest and Eggs of Canvasback Duck.
—Photo by Thos. S. Roberts.

chiefly birds that have been favored by a decrease in their natural enemies and fall easily into new ways without having especially attracted the cupidity of man.

The narratives of such early voyageurs into this region as Hennepin, La Hontan, Carver and others who were here previous to 1800 contain references to, and even lists of, the more conspicuous birds observed, but the statements are brief and couched in such general terms that they are of little value except to suggest the wealth of animal life that existed at that time. The first work that contains really important information in regard to the birds is Keating's *Narrative of an Expedition to the Source of St. Peter's River*, which, in 1823, explored the country (now included in Minnesota) from Ft. Snelling to Lake Traverse and thence northward to the International Boundary. Thomas Say, the well known entomologist, was a member of the party and to him are due the numerous and definite bird notes scattered through the two volumes. No fewer than fifty-four species are referred to, many of them by their technical names. Among these are mentioned the Whooping and Sandhill Cranes, Ducks of several kinds, the Woodcock, the Upland and Golden Plovers; and the abundance of Wild Pigeons at Pembina in early August, 1823, is commented upon. On the evening of July 15, 1823, the party camped on Swan Lake (Nicollet County) and County Beltrami (after whom Beltrami County is named), who was attached to the expedition, relates in the book that he wrote his disappointment that Major Long's haste would not permit their remaining long enough to shoot some of the Swans, old and young, that floated on the surface of the lake. Keating gives the Sioux Indian name of this lake as *Manha tanka otamenda*, meaning Lake-of-Many-Large-Birds, referring to the great number of Swans that were ordinarily to be found there.

Schoolcraft's accounts of his two trips (in 1820 and 1832) in search of the source of the Mississippi River contain numerous bird notes, some of which are of special interest.

The writings of Pike, Nicollet and others contain but little bird-lore as these men seemed to be more interested in the main objects of their quests.

In the summer of 1835, G. W. Featherstonehaugh, an English geologist, made a trip to Lake Traverse and back by way of the Minnesota River and published in 1847 a two volume account of his journey entitled *A Canoe Voyage up the Minnuy Sotor*. The first volume especially contains numerous statements in regard to the game birds of the region traversed. He ascended the river in September and returned in October; and it is a story first and last of "an incredible quantity of wild ducks." He comments in one place on the abundance of the "gaudy wood duck." The flocks of wild geese coming and going served to indicate the course of the river. On October 4th, not far from Lake Traverse "immense numbers of white wild ducks with black-tipped wings" (Snow Geese) were seen; and on the afternoon of October 7th. he "descended again from the prairie, about a mile from the south end of the lake (Big Stone) where it was covered with tens of thousands of wild fowl, that made a noise like thunder when they rose. I never saw greater numbers together." On October 10th. as they were descending the river some distance below Lac qui Parle, "The left bank of the river was literally alive with *Tetrao* coming to feed and drink from the burnt prairie; they were so large and fat that they looked like barn door fowls." Elsewhere he speaks of the abundance of the grouse on the uplands rising "screaming in every direction." One of the most pleasing passages is under date of October 23rd. when he was

descending the Mississippi homeward bound. "About a quarter past twelve we suddenly came upon Lake Pepin, and the weather being improved into a fine sunny morning, the spectacle which presented itself was as rare and beautiful as any I had seen the whole summer. Upon the smooth and glassy surface of the lake hundreds upon hundreds of noble swans were floating with their cygnets, looking at a distance like boats under sail. The cygnets were still of a dull yellow colour, and all the birds were very shy. It made a beautiful picture."

THE WATER BIRDS OF MINNESOTA.

GREBES. (*Colymbidae*).

Five species of Grebes are found in Minnesota and all nest within the state. One, the large Western or "Swan-necked Grebe," occurs only sparingly along the western border of the state and occasionally as a straggler further east. It has been found breeding at Heron Lake and has been taken in the nesting season along the Red River of the North. The Eared Grebe, also a western species, nests in colonies at least as far east as Swan Lake, Nicollet County. Holboell's and the Horned Grebes occur throughout the state but breed chiefly northward. The little Pied-billed Grebe, Dabchick or "Helldiver" is the abundant species and is found in great numbers everywhere in still waters. All the Grebes build floating nests of water-soaked, decayed materials and cover their eggs when not sitting on them.

Grebes are not edible and are usually considered of little economic importance, but investigations made by the Biological Survey at Washington seem to indicate that they are of more value than supposed. McAtee in Farmers' Bulletin No. 497 reports as follows in regard to the examination of the stomach contents of 57 Horned Grebes: "Various beetles, chiefly aquatic, compose 23.3 per cent of the food; other insects, nearly 12 per cent; fishes, 27.8 per cent; crawfish, 20.7 per cent; and other crustacea, 13.8 per cent. A little other animal matter is taken, including snails and spiders, and a small quantity of vegetable food was found in two stomachs." It is a curious fact that the stomachs of Grebes almost always contain a mass of feathers, which it is supposed play some unknown but probably essential part in the digestive process of these birds. McAtee states that 66 per cent of the stomach contents of the 57 Horned Grebes examined consisted of feathers. The young are also fed feathers.

LOONS. (*Gaviidae*).

The Loon or Great Northern Diver was once an abundant bird in all the open waters of the state but while still fairly well represented, is gradually diminishing in numbers, due, perhaps, to the fact that for years it has been a favorite target of the man with a rifle. In large bodies of water as Lake Superior it sometimes annoys the fishermen by becoming entangled in their nets, occasionally at an astonishingly great depth below the surface. Its food is chiefly small fish of no special commercial value. The Loon is a beautiful and attractive object and for this reason, if for no other, it is desirable to preserve it.

Another species, the Red-throated Loon, may be an occasional winter visitant from the north but thus far there are no satisfactory records.

GULLS AND TERNS. (*Laridae*.)

Four kinds of Gulls and a like number of Terns are found in Minnesota. The Gulls are the Herring, Ring-billed, Franklin's and Bonaparte's. The Herring Gull, the largest, nests at Lake of the Woods, along the north shore of Lake Superior and probably about other large lakes in the northern part of the state. It stays all winter at Lake Superior when the lake remains open. The Ring-billed and Bonaparte's occur regularly only in migration. Franklin's Gull nests in immense colonies throughout the western prairie portion of the state.

The four Terns are the Caspian, Forster's, Common and Black Tern. Of these the Caspian is a rather uncommon migrant. The others breed in the state, Forster's chiefly in the prairie region, the Common chiefly northward and the Black Tern everywhere in sloughs and ponds, far exceeding in numbers all the others put together.

The Gulls and Terns are economically of great importance and should be carefully protected. The Gulls are not only of special value as scavengers, particularly about harbors and along water-ways, but collectively they destroy as food an incalculable number of injurious insects. Franklin's Gull alone is of immense value to the farmers of the western part of the state. It is a common sight in that region to see great flocks of this bird following the plows and alighting in the freshly turned furrows to pick up the insects and worms brought to view. At other times they are constantly winnowing back and forth over the prairies and meadows or, of evenings, circling about in the air—swallow like—devouring in vast quantities the grasshoppers, beetles, moths and other insects that are driven up or are awing in the upper air. The Terns perform a similar service, the Black Tern especially, the great abundance of which makes it an important factor in insect destruction. The Terns to a greater extent than Gulls are fish eaters, catching small surface feeding fish by darting quickly upon them from the air. Gulls, when feeding from the water, alight on the surface and pick up the food, never plunging like the Terns. The fish consumed by these birds is an unimportant matter when compared with the great service that they render in other ways. In Salt Lake City, Utah, stands a unique monument of stone and bronze erected in grateful memory of an army of Gulls that saved the crops of the early settlers when they were threatened with complete destruction by an invading horde of great black crickets. This monument is likewise a monument to the intelligent comprehension of those who erected it.

CORMORANTS. (*Phalacrocoracidae*.)

A single species of Cormorant, the Double-crested, is found as a common summer resident throughout Minnesota. It is frequently called the Black Loon and the Indian name signifies "Crow Duck." They are expert and powerful divers and like the Loon and larger Grebes catch their fish prey by pursuing it beneath the surface of the water. Most commonly in this state they build their nests in the tops of tall trees, usually in colonies associated with the Great Blue Heron. At Lake of the Woods the nests are placed on bare rocky islands.

On account of its fish eating habits and the fact that it not infrequently frightens and sometimes injures the fish in pound nets this bird is in quite general disrepute. Where it is numerous it certainly must destroy a large number of fish

and about all that can be said in extenuation is that the fish are for the most part small and of no commercial value. That it may be a considerable annoyance to fishermen where pound nets are employed will be evident to any one who will spend a little time observing the conditions at a place like Lake of the Woods. The Cormorants are there to be seen perched constantly on the stakes holding the nets and the fishermen claim that they dive after the fish and follow them into the pound where they not only frighten the fish so they become entangled in the nets but injure many of saleable size by gashing them in the sides with the sharp hook on the end of the bill. However, it may be said that during several days spent with the fishermen around the lake, the writer saw no fish thus injured. The Cormorants are said to pay frequently for their actions with their lives, for they are usually unable to get out of the trap and when the fishermen find them there they make short shrift of them. At the Lake of the Woods the eggs are destroyed and the birds killed whenever occasion presents and the former considerable population has been greatly reduced. Investigations elsewhere by the Canadian Government showed that the Cormorants of the lower St. Lawrence River did little if any damage to game or commercial fish. But it will be seen that it might be rather difficult to make out a clear case for these birds with those who take purely a utilitarian view of the situation. It may be argued whether it is ever wise entirely to exterminate any animal except the most vicious and dangerous and few if any birds are to be included in this category. Cormorants, like the Loon and Herons, interest many people and certainly add a note of wildness and fascination to the places they inhabit.

PELICANS (*Pelecanidae*).

The great White Pelican was once a common summer resident in this state. It nested on the ground in large colonies at various places, chiefly in the western half of the state. Pelican Point in the southern portion of Heron Lake was the scene of one of these annual gatherings until sometime in the seventies. The last pelicanry in Minnesota of which the writer has any knowledge was in 1878. The location was on the low prairie along the Mustinka River, Grant County, a few miles west of Herman. A visit to the spot in June, 1879, found it deserted but evidences of the occupancy of the year before were plainly visible. This pelicanry was a nine-day wonder to the inhabitants of the region and the frequent visits of curious and meddlesome parties of men and women forced these always wary birds to seek a safer domicile in a place more remote. East of the Rockies the species now nests rarely within the United States. Small parties passing to and fro give evidence that it still exists though in greatly diminished numbers.

The food of the Pelican consists of fish which this white species catches by driving them into shallow water and scooping them up with its great pouched bill. The southern Brown Pelican plunges clumsily from the air and seizes surface feeding fish.

DUCKS, SWANS AND GEESE. (*Anatidae*).

Including three more or less accidental species there are twenty-five kinds of Ducks found in Minnesota and of these seventeen breed in the state. Four species of Geese with three additional subspecies occur and one of these, the Canada Goose, may still breed occasionally. One species of Swan still occurs as a migrant.

Considered collectively, the members of this family are of more than usual value economically because they are an important food and sport asset and because it has been shown of late that many species feed extensively upon injurious insects and also that by consuming enormous quantities of aquatic sedges, grasses and other plants, they keep in check a too luxuriant growth of such vegetation that otherwise would tend to choke ponds, lakes and sluggish water-ways. The enormous falling off in numbers of these birds in recent years is, therefore, in more ways than one a deplorable situation. It is hoped that our new continent-wide legislation in force since the consumation of the Migratory Bird Treaty Act may operate to restore something like old conditions.

The following sketch, prepared in 1898 at the request of the writer of this paper, by Thomas Miller, who from 1883 on, lived for many years on "Miller's Point," Heron Lake, is of historic value in connection with the duck tribe in Minnesota and will probably be of interest to sportsmen who have been acquainted with that famous water bird rendezvous of recent years. Miller was a canny Scotchman, rough of exterior, uncultured and untutored, but self-educated to a surprising extent. In the earlier days of his residence at the lake he combined market hunting with his farm duties. He was fairly well acquainted with the water birds from books as well as in the field. In later years he became a bird student, reported each year to the Biological Survey at Washington and did very little hunting. He was of great service to the writer on his earlier trips to Heron Lake. He was killed by being thrown from his wagon on October 7, 1899.

"Heron Lake, once one of the most famous lakes for wild fowl in Minnesota, lies partly in the townships of Weimar, Heron Lake and West Heron, Jackson County. It runs in a southeasterly and northwesterly direction, measuring from the head of Duck Lake—its northwestern end—to its southeastern end near Lakefield, nearly fourteen miles. It is bordered nearly its whole length in Weimar Township by extensive marshes once the home of vast numbers of Blue-winged Teal, Mallard, Gadwall, etc. In early times this was the nesting place of a considerable number of Trumpeter Swans, one pair breeding there as late as 1883. Heron Lake is remarkable for the many varieties of water-fowl frequenting its waters, practically all kinds common to inland waters being found here. A day's shooting often consists of ten to eleven different species. Fifteen years ago when I first settled on the shores of Heron Lake its waters teemed with vast numbers of ducks and geese, sleep some nights being impossible, owing to their continual clamor. The honking of Canada Geese, the mewing call of Canvas-back, Redhead and Blue-bill, usually uttered while feeding, mingled with the whistling call of Pintail and Widgeon, mixed with the hoarse quacking of Mallards and the more feeble call of Gadwall, made a strange medley of sounds. The water, the first spring I lived here, came up to within twenty-five yards of the house and during March until the migrants moved on north we had a concert every night. When day broke a sight was to be seen that would have made a sportsman's heart thrill with delight. On the north was a bend of the lake running west about three quarters of a mile where it made a turn north toward the C. St. P. M. and O. Ry. making a sheet of water two and one-half miles from north to south by one and one-half miles east and west. To the east lay a large marsh full of rushes, sedges and canes with water about three and a half to four feet deep in the center. Further east lay the main lake or clear water. On the north large flocks of Blue-

bill, Redhead and Canvas-back could be seen skimming the water or taking a flight south to the big lake. In the shallows were Pintail, Mallard, Widgeon, Gadwall and Blue-winged Teal in ones and twos as they do not come north in very large numbers until warm weather. Green-winged Teal and Spoonbill were flying everywhere. Ducks to the right and ducks to the left every way you turn. In 1883 Heron Lake was indeed a Sportman's Paradise.

"Among the deep water ducks during the spring the Redhead and Blue-bill were about equal in numbers. Close behind came Canvas-backs. Of shoal water ducks the Blue-winged Teal was not common in spring until late in April. Mallard, Pintail and Gadwall were the most plentiful in the order named. During the fall Redhead were most numerous, followed closely by Blue-winged Teal and Gadwall, the last named being very plentiful fifteen years ago. The repeating shot gun and an influx of hunters from all over the United States have made sad havoc. As I write there are seven hunters here from other states who have been shooting steadily since September 1st. and will be here until it freezes up and the ducks have gone south. Of late years residents here get very little shooting, these non-resident hunters being on the lake from daylight 'til dark and having every likely location taken up.

"The present fall of 1898 Redhead and Canvas-back with Blue-winged Teal are affording the principal shooting. If it were not for the first two named, hunting here would be very little worth while. The Gadwall, once so plentiful, is now very scarce. Mallard and Pintail with Spoonbill are still with us but in sadly diminished numbers. To restore wild fowl shooting to its old condition of fifteen years ago requires that something shall be done and that speedily."

Mergansers, Fish Ducks or Saw-bills.

The three species of North American Mergansers are all found in Minnesota. The American Merganser, Goosander, Big Fish Duck or Big Saw-bill and the somewhat smaller Red-breasted Merganser are summer residents only in the northern parts of the state. Being hardy birds they often remain through the winter wherever there is open water, especially on Lake Superior. The common and well known Hooded Merganser, Little Fish Duck or Little Saw-bill breeds throughout the state and is occasionally found in winter.

The food of these ducks is largely fish and as they are scarcely edible, they are of little economic value, but not necessarily harmful to man's interests. It may be stated in this connection that most fish-eating birds consume chiefly small kinds of fish that devour the eggs and fry of more valuable species, so that limiting the abundance of the former kinds is really a benefit to man.

River or Surface-Feeding Ducks.

Nine species belonging to this group are of regular occurrence in Minnesota. They are the Mallard, Black Duck (here called the Black or Dusky Mallard), Gadwall or Gray Duck, Baldpate or Widgeon, Green-winged Teal, Blue-winged Teal, Shoveler or Spoonbill, Pintail and Wood Duck. All except the Black Mallard and Baldpate breed in the state. They are all valuable as food, as objects of legitimate sport and as destroyers of noxious weeds, insects, etc. Their habit of feeding in shallow water and tipping up to procure their food from the bottom

Pied-billed Grebe—Nest open.
—Photo by Thos. S. Roberts.

Pied-billed Grebe—Nest covered.
—Photo by Thos. S. Roberts.

or scooping it up with their broad strainer bills has earned for them the name of "puddle ducks" among sportsmen. They are not overly fastidious in their tastes and will eat almost anything from a mosquito to a dragon fly, from a tadpole to a crayfish or from a tiny duckweed to a hard-shelled hickory nut. The latter object, unbelievable as it seems, is easily ground to bits in the powerful gizzard of the larger species. The principal part of the diet consists, however, of vegetable matter derived from an immense variety of plants, chiefly aquatic. A bulletin, No. 720, recently issued by the United States Department of Agriculture, entitled the *Food Habits of the Mallard Ducks of the United States*, shows that about nine-tenths of the food of the common Mallard is derived from the vegetable kingdom. The remaining one-tenth consists chiefly of mollusks, insects, fish, and crustaceans in the order named. The amount of food consumed at a single meal is surprising. One Mallard's stomach contained seeds as follows: bulrush 28,160, another sedge 8,700, primrose willow 35,840 and 2,560 duckweed a total of 75,200 "as the principal items." Another contained 102,400 seeds of the primrose willow, sufficient to sow two and one-half acres of ground placing the seeds one foot apart each way.

In addition to a considerable list of other injurious and objectionable insects the ducks of this group are credited with disposing of immense numbers of mosquitoes by devouring the pupae and larvae of these much abhorred and, in some cases, disease-carrying little pests. The late Dr. Samuel G. Dixon, while Health Commissioner of Pennsylvania, published an article in the *Journal of the American Medical Association* for October 3, 1914, detailing results of experiments made by him along this line. Two dams were constructed on a stream so that the ponds would present exactly the same conditions. One was stocked with gold fish and in the other twenty Mallard Ducks were allowed to feed. After several months the duck pond was entirely free from mosquitos while the fish pond "was swarming with young insects in different cycles of life." Ten well-fed Mallards were then admitted to the infested pond. At first they were attracted by the tadpoles but "soon recognized the presence of larvae and pupae of the mosquito and immediately turned their attention to these, ravenously devouring them in preference to any other food present. At the end of 24 hours no pupae were to be found and in 48 hours only a few small larvae survived." He adds "For some years I have been using ducks to keep down mosquitos in swamps that would have been very expensive to drain, but I never fully appreciated the high degree of efficiency of the duck as a destroyer of mosquito life until the foregoing test was made." This is certainly very interesting and would seem to be worthy of further investigation.

The Wood Duck, which was considered a few years ago to be rapidly approaching extinction, is unquestionably increasing in numbers in Minnesota of late, as anyone who will visit the forest lakes of the northern portion of the state will readily believe. The cutting off of the forests and consequent destruction of its nesting places in cavities in trees, coupled with the primitive hunting skill that sufficed to bag it, were the chief factors that led to its specially rapid decrease. Where conditions permit this duck feeds extensively on acorns in the fall of the year, resorting for that purpose to open oak woods where it alights on the ground and gathers the fallen nuts. In days now long past the writer has seen considerable flocks of these birds thus engaged in oak groves now almost within the business portion of the city of Minneapolis. Mallard Ducks and perhaps other related species also eat acorns at times in considerable quantities.

The Gadwall or Gray Duck was once one of our most abundant prairie ducks but being an upland breeder the conversion of the prairies into farms has probably played an important part in bringing about its present scarcity.

The Green-winged Teal is now apparently an uncommon breeding bird in Minnesota though early accounts would indicate that it formerly bred here in considerable numbers.

There is a single reliable record of the Cinnamon Teal's having been taken in the state, in Cottonwood County.

Diving or Sea Ducks.

There are seven species of ducks belonging to this group that occur regularly and more or less commonly in Minnesota, and five others that are less frequent or accidental. Of these, four only are of special importance as game birds—the Canvas-back, the Redhead, the Lesser Scaup or Blue-bill and the Ring-necked Duck. By many of our duck hunters the latter species is erroneously called the Black Duck when in full plumage and confused when immature with the Blue-bills. The white patch in the wing of the Blue-bill readily distinguishes it from the Ring-neck, in which the wing-patch is gray. These four species of ducks formerly bred in large numbers in all suitable places throughout the state, the Ring-neck being one of the very commonest nesting ducks. All still breed though in greatly reduced numbers and it is probable that the Canvas-back has about reached extinction as a summer resident. Since they are still so numerous spring and fall, is it not possible that they, as well as other species, may return to their old homes again if these can be left undisturbed by drainage operations and if the now more efficient protective laws can be fully enforced?

The Greater Scaup or Big Blue-bill is not common in this region and apparently occurs chiefly, or only, as a migrant. It is more of a sea going duck than the Lesser Scaup, where it feeds largely upon the beds of "scalps" or scallops, whence the name Scaup.

The Golden-eye or Whistle-wing occurs in the southern part of the state as an early spring and late fall migrant, appearing sometimes on large, deep-water lakes in considerable flocks but as its flesh is not especially palatable it is not much sought after. It remains through the winter where there is open water particularly on Lake Superior and the larger streams. Many nest in the northern part of the state, making use of hollow trees after the fashion of the Buffle-head, the Wood Duck and the Hooded Merganser. The Buffle-head, Butter-ball or Spirit Duck is also an early and late comer southward but breeds further north, frequents open water and is not often shot. The curious little Ruddy Duck was until recently a very common summer resident in the western part of the state at such places as Heron Lake but of late it has rapidly disappeared for some inexplicable reason. It was never killed in any considerable numbers, raised large broods and was really abundant in most of the large prairie lakes, so why it should have suddenly become so scarce in its old haunts is not quite clear.

Of the three species of Scoters, normally sea ducks, one, the White-winged Scoter, occurs quite regularly and sometimes appears along the western border of the state in flocks of considerable size. It is a large heavy duck but its flesh is not desirable for the table. The other two species, the American or Black

Scoter and the Surf Scoter, are found only as rare stragglers. All three may remain through the winter in open water. The Old Squaw or Long-tailed Duck, another sea duck, visits Lake Superior in the winter season, often in large numbers, and occasionally appears spring and fall elsewhere in the state. Like the Scoters it is not a food duck.

All of these ducks, as the name of the group implies, secure the greater part of their food by diving for it in open water. Therefore they are not commonly found on the grass-covered lakes and sloughs that attract the surface feeding species. In this part of the country the food of the first four species mentioned above consists largely of the succulent winter buds, root-stalks and bulbs of various aquatic plants, notably the wild celery and the many varieties of pond-weeds (*Potamogeton*), the latter being the submerged plants that fill the bottoms of our lakes and ponds in such enormous masses. The investigations of the Biological Survey at Washington have shown that at times 60 to 70 per cent of the food of the Canvas-back is derived from these sources alone and that the Redhead, Blue-bill and Ring-neck are not so very far behind. The fine flavor of the flesh of these ducks is probably due to their feeding so extensively on such food. Other plants are also eaten, as duckweeds, sagitaria and sedge tubers, and the seeds of various sedges and grasses, especially wild rice. The smaller portion of the food is made up of animal matter such as water insects and their larvae, snails, mussels, tadpoles and an occasional small fish.

All the other ducks of this group eat, to a varying extent, the same sort of vegetable food, but the inferior quality of their flesh as food for man, as well as the results of such meager examinations as have been made thus far, seems to indicate that animal substances enter more largely into their diet.

Geese.

Four species of wild Geese are found in Minnesota, namely:—the Snow Goose, "White Brant," or "White Wavie;" the Blue Goose or "Blue Wavie;" the White-fronted Goose (sometimes called "Brant" and "Gray Brant") and the Canada Goose or "Honker." The Snow Geese occurring here belong almost entirely to the smaller form, the Lesser Snow Goose—the Greater Snow Goose being only a straggler from its normal range farther east. Of the Canada Goose two small forms belonging to the western United States occasionally stray into our state. They are Hutchins's Goose (medium size) and the Cackling Goose (small), the latter not much larger than a Mallard. All the geese are now spring and fall migrants, except perhaps an occasional pair of Canada Geese which may remain to breed in some remote part of the state, a lonely reminder of the time when they were common summer residents throughout the whole of this region. The Snow Goose breeds on the coasts and islands of the Arctic Sea; the White-fronted Goose on the Barren Grounds of the lower Mackenzie and upper Yukon Rivers; and the Blue Goose is supposed to make its summer home in the almost inaccessible islands north of Ungava.

Although but a remnant of the former vast flocks, geese still pass back and forth across Minnesota in considerable numbers, chiefly over the western half. The Canada Geese for the most part flock by themselves, by the three other species very commonly mingle in migration. The Snow Goose is the most abundant of the

latter and the Blue Goose the least common. The standing of the Blue Goose as a distinct species was for a long time in doubt, it being regarded by many as the young of the Snow Goose, but of late years it has received full recognition as a separate species.

The true Brant (*Branta bernicla glaucogastra*) has frequently been ascribed to Minnesota but if it ever occurred at all it must have been as a rare straggler. It is a bird of the Atlantic sea coast where it "was formerly one of the most abundant of all the sea-fowl." There are no Minnesota specimens known and when in past years the markets of Minneapolis were full of geese in the fall the writer was never able to discover a single individual of this kind, though constant search was made. It is probable that the reports were due to the hunters calling the Snow and White-fronted Geese by the name of "Brant."

Geese to a greater extent than ducks are upland feeders and graze upon grass and other green herbage, eating also acorns, various kinds of berries, corn, and grain when they can be had. When abundant they may do considerable damage to grain fields in the spring, when they alight to rest and feed during migration. As an indication that there are still a good many geese in existence, a complaint of this kind reached Mr. Carlos Avery from farmers in the vicinity of Big Stone Lake as late as the spring of 1918. When feeding in shallow lakes and sloughs, geese behave like the surface-feeding ducks, searching the bottom by means of their long necks and tipping up their bodies like a Mallard or Teal. At such times they eat all sorts of aquatic creatures and pull up the same tubers, root-stalks and plants as are consumed by the ducks.

Swans.

There is now only one kind of Swan found in Minnesota, the Whistling Swan, which passes across the state in its migrations and now and then alights to rest and feed. It breeds in Alaska and on the islands of the Arctic Ocean and winters on the sounds and bays of the South Atlantic and Gulf coasts. It was formerly very abundant and was killed in large numbers in the far north and elsewhere for the "swan's-down" as well as for its flesh. Spring and fall, flocks of considerable size may still be seen on our larger lakes and on the Mississippi River and could they be left unmolested these magnificent and graceful birds would no doubt alight even more frequently and tarry longer in such places, a source of pleasure and objects of admiration for many observers.

A second species, the Trumpeter Swan, was in early days a common summer resident in this region and as late, at least, as 1883 the last survivors of the Minnesota contingent still nested in the state. In the spring of that year a pair built their nest not far from the cabin of Tom Miller which was on "Millers Point," Heron Lake, where the Heron Lake Gun Club is now located. A Mr. Wm. Peters, who settled on the south shore of Heron Lake in the late fifties, has related to the writer stories of how common this swan was at that place in those early days and told of men, in the employ of eastern parties, who came to the lake in the summertime, and caught the cygnets by rounding them up in the middle of the lake before they were able to fly.

The Trumpeter was the only species of swan that ever bred in the northern United States and southern Canada, the Whistler, as now, always seeking the far

north for its summer home. The Whistler has been enabled to survive while the Trumpeter, possibly from the fact that its nesting places have been much overrun by the advancing habitations of man, has steadily diminished in numbers until it is now nearly, if not quite, extinct everywhere. The primitive hunting instinct of man, still rampant even in modern times, has led him too often to want to kill and possess such a big and wonderful thing as a swan. As Forbush says in his *Game Birds, Wild-fowl and Shore Birds* "There is little safety for a Swan in America unless it is high in the air or has a mile of open water around it. When the shotgun will not carry far enough the long-range rifle is brought to play. If the Swan alights on a game preserve in the north it is shot because it is rare, and is wanted for a 'specimen'; if it alights in New England, and is seen, it rarely gets away." If the surviving species of this largest, most graceful and most attractive of all North American water-fowl is to exist long, the general public must be educated to regard the killing of one of these birds as a disgraceful act and punishment must be meted out to the full extent of the law.

Swans are surface feeders and for the purpose of procuring food frequent shallow waters, where, like the other surface feeding water-fowl, they can search the bottom for the various aquatic plants upon which they chiefly live. By means of their very long necks and the tipping up of their bodies they can easily feed, it is said, in water three feet deep.

IBISES (*Ibididae*).

Ibises are natives of southern climes and do not belong properly to the bird fauna of a northern state like Minnesota. However, a number of individuals of the White-faced Glossy Ibis have been seen in the state and six or eight of them shot and preserved. They have been mostly immature birds in the early fall and may have reached these parts by reason of a curious impulse implanted in the young of their tribe which impels them to wander northward varying distances before going southward to their winter quarters. The most northern locality at which they have been taken is Lake Miliona, Douglas County.

Strange to relate this far-southern bird has been known to nest at Heron Lake, Jackson County. In 1894 and again in 1895 Rev. P. B. Peabody found several pairs living with the Night Herons and discovered their nests and eggs. One male in full breeding plumage was shot and is now in the Museum of the Zoological Survey, University of Minnesota. Repeated search has failed to show the presence of any of these birds at the lake since. Two young Ibises of this species were shot at Heron Lake in November, 1893, and were mounted and presented to the Survey Museum by Mr. L. F. Lammers of Heron Lake.

Ibises on account of their long, downwardly curved bills are not uncommonly, though incorrectly, called "curlews."

BITTERNS, HERONS AND EGRETS. (*Ardeidae*).

There are five species belonging to this family which are of regular occurrence in this state, viz., the American Bittern, the Least Bittern, the Great Blue Heron, the Green Heron and the Black-crowned Night Heron. The Egret (*Herodias egretta*) has been reported from Lanesboro, Fillmore County, by Dr. J. H. Hvoslef ("occasional; one stayed July 21-23, 1884") and both this species and the Snowy

Egret (*Egretta candidissima candidissima*) were stated by Dr. P. L. Hatch to have been seen more or less frequently in early days. As these southern birds were then much more abundant than now and were known to have ranged farther north in former times, it is possible that they may have then occurred here with some regularity. But at present they are certainly not to be considered as forming any part of our bird fauna.

The nature of the food eaten by all the members of this family subjects them to criticism as to whether or not they are entitled to protection. The smaller species certainly can do little if any harm and it is an open question whether the larger kinds, even though they do eat a considerable number of fish, are not really beneficial on the whole, as the greater part of the fish they take eat the eggs of better fish, and food required by species of more value than themselves. Bull-pouts, small carp, small pickerel, chubs and minnows figure largely in their catches. It is also claimed that they assist in checking the spread of disease among fish by eating the affected fish as these weaker and more helpless individuals fall an easier prey to them. However this may be, there are other reasons why careful consideration should be given this subject before any considerable destruction of these birds is permitted. Dr. L. B. Bishop in *Birds of Connecticut* presents the case as follows: "The chief value of these birds is their grace and beauty and the charm they add to the landscape; their economic importance is not great either for help or harm. They feed on small fish, frogs, occasionally a mouse, tadpoles, worms, grasshoppers, dragon-flies and various insects. It is conceivable that at a fish-hatchery a Great Blue Heron (*Ardea herodias*) might be out of place, but elsewhere in the state its presence is a distinct gain."

Bitterns.

The two species of Bitterns mentioned above are both common summer residents in Minnesota. The larger or American Bittern is often called, on account of its loud and strange notes, "stake-driver" and "thunder-pump," and also by the inelegant name "shite-poke." Both are strictly marsh birds, the Least Bittern preferring dense growths of quill reeds, where it climbs and runs nimbly about on the upright stems of the reeds, keeping the while well above the surface of the water. The nest of the larger species is a wisp of dead grass in an open or brush-grown meadow, while the smaller species lodges its shallow basket of coarser materials among the stems and leaves of reeds and cat-tails, usually by the water's edge and often forms above it a loose bower by intertwining the overhanging vegetation.

Hérons.

Of the three species of Herons found in Minnesota, the little Green Heron or "Fly-up-the-Creek," as it is sometimes called, is the least frequent and is common only in the southeastern portion of the state. It is a solitary bird, frequenting wooded streams and lake shores and building its nest in small trees and bushes.

The Black-crowned Night Heron is distributed pretty generally over the state but is common only southward. In the nesting season they assemble in colonies, called heronries, often of great size, as at Heron Lake where many hundreds build their nests close together each year. At the latter place, as well

Canada Goose and Cackling Goose.
—Photo by Jenness Richardson.

Snow Goose and Blue Goose.
—Photo by Jenness Richardson.

as generally throughout the prairie portion of the state, the nests are built in the great quill-reed swamps, while in wooded regions the birds build in medium sized trees, not far from water. An interesting incident happened at Heron Lake a few years ago, showing the ready adaptability of this bird to unexpected and unusual conditions. High water that year completely submerged the customary quill-reed nesting site and when the necessity of building became urgent, these birds, bred in ground nests, betook themselves to a willow-fringed stream a mile or so away and constructed arboreal nests among the branches of the willows.

Wherever this beautiful Heron occurs it may be seen morning and evening standing immovable as a statue in the shallow water beside some lake or stream, patiently awaiting the unwary fish that may come within reach of its lightning-like thrust. At the Heron Lake heronry, catfish and small carp seem to be the chief catch. The fish are swallowed whole, head foremost, by both young and old, but are more or less torn and mutilated for the smaller nestlings. The fish are easily regurgitated from the gullet, to be again swallowed by the same or another bird. It is probable that no kind of animal food, small enough to be taken whole, comes amiss, including, I fear, an occasional young bird or egg. The Night Herons at Heron Lake are much feared by the Franklin's Gulls and when the nesting sites are in close proximity, the Herons are the occasion of constant solicitude and incessant warfare on the part of the Gulls.

The Great Blue Heron is a common bird all over the state except during the breeding season, when it is chiefly confined to the wooded portion, as it places its nest in the tops of the tallest trees. An island in a large lake or river is the favorite site chosen for its heronry, though an occasional colony may be situated at some distance from water. One or more pairs of Great Blues now and then join the Night Herons at Heron Lake and build their nests among the quill-reeds. This big bird is a very early spring arrival and often before the ice is loosened in the lakes it comes from the south and going at once to the nesting places, begins to repair the dismantled homes of the previous year. I have known them to come to Lake Minnetonka while teams were still going back and forth on the ice. It would seem as though they must find it extremely difficult to get enough to eat under such conditions for recently opened streams and rivers can be the only sources of supply. The name "Crane" is commonly applied to this heron in this state, but the bird is not a crane either in habits or classification.

The Great Blue Heron is in much disfavor with fish culturists and others who consider it destructive to game fish and who regard its nesting places as nuisances. It will have to be admitted even by the friends of this picturesque and stately bird that there is some reasonable ground for these complaints. At an unguarded and unprotected fish hatchery it could certainly work sad havoc and it is probable that the most troublesome birds would have to be destroyed. The wild fish that it catches are mostly small and of little importance. An examination of the fish accidentally dropped by the young birds at the heronry in upper Lake Minnetonka during several visits in the summer of 1918 gave the following results: carp 8, sunfish 5 small, pickerel 2 small and 1 sixteen inches long, crappie 1 medium sized, yellow perch 1 small and remains of crayfish everywhere. The absence of catfish was a surprise as at the Minnesota River sloughs where the birds of this heronry fish all day long, I have seen them catch common bull-pouts often of considerable size.

As to the nesting places being objectionable certainly no one would want to live in immediate contact with one of these noisy, noisome spots. They are in the nature of things unsightly and foul smelling on close approach and all that can be done is to leave the birds in sole possession. If the locality happens to be too valuable to be thus disposed of, the birds need not, and should not, be destroyed for they will quickly move elsewhere as soon as man obtrudes his improvements. When the bit of woodland chosen by the herons is designed for future building, the complaint may be brought by the owner that valuable trees are being killed by the excrement of the birds. This is true so far as the trees occupied by many nests are concerned but these are few in number and on the whole little real damage results. To the rapidly increasing number of people who, in these days, are exerting every effort to preserve what is left of the wilderness and the wild creatures that dwell therein, it seems little short of vandalism to destroy one of these never-to-be-replaced centers of bird activity, which are so full of interest and fascination to the great body of nature lovers.

CRANES. (*Gruidae*).

Both the Whooping and Sandhill Cranes formerly bred commonly throughout the prairie regions of the state and the Sandhill occasionally in large marshes in the wooded portion. Just when the Whooping Crane ceased to nest in Minnesota is uncertain but it is fair to assume that it disappeared as a summer resident at least 20 or 25 years ago. It is now so nearly extinct as a species that it is rarely seen anywhere. The last record for Minnesota, which came as a surprise, was of a pair that alighted near Badger, Roseau County, on the 23rd of April, 1917. Unfortunately one of these rare birds was shot. It was brought to Mr. P. O. Frykland of Badger for mounting, from whom this information was obtained.

As late as June, 1880, the writer found a pair of Sandhill Cranes nesting in the great marshes in southeastern Anoka County, within sound of the whistles of the saw mills at Minneapolis. In June, 1901, when the region of Mud Lake, eastern Marshall County, was explored by a Minnesota Zoological Survey party under the leadership of L. O. Dart, the Sandhill was still breeding in that then Paradise of water birds. How much longer they may have continued to nest in the state or whether an occasional pair still remains in some remote spot is unknown. As migrants they are at present seen, spring and fall, passing over the state in wedge-shaped flocks of no great size. Twenty years ago they were extremely abundant in migration as witness the following written by H. J. Jaeger from Walnut Grove, Redwood County, in 1899: "April 9th (of that year) the Sandhills began to arrive here and for about two weeks the country was flooded with them. Sometimes hundreds would congregate in a pasture or meadow just like a large flock of sheep." Such scenes have now vanished from this state and brief as is the period since then, only a remnant of these great flights is left—or at least comes this way.

Cranes build their huge nests on heaps of broken down vegetation or old muskrat houses, far out in extensive marshes where they have a wide range of vision all about them. They feed on the upland as well as in the marshes and their diet is very varied—small fruits, roots, succulent vegetation, grasshoppers and other insects, frogs, tadpoles, snakes, small rodents, young birds, eggs, etc. The food is swallowed whole and the indigestible portion regurgitated in the form of a bolus as is usual with birds that bolt animal food entire. When the

farmers' gardens and fields appeared they took kindly to corn and other grains and potatoes and were said to do considerable damage to such crops at times. A favorite method of hunting them was to use the interior of a hollowed out corn-shock as a place of concealment and shoot them as they alighted in the field to feed. Much slaughter could thus be done by a single discharge of a battery of guns. The young birds were fair eating and in the seventies and early eighties they were offered for sale in our markets in considerable numbers.

The so-called "dances" in which Cranes indulge themselves in the mating season are famous and were once common spectacles on the prairie knolls of Minnesota. These curious antics have been graphically described by many early writers. The following is from Goss's *Birds of Kansas*: "During the courtship and the early breeding season their actions and antics at times are ludicrous in the extreme, bowing and leaping high in the air, hopping, skipping, and circling about, with drooping wings and croaking whoop, an almost indescribable dance and din, in which the females join, all working themselves up into a fever of excitement equalled only by an Indian war dance; and, like the same, it stops only when the last one is exhausted."

A smaller variety of Crane, the Little Brown Crane, is occasionally found in Minnesota, usually mingled with the larger kinds. It is to be distinguished from the Sandhill only by its smaller measurement. The Survey collection contains a single specimen taken not far from Minneapolis, April 2, 1894. This bird measures from the bend of the wing to the tip of the longest feather only $18\frac{1}{2}$ inches; the bill only 4 inches, while in the Sandhill these measurements are respectively about 22 and 5.50 inches.

RAILS, GALLINULES AND COOTS (*Rallidae*).

Though this family is represented in Minnesota by only a few species it is worthy of special note, since in number of individuals it comprises by far the greater part of the aquatic bird life of the marshy lowlands of the state. As Minnesota possesses an almost indefinite number of sloughs, ponds and marshy lakes and they all teem with members of this group, especially in the fall when the numerous young are added to the adults, the aggregate population reaches a figure difficult of even imagination—certainly many millions.

The most abundant species are the Sora and Virginia Rails and the Coot, which are found all over the state, while the big King Rail and the Florida Gallinule are less numerous and confined to the southern half. A sixth species, the little Yellow Rail, is apparently uncommon, though its secretive, mouse-like habits may be more responsible for the lack of information in regard to it than its actual scarcity. It is known to be a summer resident, for its nest and eggs have been found at Lake Wilson, Murray County, by Mr. A. S. Peters, June 10, 1917, the only record for the state thus far (see *The Oologist*, XXXV, p. 28). P. B. Peabody has also reported its presence in the breeding season near Hallock, Kittson County.

All the *Rallidae* build coarse nests of dead grass leaves and stems, supported only a few inches above the water. Those of the Coot and Gallinule are usually out in the open, while the Rails seek the shelter of thick vegetation. They are all very prolific, laying large clutches of eggs, especially the smaller species. The Sora and Virginia Rails lay commonly 10 to 14, and occasionally 16 to 17 eggs.

The young leave the nest as soon as hatched and are able to take care of themselves as far as securing food is concerned. If the theory that numerous progeny is a provision against great destruction from natural causes is correct, then the annual casualty list among these birds must be very high. Their powers of flight are rather weak and clumsy and, excluding the Coot, they depend largely for escape upon their ability to run quickly and hide in the grass. So awkward are they on the wing when first flushed that it was formerly considered impossible that they could make the long flights necessary in migration and it was then seriously believed that they passed the winter hibernating in the mud like turtles and frogs! But when once well a-wing they make the journey to milder climes like other birds, the Sora going even as far as Peru and Venezuela.

By far the most abundant member of the family in Minnesota is the Sora or Carolina Rail. Its call, usually described as a "whinny," rises in a great chorus from every considerable marsh whenever a sudden noise startles the unseen and timid birds. This is the rail that now and then during migrations is picked up in yards and streets of towns and in other strange places and in the late summer may be flushed from upland cover where it is feeding far from its usual haunts. In August, 1879, when the writer was studying birds along the Minnesota shore of Lake Superior the following note was made: "Common, though the almost entire absence of marshes forces the species to frequent what seem very unsuitable places; for instance the dense raspberry patches of the burnt sections, thick brush, a pea patch, the rank grass about abandoned habitations and like curious localities. Once I found three quietly reposing several feet from the ground in an evergreen tree standing in a perfectly dry, stony place; and on another occasion shot a specimen from the smaller branches of a tree, where it alighted after being flushed from a weed-patch on a dry hillside." Potato fields are an especial lure in the fall. Insects, berries and weed-seeds are no doubt the attraction at such times. In the marshes it feeds upon wild rice and other seeds, many aquatic insects and larvae, worms, snails, etc. A considerable quantity of sand is swallowed by this and all the other species as an aid to digestion. The small size, stubby bill and black face readily identify the Sora.

The Virginia Rail is generally distributed but is less abundant than the Sora and seems not to wander from the marshes like the last species. Its long bill and reddish color distinguish it from the Sora and its smaller size from the King Rail of which otherwise it is an almost exact counterpart.

The King Rail is a fairly common bird in the southern third of the state, becoming infrequent northward until it disappears at about Lat. 46 degrees. The most northern record is southeastern Otter Tail County. It is a large cinnamon-brown bird, 15 inches in length with a slender bill nearly two and a half inches long.

The Florida Gallinule is common with about the same range as the King Rail. It is a large, dark, slate-colored bird, thirteen and a half inches long, with a short, thick, white-tipped, red bill, and a shiny, bright red plate on forehead and crown, when in full plumage. The immature birds in the fall lack the red and the frontal plate is small. It apparently breeds very unevenly for not infrequently many of the young are only half grown and flightless with the advent of fall, and occasionally a recently hatched brood of the curious sooty-black, red-billed, red-crowned and gray-whiskered youngsters may be encountered even as late as the

first days of September (Sept. 1, 1901, Long Meadow Gun Club, Hennepin Co., Roberts). On acquiring the second or juvenal plumage this red is lost and the white facial hairs disappear. This presence of the red color of the adult, to be lost with the molting of the down, is a singular feature. The immature Gallinule is usually called "King Rail" by our hunters but it should be easily distinguished. The exceptionally long toes of the Gallinule serve to support it perfectly on the lily-pads and floating vegetation and it may often be seen in the spring walking daintily about out in the open sloughs, bobbing its head with each step and displaying at the base of the tail on either side a conspicuous tuft of white feathers which clearly distinguishes it from all others of its kind. It swims easily like all the rails and sometimes feeds by tipping up the body until only the tail is visible, just like Teal Ducks. The food of the Gallinule consists of wild rice and other seeds, duckweed and pondweeds, insects of many kinds (dragon-flies were conspicuous in one stomach examined), snails (which are swallowed whole), other small mollusks, etc. One chick reared to adult size in captivity by the writer, lived on chopped raw meat and duckweed. This bird when nearly full grown took to roosting at night on the lower limb of a tree in its enclosure and settled down contentedly with a Blue Jay on one side and a Brown Thrasher on the other.

The Coot, Mud-hen, Rice-hen, Mud-chicken, Mud-duck, etc., with its slate colored garb, white bill, white frontal plate and lobed feet is so abundant and, unlike the other members of its family, so conspicuous that it is well known to everyone at all familiar with our water birds. Its habit of "walking the water" when taking wing is a noisy and clumsy performance due to its short wings and heavy body. It comes in the spring as soon as there is open water and many remain until driven away by the ice in the fall. They feed by diving, tipping the body and picking up food from the surface of the water. They eat water insects of many kinds, snails and other small mollusks, wild celery, wild rice, the tubers of pondweeds, duckweeds and other plants and fruits. This is about the average food of our ducks and when the Coot is abundant it probably makes a considerable inroad into the larder of those birds. At Heron Lake and similar places Coots become in the fall so fat that they can scarcely take wing—getting under way with the body hanging down and almost dragging them back into the water.

In addition to the economic value of the *Rallidae* as insect destroyers, which is probably worthy of consideration, the members of the family may all be regarded as game birds of some importance. The flesh of the rails and of young gallinules in the fall when they have been feeding largely on wild rice and other vegetable food is well flavored and suitable for the table. "Rail shooting" on the Middle Atlantic Coast has for a long time been a favorite sport and "rail-bird-on-toast" has always suggested a specially delectable meal, however much the accessories may have to do with it. Here in the west however the shooting of rail birds has not as yet become a frequent practice and is resorted to only occasionally when larger game fails. Since ducks have become scarcer, many hunters have been turning their attention to Coots, calling them "Rice-hens" as a more appetizing name. When the food taken is largely wild celery, wild rice and pondweeds, these birds are, if properly cooked, of good flavor and nutritious, much better than some ducks. What they have been eating and how they are prepared and handled in the cooking, determines largely their desirability as food.

In the case of birds so secretive, so rarely seen and therefore so difficult to observe as the rails, a knowledge of their calls or notes is of first importance in recognizing their presence. This is not an easy matter for, like barnyard fowls, they utter a great variety of minor and unimportant sounds, but each has one or more characteristic performances which serve to distinguish it from its fellows. The Sora utters a "clear whistled *"ker-wee"* but most distinctively a shrill "rolling *whinny*," not to be mistaken for anything else among marsh bird-calls. The Virginia Rail, besides grunting like the King Rail, delivers "a guttural *cut, cutta-cutta-cutta*." The King Rail often grunts like a pig and calls in a monotone "*bup-bup-bup-bup*", sometimes rapidly and again slowly and distinctly. A pair of these birds, whose nest was studied and photographed at Heron Lake, uttered in addition to these notes a short, sharp syllable of protest resembling the sound usually made by the tongue and cheeks in urging on a horse. The Yellow Rail has a scolding "*kik-kik-kik-kik-queah*," compared by Nuttall to the croaking of a tree-frog. Gallinules are extremely noisy birds and they have a great variety of hen-like cacklings and guttural notes with occasional loud and shrill outbursts which invariably set the whole colony going. They are especially vociferous at night and in the springtime seem never to rest. Coots are also cacklers and only a little less noisy than the gallinules. They have in addition a medley of other notes of varying intensity and it is easy to confuse the utterances of the two species. However the Coot is usually in the open and can be seen.

SHORE BIRDS (*Limicolae*).

The Shore Birds are so called because most of the species are commonly found along the borders of lakes and streams, on sea beaches and on sandbars and mudflats. Their long legs fit them for wading and their long bills for searching in shallow water and probing in mud for food. But many of them also frequent uplands and some spend most of their existence there finding the food they most prefer in such situations. With few exceptions they build their nests on dry land, some species at a considerable distance from water, while one eccentric even deposits its eggs in deserted nests in trees. The majority of the Shore Birds breed in the far north and winter far south, several going as far as the southern part of South America. Thus they must make long and hazardous journeys spring and fall. The 2,400-mile unbroken flight of the Golden Plover from Newfoundland to South America, in a straight line, far out at sea, is one of the wonders of bird migration.

The story of the Shore Birds or Waders, in recent times is a sad one. Fifty years ago North America possessed an immense population of these birds, belonging to some fifty-odd species. Now, without exception, all the species are represented by only a meager remnant of the former great numbers and in one instance, the Eskimo Curlew, once one of the most abundant, almost complete extinction has occurred. Several others, notably the Golden and Black-bellied Plovers, are disappearing so rapidly that a like result seems inevitable. Minnesota, with its vast water area and extensive unforested uplands, afforded in early days a congenial and undisturbed summer home for many species; and, lying directly in the most frequented path of migration in the interior, was host, spring and fall, to an immense assemblage of transients belonging to this group.

From 1875 to 1880, when the writer first began the serious study of birds, the vicinity of Minneapolis still presented an abundance of many species of Waders, while the western prairies, visited in 1879, abounded in such birds as the Upland Plover, Marbled Godwit, Willet and others that are now little more than traditions in those parts. The Avocet and the great "Sickle-bill" or Long-billed Curlew had even then nearly disappeared from the state. Since that time the dense flocks of Golden Plover and the myriads of other migrating Shore Birds that tarried to feed, spring and autumn, have been reduced to straggling parties that are but pitiful reminders of the former flights, which wasted away with a rapidity that no one thought possible.

The cause of all this destruction has been primarily the widespread and fearful slaughter to which they have been subjected by thoughtless sportsmen and ruthless market hunters. Big and little, they have always and everywhere been regarded as game birds and legitimate objects of sport. The habits of many species made them an easy prey as they flew in compact flocks, decoyed readily, or, as in the case of the Woodcock, lay well to a dog. Depositing few eggs and being exposed to many dangers in infancy and during their long migrations, they could not withstand the great inroads made in their numbers by the gunners of former days. Another cause of their decrease, more unavoidable than the last, has been the steady advance of agriculture, appropriating the nesting grounds of such species as bred on the uplands in temperate climes. The draining of marshes, sloughs and shallow lakes has also played no inconsiderable part. In 1900 and 1901 many Shore Birds, notably the Marbled Godwit, were breeding or spending the summer in the Mud Lake region in eastern Marshall County, but the great drainage canal that now traverses that area took from them their last extensive dwelling place in this state and they are gone never to return.

The great diminution in the number of Shore Birds is a serious loss to the state in more ways than one. They are liable to be looked on only as food and objects of pursuit, but in reality this is entirely secondary to the incalculable service they render, or rather, did render, in keeping in check insects detrimental to the interests of man. The work done by the Biological Survey at Washington, by Aughey of Nebraska, and others, in examining the stomach contents of practically all species of this group, shows that they live almost entirely upon insects and conspicuous among these are many kinds that are especially injurious to agriculture. To appreciate the great good that they did when abundant, it is necessary only to state that many of the stomachs examined were packed with such insect pests as locusts, grasshoppers, wire-worms, adults and larvae of horse flies, crane flies, army worms, cut-worms, many kinds of caterpillars, white grubs, weevils, bill-bugs, click beetles, squash bugs, cucumber beetles, cabbage worms, and last, but perhaps not least, mosquitoes and their "wigglers" in great quantities. McAtee of the United States Biological Survey, says: "The economic record of the shore birds deserves nothing but praise. These birds injure no crops, but on the contrary, feed upon many of the worst enemies of agriculture." "Nor must we forget the more personal debt of gratitude we owe them for preying upon mosquitoes. They are the most important bird enemies of these pests known to us." "They should be protected first, to save them from the danger of extermination, and, second, because of their economic importance. So great, indeed, is their economic value, that their retention in the game list and their destruction by sportsmen is a serious loss to agriculture."

Thirty species of Shore Birds still occur in Minnesota more or less frequently, and three, formerly found, have entirely disappeared. The latter are the Avocet, the Eskimo Curlew and the Long-billed Curlew. Of the thirty still found, sixteen are transients, migrating through the state spring and fall, five are of only accidental occurrence and nine breed in the state. To avoid possible mistakes through supposing that certain far-north breeding birds sometimes breed here because they are occasionally seen in the early summer, it may be said that such individuals are supposed to be unmated birds, sterile, or without breeding instinct and there is no evidence that such species ever nest so far south. The list of such strays includes the Pectoral, Least, Semipalmated, Stilt and White-rumped Sandpipers, the Yellow-legs, the Sanderling, the Turnstone and perhaps others. A surprising feature of the movement of the northern Waders is the late date at which some of them leave for the north and the early date at which they are back again. This may also lead to wrong conclusions with beginners in bird-study.

As the number of Minnesota species is so large it will make for clearness and brevity to consider them in the form of an annotated list.

PHALAROPES (*Phalaropodidae*).

The Phalaropes are medium sized birds with lobed feet, slender bills, dense duck-like plumage and they swim buoyantly like tiny, graceful ducks. The male is duller colored than the female and is said to incubate the eggs and care for the young. As destroyers of mosquitoes, McAtee accords them very high rank, stating that "fifty-three per cent of the food of twenty-eight Northern Phalaropes" examined consisted of mosquito larvae. Two species occur in Minnesota. A third, the Red Phalarope, a maritime bird, was credited to the state by Dr. Hatch, but there is no present-day evidence that it ever occurred.

NORTHERN PHALAROPE. An uncommon migrant, seen chiefly in the late summer and fall—August to October—when it may occasionally be seen floating like a puff-ball far out on the waters of Lake Superior. It breeds in the far north.

WILSON'S PHALAROPE. This beautiful bird was once an abundant summer resident throughout the state, especially the prairie portion. Wherever one went in those days, on grassy lowlands in the breeding season, its soft, mellow notes were sure to be heard coming from the anxious birds fluttering overhead. Now in these places it is rarely encountered. It is scarcely a game bird and why it should have thus almost vanished is difficult to imagine unless the mowing of the meadows in June destroyed its nests.

AVOCETS AND STILTS (*Recurvirostridae*).

AVOCET. Was formerly a Minnesota bird and bred in limited numbers, but it disappeared long ago. The writer never encountered it. Dr. Hatch met with it in the earlier days of his bird work—prior to 1870. Dr. Wm. C. Portman, of Jackson, Jackson County, who has observed and collected birds in that locality for many years, told the writer in June of 1893 that he had some years previously seen them in considerable numbers in that vicinity. On one occasion they were in company with Long-billed Curlews and had apparently dropped down during migration to feed and rest.

Franklin Gulls following the plow—significant of their economic value, June, 1916.
—Photo by Jenness Richardson.

Drainage ditch in Northern Minnesota—a powerful factor in contributing to the disappearance of water birds.

The BLACK-NECKED STILT was reported by Dr. Hatch to have been once common in Minnesota both as a migrant and summer resident, but in view of the known range of this species, it is probable that the seemingly circumstantial account is in some way due to an error, possibly confused memory, as the Doctor kept few, if any, written records. There is no trustworthy evidence that the bird ever occurred here at all and if it did it was probably only as a straggler from the south.

SANDPIPERS, SNIPES, GODWITS, ETC. (*Scolopacidae*).

There are twenty-four species of this family to be considered in this connection. Of these, six breed in the state, thirteen are migrants, spring and fall, two are accidental, the status of one is unsettled and two are no longer found here. The typical Waders belong to this family. Several members are famous game birds. All are valuable economically as large destroyers of injurious insects.

WOODCOCK. Occurs sparingly as a summer resident all over the state, but is most frequent in the southeastern portion. It is a very early arrival in the spring, coming usually early in April, and soon thereafter begins nesting in bush-grown and wooded lowland places. It has undoubtedly decreased much in numbers, but never was sufficiently abundant in Minnesota to make it an important object of chase. However, if the graphically told tales of Mr. T. S. Van Dyke in *Forest and Stream*, Vol. X, 1878, pages 430-431 and 447-448, and later in *Outing*, Vol. XX, 1892, pages 293-297, are to be taken at their face value, there must have been many Woodcock in the wooded bottomlands of the Mississippi River below Lake Pepin in the early seventies. Mr. Van Dyke tells of wonderful shooting trips there about 1872 and states that twenty birds to each gun satisfied the members of the party on several occasions. The *Outing* article begins with the following astonishing sentence: "In few places has there ever been Woodcock shooting that, for the certainty of finding the birds and ease in following them, equalled the sport in the bottomlands of the upper Mississippi River twenty years ago." No one else seems to have encountered such conditions in Minnesota.

WILSON'S SNIBE, JACK SNIBE. This well-known and commonly hunted bird is too familiar to sportsmen to need much description. It is still fairly abundant here, especially during migrations. About mid-April the flight arrives from the south and then for a few days it can be found in numbers along streams, lake shores and in almost every marshy spot. Such a flight occurred at Minneapolis in the spring of 1918, the height of the wave being on April 16th. It nests throughout the state on lowlands. In late summer and fall it frequents singly wet meadows and marshes, where it remains until ice forms. A stray individual not infrequently remains about some spring run through the entire winter.

Wilson's Snipe, like the Woodcock, has a so-called "flight song." This aerial performance is to be heard mornings and evenings, moonlight nights and on still, cloudy days, when the birds, rising to a considerable height, circle round and round on fluttering wings and darting suddenly downward produce a peculiar hollow whirring or "bleating" sound, thought to be caused by the air passing through the outer flight feathers.

LONG-BILLED DOWITCHER; GRAY SNIBE. This bird has not, for some years at least, been common in Minnesota, but there is reason to believe that it

was formerly a well-represented migrant. Dr. Hatch speaks of it as more common than the last species and C. L. Herrick found many at Lake Shetek, Murray County, in late October, 1877. Dr. C. T. Cooke reported it fairly common at Madison, Lac qui Parle County, in October, 1892. It has also been taken at Wood Lake, Yellow Medicine County, by Albert Lano, October 11, 1888; Heron Lake, T. S. Roberts, May 21, 1893, and at Leech Lake, by E. S. Currier, May 24, 1903. The Dowitcher is a long-billed bird about the size of Wilson's Snipe, but flies in compact flocks and frequents sand bars and mud flats. It breeds in the far north.

STILT SANDPIPER. An infrequent migrant. Occurs in small flocks or associated with other lesser sandpipers. Its long legs and the flattened tip of the bill distinguish it from others of its kind. Dr. Hatch, writing in early days, says it was never common. In 1887, Dr. Hvoslef of Lanesboro, Fillmore County, reported that it was "not a rare fall migrant at least. I have shot several and have two in my collection." It has also been reported from Heron Lake (Peabody, 1894), Otter Tail County (Barker, about 1890), Pembina (Bryant, 1895), and in July, 1897, Franklin Benner found a number at Lake Shaokatan, Lincoln County, and collected several which are in the Survey Collection at the University of Minnesota. There are no recent records known to the writer.

KNOT; ROBIN SNIPE. A very rare migrant. There is only one Minnesota specimen known, taken September 7, 1885, in Fillmore County, by Dr. J. H. Hvoslef. This is now in the Survey Collection at the University of Minnesota. There are no other records except Dr. Hatch's statement in 1892 that it was "rather rare" in early days, but occurred both spring and fall. Breeds in the Arctics.

PECTORAL SANDPIPER; GRASS SNIPE. Common as a migrant. Arrives in April and is back again from its Arctic breeding grounds in July. Remains until October and occasionally even later (two seen and one shot at Minneapolis, November 5, 1875, by T. S. Roberts). This bird is sometimes seen in numbers in June ("rather common" in Grant County, June 5-9, 1879, Roberts and Benner), and is often encountered in the return movement by the middle of July (number seen in Lincoln County in mid-July, 1897, Franklin Benner), but it must not be assumed from this that it breeds here. Dr. Hatch's account of finding its nest in Minnesota is open to doubt for several reasons.

The Grass Snipe travels in small companies and frequents wet grasslands, and, quite often, upland fields and prairies, where it feeds upon insects of many kinds. Its southern journey takes it as far as Peru and central Patagonia.

WHITE-RUMPED SANDPIPER. The records thus far are all from the western part of the state, where it was, formerly, at least, a common migrant. In May, 1889, Cantwell found it "very plentiful in Lac qui Parle County" and collected specimens. On May 25, 1893, Albert Lano secured two specimens in the same county, which are in the Survey Collection. Peabody reports it at Heron Lake, in 1894, "abundant May 19 (first seen); seen also June 2 and July 1 (one)," but states that it is rare in Kittson County. Franklin Benner collected a single female bird in immature plumage at Lake Benton, Lincoln County, on July 18, 1897 (in Survey Collection). This Sandpiper breeds in the Arctics and spends the winter in the extreme southern part of South America.

BAIRD'S SANDPIPER. A migrant. With the exception of two questionable records, this bird has been seen in Minnesota only during the southward migration, in July to October, inclusive. It is then not infrequent along lake shores and on sand-bars and mud-flats, usually in company with other small sandpipers.

Of the two spring records mentioned above, that of Dr. Hatch in his "Notes," 1892, "The spring of 1875, Dr. T. S. Roberts" is an erroneous use of August observations reported to Dr. Hatch by the present writer at the time they were made. This is an example of the manner in which the Doctor very often handled information submitted to him, in writing, as well as verbally, and which makes his reports, written apparently from memory, so unsatisfactory and so unreliable in details. Dr. Hatch, with whom the writer was well acquainted, was an active and enthusiastic bird student and entitled to credit for his perseverance and single-handed efforts in the early days, but, unfortunately he was not possessed of a scientific or orderly mind. A second spring record is that of Mr. J. M. Eheim, who reported in *Fins, Feathers and Fur*, No. 14, June, 1918, that he saw fifteen Baird's Sandpipers near Hutchinson, McLeod County, on May 18, 1918, and that it was "common" on the 19th. No specimens were taken and Mr. Eheim himself now considers the observation questionable.

In July and August, 1879, this species was taken and seen several times by the writer along the north shore of Lake Superior, feeding on the shelving rocks in the wake of retreating waves, commonly associated with Least and Semi-palmated Sandpipers. Dr. Hvoslef reported it "numerous" at Lanesboro, Fillmore County, August 28, 1888. Taken in Lac qui Parle County, October 13, 1892, by Dr. C. T. Cooke. Two were seen at the Long Meadow Gun Club, Hennepin County, August 25, 1918, T. S. Roberts. It is sometimes found on the uplands in quest of insect food. Breeds in the far north and winters far south in South America.

LEAST SANDPIPER; PEEP; AMERICAN STINT. This, the smallest of our Shore Birds, is a common migrant throughout the state, the rocky shores of Lake Superior and sandy beaches or mud-flats elsewhere proving equally attractive in its search for food. It arrives about May 1st and the bulk passes quickly on, to return again in August and remain until early October. Many are here during the whole summer and may be encountered almost anywhere in suitable places, either singly, in pairs, or in little parties of a half dozen or so; but there is no reliable record of the species nesting in the state as Dr. Hatch's account is not without question. It breeds in the far north and winters from the West Indies to Brazil.

RED-BACKED SANDPIPER; BLACK-BELLIED SANDPIPER; AMERICAN DUNLIN. A common, formerly an abundant, migrant, from about May 1st to the first week in June, returning from the north in August to remain until mid-September. It is less frequently seen here in the nesting season than the other regular transients of this group. "Quite a number" were found in Lincoln County, July 18, 1897, by Franklin Benner. It flies in close flocks and feeds on mud-flats and beaches. Breeds on the shores of the Arctic seas and winters in the southern United States.

In full plumage the black belly and reddish brown back easily identify this species; but at all times its slightly *decurved*, rather long bill serve to distinguish it.

SEMIPALMATED SANDPIPER. A common migrant, traveling usually in company with the Least; but it is a little later in the spring and leaves a little earlier in the fall than the first and last of that species. It is here throughout the summer in greater numbers than any of the other migrating Waders. A small flock was seen at Hermann, Grant County, June 7, 1879 (Roberts and Benner); a flock of nine at Lanesboro, Fillmore County, June 12, and one, June 16, 1888 (Hvoslef); common in Lincoln County in mid-July, 1897 (Benner); and "fairly abundant" at Mud Lake, Marshall County, July 23, 1900, but absent June 10-24, 1901 (Dart). Breeds on Arctic coasts and winters from southern United States to Patagonia.

There are six species of the smaller sandpipers that are especially confusing to the beginner in the field and the following brief analysis of the most conspicuous features of these is offered in the hope that it may help to distinguish them. It is best not to make unusual records in regard to these birds without very close study and, indeed, it will often be necessary to take specimens in order to be sure of their identity.

Stilt Sandpiper. Length, 8.25 inches; legs very long for size of bird; spring adults, white below heavily barred with dark ashy; fall adults and young, dark barring below wanting, breast buffy with faint streaks; much white at base of tail above.

Pectoral Sandpiper. Large; length, 9 inches; black at base of tail above; spring adults, throat and belly white, breast heavily streaked with black and buff; fall adults and young, buffy on breast with streaks indistinct; young in August, somewhat smaller than adults.

White-rumped Sandpiper. Length, 7.50 inches; white at base of tail above, but less than in Stilt Sandpiper.

Baird's Sandpiper. Length, 7.40 inches; dark colored at base of tail above; generally lighter colored throughout than the other species, but confusing in field.

Least Sandpiper. Smallest; length, 6 inches.

Semipalmated Sandpiper. Length, 6.30 inches; a little larger than the Least and somewhat lighter colored, especially in the fall, when it lacks the dark streaks on breast; toes partially webbed, which, of course, can be seen only when the bird is in the hand. The Least and Semipalmated are very difficult to tell apart in the field.

SANDERLING. This bird of the sea coasts is a rare straggler in Minnesota. There are positive records of only ten birds thus far: Minneapolis, September 22, 1875, two seen, one shot, the latter in Survey Collection (Tiffany); Minneapolis, September 30 1878 (Williams); Windom, Cottonwood County, specimen in collection Minnesota Agricultural College (Shaw); Big Stone Lake, September 8, 1893, specimen in Survey Collection (de la Barre); Leech Lake, June 10, 1902, and May 24, 1903 (Currier); Lake of the Woods, June 24, 1916, two seen together and one shot, the latter in Survey Collection (Roberts); and one shot at Lake Minnetonka, September 26, 1914, in collection Minnesota Academy of Sciences (Martin Bovey). The Sanderling breeds in the far north, and Dr. Hatch's account of its frequency here and possible nesting in the state must be an error.

The Sanderling is unique among our sandpipers in having only three toes.

MARBLED GODWIT; MARLIN. When the writer, in company with Franklin Benner, went to Grant and Traverse counties in June, 1879, to study the wild life of that region, the great Marbled Godwit was so abundant, so constant and insistent in its attentions to the traveler on the prairie and so noisy that it became at times an actual nuisance. The following extract from the diary kept at the time will illustrate the conditions encountered: "June 9, 1879. On the low ground along the Mustinka River, several miles west of Herman, where we went to look for the site of the pelicanry of last year, there were a great many Marbled Godwits. They were continually hovering about the team, perfectly fearless and nearly deafening us with their loud, harsh cries—'*go-wit, go-wit.*' On getting out of the wagon to search for their nests, the birds became fairly frantic until we were fain to stop our ears to shut out the din. Now and then the birds would all disappear and peace would ensue for a brief period, but they had only retired to muster their forces anew, for shortly a great company would bear down upon us, flying low over the prairie, and spread out in wide array, all the birds silent, until, when almost upon us, they swerved suddenly upward over our heads and broke out again in a wild, discordant clamor. Once I counted fifty birds in one of these charging companies." This, to us, novel experience, went on from day to day in various places and has left a vivid impression that can never be effaced. Happenings of this sort have long since become things of the past in Minnesota. The Godwits gradually disappeared before conditions associated with the advance of man into their domain until now it is doubtful that more than an occasional pair remains to nest in some remote part of the state. Dr. Hatch says that in the early days they were common in the fall on the Fort Snelling prairie. The last known record for the eastern part of the state is of a bird taken near Minneapolis by R. S. Williams on June 19, 1878, a date that suggests, in the case of this summer resident species, that it may have been nesting. They were numerous in Marshall County, June 21-26, 1897 (Gleason), and were still well represented among the Waders at Mud Lake in the eastern part of that county, June 12-23, 1901 (Dart).

Godwits are said to be good eating. Their fearless nature and gregarious habits make them an easy prey for hunters. They are still common in some regions farther west, but only rigorous protection will save such a conspicuous game bird from extinction.

With their long, up-curved bills they probe the shallow water of sloughs and lake shores for aquatic insects and mollusks and also spend much of their time on meadows and low-lying prairies where they devour grasshoppers and other insects of many kinds. These big birds, when they were as abundant as they once were, must have been an important factor in keeping in check the dangerous insect hordes of our state. But they, with others of their kind, are gone and man is left to fight conditions as he must with agencies of his own devising, less efficient, perhaps, than those provided by nature.

HUDSONIAN GODWIT; RING-TAILED MARLIN. A rare migrant in Minnesota, but flocks of considerable size were formerly encountered occasionally. So far as all records known to the writer are concerned, it has been met with here only in the spring. Dr. Hatch states that he never met with it in the field and gives no information of value. Cantwell found it "fairly common" in Lac qui Parle County in May, 1889, and collected specimens. May 20-21, 1893, the writer

met with a small flock at Heron Lake and took three specimens which are in the Survey Collection. Peabody reports seeing "a flock of about 200" at Heron Lake on May 18, 1895. This is all the information that can be found in regard to this bird in Minnesota. There are no recent reports. It is said to be getting rare everywhere. It breeds in the far north and winters in the southern part of South America.

Like the Marbled Godwit, its bill is curved slightly upward. The Hudsonian is a smaller bird than the Marbled and the under parts in the spring adult are dark reddish-brown instead of pale buffy, with darker and more distinct bars. Measurements: Marbled Godwit, length, 16.50-19.50 inches; bill, 3.66-5.00 inches; Hudsonian Godwit, length, 14-16 inches; bill, 3.20 inches.

GREATER YELLOW-LEGS; GREATER TELL-TALE. This big Wader was formerly an abundant migrant spring and fall, but is now seen rather infrequently and the large flocks have dwindled to occasional small parties or single birds. It occurs from early April to June and from late July to October, belated birds remaining now and then until November (November 11, 1881, and November 12, 1884, Lanesboro, Fillmore County, Hvoslef). Recent records of single birds of this species are from Cass Lake, July 10, 1916 (Lofstrom), and Elk River, April 20 and May 17, 1914, and April 22 and 28, 1915 (Bernard Bailey). Mr. J. M. Eheim's report of this bird's being common at Hutchinson, April 29, 1918 (*Fins, Feathers and Fur*, No. 14, June, 1918), was an error. Breeds on the Arctic coasts and winters from the Gulf states to Patagonia.

The notes of this species are musical, like a mellow whistle. It decoys readily and was formerly shot in great numbers on the Atlantic coast and elsewhere.

YELLOW-LEGS; LESSER YELLOW-LEGS; LESSER TELL-TALE. This bird is still a common migrant from early April to late May, returning again in the latter part of August to remain until October. It may frequently be seen during the breeding season but there is no evidence that it nests here. It was extremely abundant at Mud Lake, Marshall County, July 23, 1900 (Dart). Peabody relates that at Heron Lake, June 15 to mid-summer, 1894, it reappeared after a month's absence "in flocks of ten to fifty, swarming noisily and fearlessly everywhere on the great waste of mud-flats that were daily growing larger with the prolonged drought. The Lesser outnumbered the Larger, at the period, about four to one." (*Oologist*, XII, p. 15.) A considerable flight occurred in the vicinity of Minneapolis in the spring of 1918, during the first week of May.

This bird is a small counterpart of the Greater Yellow-legs in appearance, habits, breeding range and winter home. Measurements: Greater Yellow-legs, length, 14 inches; bill, 2.20. Lesser Yellow-legs, length, 10.75; bill, 1.40.

SOLITARY SANDPIPER. A common summer resident in the wooded areas of the northern part of the state; farther south it is a migrant. Unusually abundant at Minneapolis, May 7-14, 1918. Reaches Minneapolis on the southward movement, August 1-15. It frequents wooded streams and forest lakes and ponds. This bird has the singular habit of laying its eggs in the deserted nests of other birds *in trees*. While no instance of the actual finding of the eggs in Minnesota is known, it undoubtedly breeds throughout the northern part of the state.

WESTERN WILLET. Formerly a common summer resident throughout the prairie portion of the state and farther east in sparsely wooded areas. It is now uncommon but small flocks have been occasionally met with during the last eight or ten years, even as far eastward as Hennepin County. (Five were shot from a flock at the Long Meadow Gun Club sloughs about 1909 by Garry Van Nest.) It was common and breeding in Grant and Traverse counties in June, 1879 (Roberts and Benner), and Cantwell found it "numerous and noisy everywhere on the mud-flats" in Lac qui Parle County in May, 1889. It is still abundant farther west but has almost disappeared from our state.

UPLAND PLOVER; BARTRAMIAN SANDPIPER OR TATTLER; FIELD PLOVER. To recite the history of the Upland Plover in Minnesota is to tell a sad tale of dreadful slaughter and destruction that has resulted in the almost complete extermination of this valuable and once abundant bird. Fifty years ago it was present all through the summer, everywhere in open country, in countless thousands. Now it is nearing extinction. Here and there an occasional breeding pair may yet be found, but they are lonely occupants of the places where their ancestors dwelt in vast numbers. The fact that they were an excellent table bird, were tame and unsuspicious, raised only a single brood of four each year and were unprotected at the time when most easily killed, constituted conditions, which, taken together, led surely and rapidly to their disappearance. In the early seventies they were one of the most common and noticeable birds on the prairies about Minneapolis. In those days a small sandy prairie bordering a little lake known as Sandy Lake and lying just north of the city (long since thickly settled and included as an outlying suburb under the name of Shoreham) was a favorite congregating place of these birds in July and August and the writer has figures to show that 152, probably many more, Upland Plover were shot on this limited area between July 27 and August 13, 1874. No one thought seriously of such practices in those days, just as a hunter at that time did not feel guilty after killing fifty or sixty Wild Pigeons in a morning. The controlling conscience of the true sportsman had not been generally aroused, nor had a realization come to many of what must be the inevitable result.

In May, 1893, the writer visited Jackson and Pipestone counties and Upland Plovers were present everywhere on the prairie. A return visit was made in 1899 and they were gone—the incessant and musical "qua-a-a-ily, qua-a-a-ily" of the hovering birds was a voice of the past. Stories were rife, whether true or not is not positively known, that market hunters from eastern cities had come into those parts and had killed the Plover in great numbers in the nesting season and shipped them back to wholesale dealers, by whom they were in great demand for home and foreign sale.

A. D. Brown of Pipestone, writing from that place in June, 1900, said that he had not seen a pair of Upland Plover that year. In June, 1901, they were still fairly numerous in the sparsely settled eastern portion of Marshall County (Dart) and the same year two pairs were found in the nesting season near Parker's Lake, just north of Minneapolis, by Wm. Kilgore, Jr. On June 2, 1918, Lawrence L. Lofstrom found a nest and eggs of this species near Anoka, which was left undisturbed. So, apparently, a few are left of the former multitudes. Complete protection is afforded by the present law but if it is to be effective it will have to be well enforced and continued for a long time, and it is doubtful that,

even then, the remnant can be saved, to say nothing of re-establishing the species in any considerable numbers.

The Upland Plover built its nest on the prairies. After the prairies became grain fields, the nests were commonly concealed in the growing grain. This ready adaptability seems to indicate that this important bird might have been saved could the murderous hunting to which it was subjected have been controlled. Economically, aside from its value as food, it is of much importance, for it lives largely upon insects and its upland habits make it the enemy of many injurious species, especially grasshoppers.

This sandpiper arrives from the south in the latter part of April and usually leaves in August, but a few stragglers may remain into September. It winters on the plains of southern South America.

BUFF-BREASTED SANDPIPER. Formerly an uncommon migrant spring and fall. There are no recent records. It passed northward in May and reappeared in the southern part of the state about August first, remaining through the month of September. In August, 1877, several flocks were found on "Sandy Lake Prairie" near Minneapolis and the first specimens for the state were secured by the writer and R. S. Williams. In the same locality on September 16, 1892, Dr. C. T. Cooke collected a pair, which are in the Survey Collection. Cantwell found them "fairly common" in Lac qui Parle County in May, 1887, and Peabody met with a flock "of about a dozen" near Heron Lake, May 21, 1895, the only ones he ever encountered in the state in his rather extensive experience. There is a specimen in the Survey Collection taken in Anoka County, September 27, 1882, by Wm. Howling. The most recent record is for Otter Tail County, late in August, 1907 (Barker). This comprises about all that is known of this bird in Minnesota, so it may fairly be considered a rare species here, if indeed, it occurs at all at present. Forbush suggests that "apparently it is on the way to extinction."

The Buff-breast is rather plover-like in its habits, frequenting sandy prairies and fields, as well as the shores of lakes and ponds, flying in close flocks and circling rapidly about low over the ground in a restless, uneasy manner. It breeds in the far north and winters in southern South America. Dr. Hatch's surmise that it nested here was undoubtedly an error.

SPOTTED SANDPIPER; TIP-UP; TEETER SNIPE. The most common and ubiquitous summer resident of this family. Still abundant everywhere and nesting by the margins of lakes and streams. The constant bowing and teetering of this bird constitute its best field mark as the young of the year lack the round, black spots of the under parts in the adult. The Solitary Sandpiper has somewhat the same habit but its movements consist rather of a bobbing and nodding of the head than a see-sawing and swaying of the hinder part of the body as in the present species.

The Spotted Sandpiper arrives late in April and remains until the middle of October. It winters from the Gulf states to Peru and Brazil.

LONG-BILLED CURLEW; SICKLE-BILL. This, the largest of the Shore Birds, was formerly a common nesting bird throughout the prairie and sparsely wooded regions of the state. It was especially numerous on the western prairies from the Iowa line northward, preferring in the Northwest the sandy ridge or

Franklin Gull, Heron Lake, Minn.
—Photo by L. O. Dart.

Black Tern and Nest.
—Photo by Jenness Richardson.

old beach that borders the Red River Valley on the east. It is now apparently an extinct bird in Minnesota.

As late at least as 1883 it was still breeding in southern Jackson County (J. W. Preston) and Gleason saw a single bird of this species near Euclid, Polk County, on June 17, 1897, which at that date may be assumed to have been a breeding bird. This report of Gleason's is the very last record of the Long-billed Curlew in Minnesota known to the writer. It ceased to be generally abundant somewhere about 1880 and rapidly decreased in numbers, even as a migrant, until it disappeared entirely about the close of the last century. In June, 1893, Dr. Wm. C. Portman of Jackson, Jackson County, told the writer that "a few years previous to that date it was very abundant on the high prairie about Jackson" and that he had found the nest and eggs there. It was not found by Roberts and Benner in Grant and Traverse counties in 1879 and was never met with during various trips to Heron Lake, beginning in 1893. F. L. Washburn, who visited the Red River Valley in September, 1885, to study the bird life in the interests of the Zoological Survey, says of this species in his manuscript report: "Only a few individuals observed. I was informed by sportsmen at Ada that it was not present this year in regions where it was extremely abundant last year. The bird was spoken of familiarly at Georgetown and a few were shot near Crookston and Ada." Among the later records is one from Madison, Lac qui Parle County, October 13, 1892, and another from New Richland, Waseca County, May 19, 1893, both by Dr. C. T. Cooke; and Rev. Severn Gertkin of Collegeville, Stearns County, reported in notes from that locality that "four Long-billed Curlews passed through on April 19, 1894." The only Sickle-bill that the writer ever encountered in his forty years of traveling about the state was a single bird flying about "Craig's Prairie" in southern Sherburne County on August 10, 1880.

This huge shore bird, nearly two feet long, with its immense, downwardly curved bill, six or eight inches in length, must have been a striking object in its days of plenty, as it moved about among the vegetation of the higher uplands which it often frequented in search of insects and berries; or as it waded through the shallow water of lakes and ponds probing the bottom for larvae, worms, snails, and crawfish, which it easily secured with its long, forceps-like bill. When migrating in flocks the birds flew high in the air in wedge-shaped formation and uttered a loud, mellow whistle which was easily imitated in decoying them within gunshot range. They can still be seen and studied in unsettled and protected regions farther west in the United States and Canada where they still occur in considerable numbers. Their destruction here in the northern Mississippi Valley and along the Atlantic seaboard was largely due to the ruthless slaughter to which they were subjected by shore bird hunters. But it seems probable that this big, conspicuous bird, like other wild creatures of its kind that make their homes in places coveted by men, would not have long survived by the side of civilized conditions, even if encountering no more than the usual unavoidable molestation.

HUDSONIAN CURLEW. There are no satisfactory records of the occurrence of this maritime bird in Minnesota. It is included in Dr. Hatch's list of 1880 and in Cantwell's list of 1890, and in Hatch's *Notes on the Birds of Minnesota*, 1892, occurs the following: "I formerly met with this species more frequently than of late years, and why so I can not explain to my own satisfaction. They were

always associated with the Long-bills, except upon one occasion, when I found a flock of eight by themselves in spring migration, it being then early in April. Only a single bird was obtained, but a number found their way into the taxidermist's collections. And from time to time I have found specimens of this species in those places. They are more frequently obtained in the autumnal than in the vernal migrations, and except as above, invariably mingle with the other species. I know nothing of their habits beyond the fact of their presence in migration in very limited numbers." Whether this account is reliable is a matter of conjecture. W. W. Cooke in *Bird Migration, Mississippi Valley*, 1884-5, gives a record for Heron Lake, "May 1, '84," reported by Thomas Miller, which was not based on capture. Miller's intentions were always honest, but he was not sufficiently well informed to make accurate specific observations in such a matter as this. Here the question stands. It is perhaps too late to obtain further more definite information.

Anderson in his *Birds of Iowa*, 1907, after quoting the Miller record for Heron Lake, says: "I have a female specimen of the Hudsonian Curlew in my private collection, shot on the prairie south of Crystal Lake, Hancock County, May 25, 1895." This locality is only a short distance south of the southern boundary of Minnesota.

ESKIMO CURLEW. This bird, now long since absent from Minnesota, formerly passed northward in the spring in great numbers through the western Mississippi Valley on its way from its winter home on the Pampas of southern South America to its breeding grounds on the Barren Lands of the far north. It disappeared as rapidly during the latter part of the last century as did the Passenger Pigeon and Golden Plover and for the same reason—slaughter in immense numbers by market hunters and thoughtless sportsmen. The birds were killed chiefly in the Mississippi Valley as they went north. They flew in large close flocks like Plover, were easily decoyed and returned again and again to the blind so that but few of a bunch escaped. The return trip to its winter quarters was by a long oversea flight from Newfoundland to South America, like the Golden Plover. It is now considered almost extinct everywhere. A very few individuals have been seen or taken along the Atlantic coast since 1900 and none in the interior.

Agersborg, writing of the birds of what is now southeastern South Dakota in 1885 (*Auk*, Vol. 21, p. 287), says: "In spring often very abundant." It was taken at Burlington, Iowa, by Paul Bartsch, April 5, 1893 (Anderson, *Birds of Iowa*). The Minnesota records are as follows: Hatch in 1876, says: "Is found to be abundant in season in some parts of the state, especially the northwestern." And in 1880, "not rare," while the brief account in his "*Notes*," 1892, is indefinite and without data. Cantwell in his list of 1890 says: "Commonest of the Curlews. Seen only during migration," but this is from hearsay. Thomas Miller reported to the Biological Survey at Washington two records from Heron Lake, "April 3, 1884, and April 24, 1885." It is evident that it disappeared from the western part of the state, where it was without doubt once abundant as a spring migrant, before that region was explored to any extent by bird students. No Minnesota specimens are known.

PLOVERS (*Charadriidae*).

Five members of the Plover family are to be credited to Minnesota, but only a single species—the common Killdeer—now occurs in any considerable numbers,

its indifferent merits as a table delicacy having saved it from the fate of its more savory relatives. The great flocks of the Golden, and the smaller flocks of the Black-bellied Plovers that once swept across the state in their annual migrations are now represented by only a few stray individuals. The Ringnecked Plover is an uncommon migrant. The Piping Plover is a very rare straggler.

Plovers, when abundant, are of very great value to the agriculturist and horticulturist. They seek the open uplands and there feed almost entirely upon insects among which are many of the worst enemies of field and orchard crops. Edward H. Forbush in *Game Birds, Water Fowl and Shore Birds* concludes his article on the Golden Plover, which is largely in the nature of a memorial, with these words: "Every farmer knows, or should know, that the grasshoppers, locusts, crickets, white grubs, cutworms and wire worms which the Plover eat are reckoned among the most destructive of all pests in the hayfield, grain field or garden, and it must be evident to all thoughtful people that the immense flocks of Golden Plover which formerly swept north and south over the fertile plains of this country would have done great service to agriculture had they been protected during their flights up and down the continent." The moral to be drawn is that we should do everything possible to save the remaining birds of this and other species, not especially because they are game birds but because they are of even greater value in other ways. Of the service rendered by the Killdeer, which is still with us commonly, Forbush says: "Prof. Samuel Aughey examined the stomach contents of nine of these birds taken from May to September in Nebraska, and found 258 locusts and 190 other insects. Only one had taken grain, and that only a few waste kernels. Nash states that its food consists of earthworms and insects, of which small beetles form the greater part, and that a brood of these birds and their parents will relieve a farm of an enormous number of insects daily. He has known stomachs of this species to be completely filled with weevils taken from orchards. Eaton found it feeding on grasshoppers, beetles, caterpillars and a few water insects. Throughout the country, wherever the Killdeer is found, it is very destructive to weevils, some species of which cost the farmers of the United States millions of dollars annually. The Killdeer takes weevils from ploughed fields as well as from orchards and is one of the enemies of the Mexican cotton boll weevil." W. L. McAtee in *Farmers' Bulletin No. 497*, United States Department of Agriculture, presents in detail an astonishingly long list of insects eaten by the Killdeer and summarizes as follows: "In all, 97.72 per cent of the Killdeer's food is composed of insects and other animal matter. The bird preys upon many of the worst crop pests and is a valuable economic factor. There can be no logical reason for continuing to regard it as a game bird.

The Plovers are rather short-legged, plump-bodied birds with thickish bills not longer than the head. The feet are partially webbed; and among our birds the Black-bellied is the only one that has more than three toes. In this species the hind toe is present but is very small and inconspicuous.

BLACK-BELLIED PLOVER. This bird was formerly a regular migrant spring and fall through the state but seldom appeared in the large flocks characteristic of the Golden Plover. It had become uncommon in the eastern part of the state in the middle seventies when the writer first began recording bird observa-

tions in the vicinity of Minneapolis. There are no records known for Minnesota for the last twenty years and it is probably now of only very rare occurrence. It passed north during the month of May—April 30 to May 25—and returned in September. Cantwell encountered a flock at Madison, Lac qui Parle County, on May 13, 1889, and Peabody reports "large flocks" in May, 1895, on the prairies in the Heron Lake region. The last Survey record is of a flock of about twenty at Duluth in the spring of 1899. Forbush states that the Black-breast still appears occasionally on the Atlantic coast in considerable numbers and thinks that it shows an increase since the stopping of spring shooting and the generally better protection afforded of late years.

Dr. Hatch's statement (*Notes on Minnesota Birds*) that a nest with eggs of this species was obtained in 1875 on upper Lake Minnetonka, and that other nests were found later is undoubtedly an error. It breeds on the coasts of the Arctic seas and winters from the southern United States to Peru and Brazil. Unlike the Golden Plover the lines of migration are to and fro over the same route.

The fall young of this bird and the next are easily confused. In the hand the small hind toe of the Black-bellied—absent in the Golden—readily identifies it. In the field the whitish upper tail coverts and tail and a white band in the wing seen in flight distinguish this species from the next.

GOLDEN PLOVER; AMERICAN GOLDEN PLOVER; PRAIRIE PIGEON. Reference has already been made to the former great abundance of this bird in Minnesota during its migrations. They entered the southern part of the state in the spring early in May (May 8, 1898, Heron Lake, "saw about twenty today. They are about four or five days late." Miller) and continued passing in successive flocks until the last of that month. The first returning birds arrived about September first (August 25, 1875, Minneapolis, Roberts) and became increasingly numerous until late October, the last stragglers remaining sometimes into early November (November 1 and 5, 1875, Minneapolis, Roberts). They were often more abundant in the fall than in the spring, contrary to the usual statement that the spring flight was northward through the Mississippi Valley and the fall movement eastward across British America to Labrador and Newfoundland and thence to South America by a long ocean flight. The explanation is probably that these fall flocks were taking a short cut to the Atlantic sea coast.

They continued to be numerous in the eastern part of the state as late as 1889, as shown by the following note from Dr. J. C. Hvoslef of Lanesboro, Fillmore County: "September 28, 1889, many; October 22, 1889, a great many; November 2, 1889, small flocks. Abundant this fall." From that date they rapidly decreased. Two were seen at Minneapolis, May 30, 1892, by Wm. de la Barre, Jr., and two flocks passed over Lanesboro, September, 1897 (Hvoslef). The last report is of one taken in McLeod County, September 27, 1914 (J. W. Franzen).

Farther west they continued to occur in numbers to a somewhat later period. Miller reported them as plentiful at Heron Lake in the fall of 1897—"more so than I ever saw them before in the fall migration. Quite a number were killed by gunners as the birds flew across the lake." There was a small flight at Heron Lake, May 12, 1912, when several specimens were taken, two of which are in the Survey Collection through the courtesy of Wm. Kilgore, Jr.

At present this Plover can be considered only as a rare and irregular migrant anywhere in the state. It has, in fact, become so scarce everywhere throughout its range that ornithologists generally consider that it is approaching total extinction and doubt whether the most rigorous protection can save it. If this comes true, it is another sacrifice of a noble and valuable bird to the greed of man. Its habits made it an easy victim and the tales that are told of the vast numbers that were annually killed as it traversed the coasts and especially the interior of North America are almost beyond belief. Audubon's account of being present one day, early in the spring of 1821, near New Orleans when *forty-eight thousand* of these birds were killed between dawn and nightfall by an army of hunters who awaited the arrival of the hosts from their flight across the Gulf, is but one of many similar tragical happenings that befell the Golden Plover in its earlier encounters with man.

The Golden Plover, while here, in common with its relative, the Black-bellied, fed principally on prairies and fields where the vegetation was scantiest and soon learned that its diet of insects and worms was most readily gleaned on burned-over areas and ploughed fields, so that it was in such places that these birds were usually to be found. When first arrived they were tame and unsuspicious and answered quickly, again and again, an imitation of their soft, whistling notes, paying little heed to a report of a gun or the presence of a gunner. It is within the memory of the writer when great flocks of these birds assembled in the fall on the then unsettled prairie south of Minneapolis, about where the Steel & Machinery plant now stands, and where they paid heavy toll to numerous hunters of those days as they circled round and round seemingly wholly indifferent to the devastation that was inflicted upon their closely massed ranks at almost every turn they made.

KILLDEER; KILLDEER PLOVER. This still abundant and generally distributed summer resident of our state needs little special mention. Its loud and penetrating notes—*kill-dee, kill-dee*—are familiar to almost every one and at times not without an annoying feature. The Killdeer is an early arrival, coming usually with the first Robins and Bluebirds about the middle of March, rarely a few days earlier. It remains until late in October.

The nest is placed almost anywhere in a field, pasture, corn field or garden and is concealed by its very openness and the dark, blotched character of the eggs. The birds are fond of mud-flats and the muddy shores of shallow lakes and ponds but feed chiefly on the uplands. Their great value to the agriculturist has already been described in the general account of the family. In the eastern states they have been largely killed off, but they are still common with us and should be continuously and permanently protected as a most important insectivorous bird.

SEMIPALMATED PLOVER; RING-NECKED PLOVER. This little Plover is a migrant through Minnesota but has never at any time been very abundant and of late years has been reported only occasionally. Mr. J. M. Eheim's statement in *Fins, Feathers and Fur*, No. 14, June, 1918, that he saw twenty of these birds near Hutchinson, McLeod County, on May 18, 1918 and that they were *common* the next day is an exceptional and unexpected record.

Dr. Hatch's account in *Notes on the Birds of Minnesota* suggests that it was fairly common and of regular occurrence in earlier times but the statement that it nested repeatedly near Minneapolis seems highly improbable as its only known

breeding ground is in the far north. It passes northward through Minnesota in the latter half of May, usually the last week, and on the return journey it may be met with any time from late in July to early in October.

The following records from the Survey files will suffice to indicate its distribution and dates of occurrence: Hvoslef wrote in 1893 that it was then "common around Lanesboro in the migrations" and that he had shot it there as early as August first (1879). Washburn saw a few individuals on the mud-flats of Mud Lake in eastern Marshall County, September 2, 1885, and Dart reported it "fairly abundant" at the same place, July 23-28, 1900. Peabody stated in 1898 that it was "by no means uncommon in the northward movement at Heron Lake" and added that it was always seen singly. Minneapolis, May 5, 1877 (Roberts) and August 25, 1892 (de la Barre). There are specimens in the museum of the Minnesota Agricultural College taken at New Ulm, October 1 and 4, 1894 (Fisher).

The Ring-neck prefers muddy flats and shores rather than the upland like some others of its kind. It breeds in the Arctics and winters from the southern United States to southern South America. It is most common along the sea coasts but is steadily disappearing of late years (Forbush).

This Plover is in general appearance like a little Killdeer but has a single black ring around the lower neck instead of two black bands across the breast as in the latter species. It is but 6.75 inches in length, while the Killdeer is 10.50. Its notes are described as a sweetly plaintive *chee-wee*.

PIPING PLOVER. Common on the Atlantic sea coast but a very rare straggler in Minnesota, there being but a single record for the state. Four adult birds of this species were seen together on July 6, 1915, by T. S. Roberts on the end of the long sandbar where the Rainy River enters the Lake of the Woods. There was no evidence that they were breeding. Anderson, in the *Birds of Iowa*, gives several records for that state, two of which are for localities close to the southern boundary of Minnesota.

The Piping Plover is pale gray or "dry sand color" above, while the Semipalmated, which it otherwise closely resembles, is dark gray or "wet sand color" above.

SURF-BIRDS AND TURNSTONES (*Aphrízidae*).

The only member of this small family that occurs in the eastern United States—the Ruddy Turnstone—is found in Minnesota as a rare, accidental wanderer from its natural home on the borders of the seas. Plover-like in general aspect, Turnstones have rather short legs, four webbed toes and an inch-long bill that is straight, hard and tapering to a sharp point. They frequent chiefly sandy beaches and bare, shelving rocky shores, and are often alone, but may be encountered in small flocks associated at times with other shore birds. They secure their food, consisting of aquatic insects, worms and small crustaceans, by adroitly turning over stones, bits of drift wood and stranded debris with their strong bills, from which habit they derive their common name. In flight they alternate rapid movements of the wings with short periods of gliding like the smaller sandpipers.

RUDDY TURNSTONE; CALICO-BACK; CHICKEN PLOVER. With a single exception, all the definite records of this bird for Minnesota are for the

Nest, Male, Eggs and Female of Virginia Rail.
—Photo by Jenness Richardson.

Coot's Nest, and Eggs, Heron Lake, Minn.
—Photo by Thos. S. Roberts.

month of May. Dr. Hatch in his first list in 1874, stated that it was "rather rare; arrives about the first of May and shortly passes on to the north to breed"; and in his *Notes*, 1892, recorded it as both a *summer* and autumn bird, but this latter account is vague and conflicting and can not be taken seriously.

The Survey files contain the following records: Four seen near Detroit, Becker County, in May, 1883, by Foster H. Bracket; a specimen, now in the state collection at Albany, New York, taken by Barker at Parker's Prairie, Otter Tail County, from a flock in the early nineties; a specimen in the Minnesota survey collection taken at Lake Minnetonka, May 24, 1888, by Albert Lano; four specimens taken from a flock in company with Sandpipers near Madison, Lac qui Parle County, on May 24, 1889, by Cantwell; "a flock of about eight—one bird secured—seen on May 24, 1895, on the margin of a stony lake about seven miles northeast of southern Heron Lake" by Peabody; a single bird seen at Leech Lake, May 24, 1903, by Currier; and a specimen in the survey collection taken at Spirit Island, Lake Mille Lacs, on June 22, 1915, by T. S. Roberts. The latter is the only definite summer record. The bird was a female, apparently living alone on the rocky islet and showing no evidence of nesting. Mr. J. M. Eheim, in *Fins, Feathers and Fur*, for June, 1918, reports seeing six of these birds near Hutchinson, McLeod County, on May 26, 1918, and that they were "*common*" the following day. If correct, this was a most exceptional occurrence. The above is all the information in regard to the Turnstone in Minnesota known to the writer.

The summer home of the Turnstone is on the coasts and islands of the Arctic and its winter abiding place from the southern United States to Brazil and Chili.

NOTE.—Fault may be found by some critical readers of this article with the quite general omission of specific references to the published sources of records given—especially in the section on shore birds. Also it may not always be clear whether the notes are from the literature or from unpublished records in the files of the Survey. The answer is that the inclusion of the large number of explanatory references required would have added greatly to the length and complexity of the text, and been of very little interest to the class of readers for whom the paper was primarily prepared. A recent publication by the author entitled, "*A Review of the Ornithology of Minnesota*," contains an annotated bibliography that will furnish a clue to practically all of the Minnesota bird literature here drawn upon. Inquiries from anyone interested in any particular matter will receive ready attention if addressed to the author at the Animal Biology Building, University of Minnesota, Minneapolis, Minn. Corrections of statements made in this paper or additional information in regard to the water birds of Minnesota will be most gratefully received, as it is desired to make the files of the Survey Museum as accurate and complete as possible.

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