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A List of the Birds Found in Marshall County, Iowa

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U.S. Department of Agriculture

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A LIST OF THE BIRDS FOUND IN MARSHALL COUNTY, IOWA.

IRA N. GABRIELSON.

During a three years' residence at Marshalltown, Marshall county, Iowa, ending September 15, 1915, the writer spent most of his spare time in a study of the avifauna of the region. Nearly all parts of the county were visited, the area within which most of the work was done being indicated on the accompanying map (figure 10).

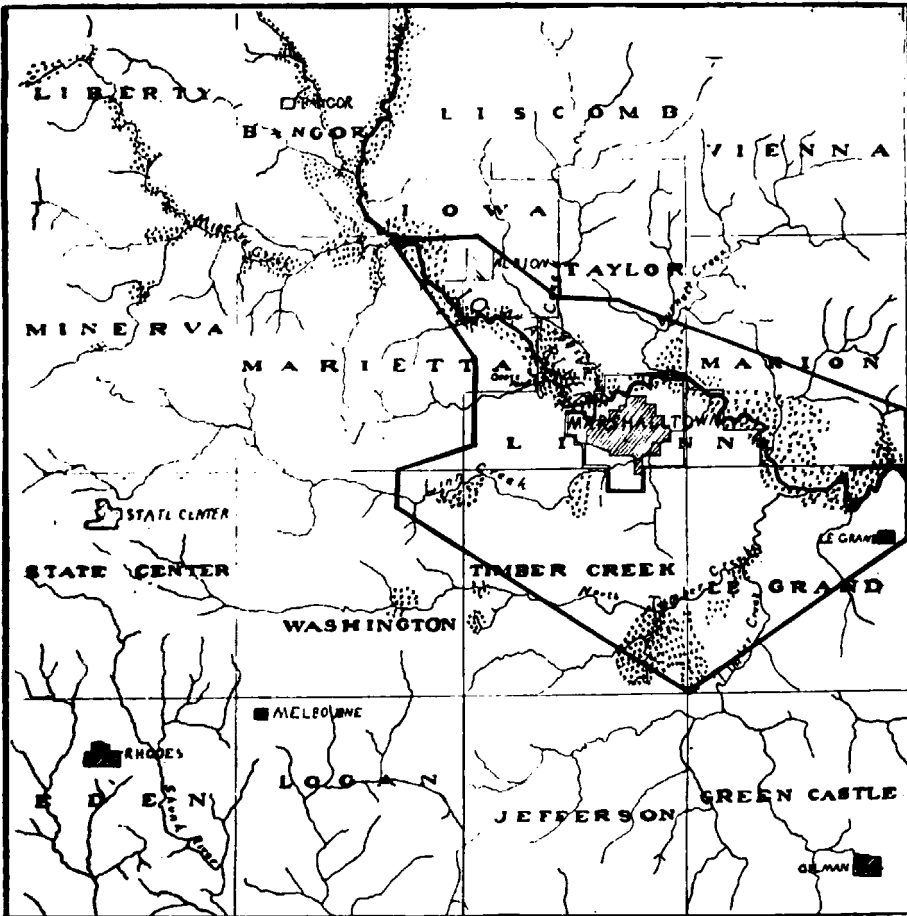


FIG. 10. Map of Marshall county, Iowa. The area inclosed by the heavy black line includes the territory within which most of the birds recorded in this paper were found.

Marshall county lies almost in the exact center of the state of Iowa. Its geology and topography have been fully described by

Beyer* and the following account is based partly on his report and partly on my own observations. As is the case with most counties of the state, it is approximately twenty-four miles square. For a description of its general topography I can do no better than quote Beyer's account, as follows:

* * * In order better to understand the more general configuration, conceive a more or less regular surface very slightly inclined to the southeast. Let there be a slight depression in the position of the Iowa river, flanked on either side with parallel

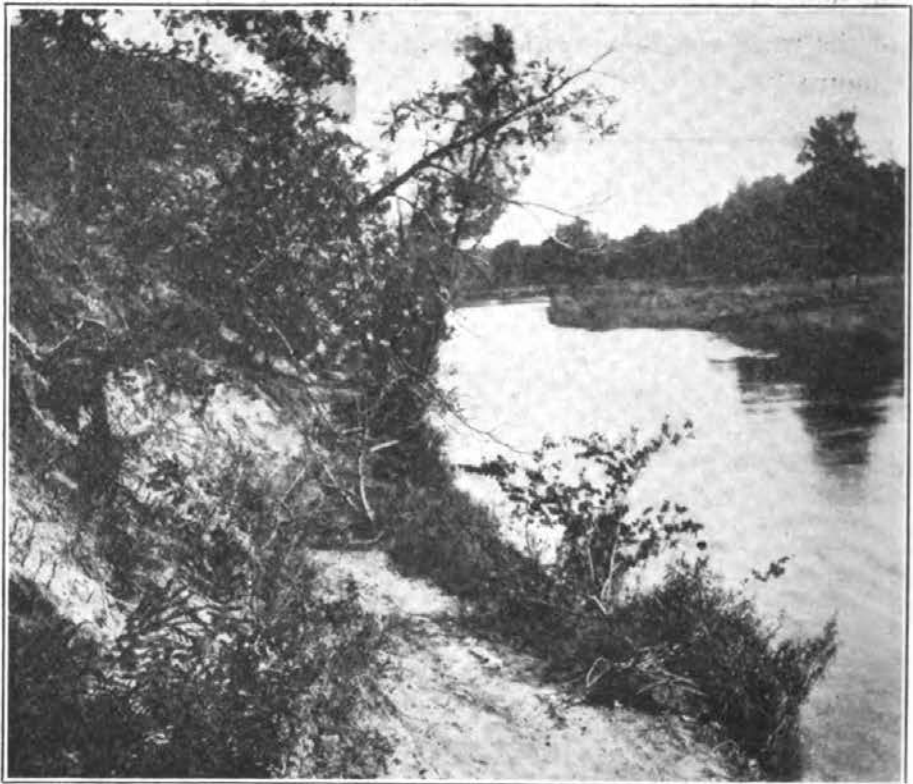


FIG. 11. Iowa river at Clay Bluffs. The open pasture in figure 13 is shown on the right.

ridges, the crest on one side bisecting Vienna township diagonally, while a line passing through State Center, Van Cleve, and Laurel marks approximately the position of the other. Spread over the surface a material which responds readily to water action, but holds with equal fidelity the vigorous carving of the spring freshet and the most delicate tracery of the summer shower; given these conditions, time and the erosive agents are the only requisites to account for the general physiography of the region.

*The Geology of Marshall County, by Samuel Walker Beyer. Annual Report for 1896 of Iowa Geological Survey, Vol. VII, pp. 199-262, with 2 maps, figs. 25-37. Pls. V-VI.

A small section of the northwestern corner of the county lies within the Wisconsin drift area. However, most of the marshes and "kettle holes" which characterize that formation have now been drained. The Iowan drift sheet extended over the northeastern corner and as its most characteristic work left scattered bowlders, some of which are of huge size. The remainder of the county is covered with a loess soil, which has eroded into rolling hills separated by narrow V-shaped valleys. The most important physiographic feature from an ornithological standpoint is Iowa river. It has a general northwest to southeast trend and serves

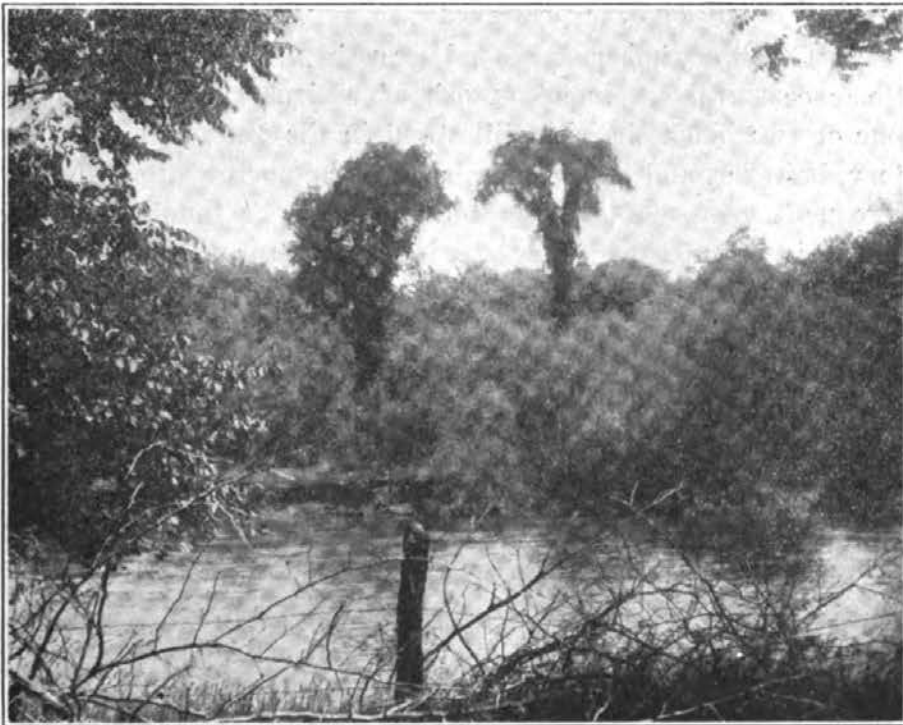


FIG. 12. Characteristic low timber of Iowa river valley. The two old elms represent the older timber growth which is now largely cut off.

as a bird-migration route to the interior of the state. The valley averages from one to two miles in width and contains more or less timber. At various places in the county cut-offs have been formed, some of which still contain permanent bodies of water, while others are filled by the spring freshets and then slowly disappear by evaporation during the summer months. The Goose Pond or Ponds, frequently mentioned in this paper, is the largest of these and lies northwest of Marshalltown. It consists of a pond or series of ponds, depending on the state of

the river, which extend for considerably more than a mile in a general north and south direction. These ponds furnish the only resort of any size in the county for waterfowl, and the mud flats exposed by the summer evaporation attract thousands of sandpipers during the fall migration.

Practically the entire county outside the flood plain of the Iowa and its tributaries* is under cultivation, and consequently little of the original prairie flora and fauna can be found undisturbed. Much of the timber and underbrush has been cleared along the streams, leaving open wooded pasture land, and consequently here, too, it is difficult to find any large area in which original conditions are preserved.

Most of the timber is second growth and not of large size. Some beautiful specimens of oak of various species, elms, and one or two black cherries still stand in the Marshalltown cemetery, however, and at various places at the north end of the city. Frequent groves of giant cottonwoods can be found along the Iowa river and some other streams. Perhaps the largest area of wild land remaining within the limits of this county is along Mormons Ridge, which lies along Iowa river, northwest of the town of Albion. It is well wooded and somewhat rugged, and this probably accounts for its present condition.

The following list of trees and shrubs, while by no means complete, contains the more common forms growing along Iowa river and tributary streams (nomenclature from Gray's New Manual of Botany, 7th edition):

Red cedar, *Juniperus virginiana* Linnaeus. Occasional on the bluffs along the river. All small.

Green brier, *Smilax rotundifolia* Linnaeus. Common in the bottom land.

Black willow, *Salix nigra* Marshall. Common.

Sandbar willow, *Salix longifolia* Muhlenberg. Common.

Salix missouriensis Bebb. (?)

White poplar, *Populus alba* Linnaeus. Occasional as an escape; common in cultivation.

Aspen, *Populus tremuloides* Michaux. Tolerably common on the hill-sides.

Cottonwood, *Populus deltoides* Marshall. Probably the dominant low-land form.

Butternut, *Juglans cinerea* Linnaeus. Common on the flood plain of Iowa river. Occasional on the upland.

Black walnut, *Juglans nigra* Linnaeus. Common with *J. cinerea*.

*For a full discussion of these tributaries see Beyer, op. cit., pp. 205-206.

Hickory, *Carya ovata* (Miller) K. Koch. Tolerably common upland form.

Pignut, *Carya glabra* (Miller) Spach. Common.

Hazelnut, *Corylus americana* Walter. Common.

Hop hornbeam, *Ostrya virginiana* (Miller) K. Koch. Common upland form.

River birch, *Betula nigra* Linnaeus. A few trees below Marshalltown along Iowa river. Other birches are frequently cultivated.

White oak, *Quercus alba* Linnaeus. Common.

Bur oak, *Quercus macrocarpa* Michaux. Most common oak.

Red oak, *Quercus rubra* Linnaeus. Common.

Scarlet oak, *Quercus coccinea* Muenchhausen. One or two trees supposed to be of this species are in the Soldiers' Home grounds.

Black oak, *Quercus velutina* Lamarck. Common.

Slippery elm, *Ulmus fulva* Michaux. Tolerably common.

Elm, *Ulmus americana* Linnaeus. Common.

Hackberry, *Celtis occidentalis* Linnaeus. Common on the lowlands.

Red mulberry, *Morus rubra* Linnaeus. Not common. An occasional native tree is found along the river.

Prickly gooseberry, *Ribes cynosbati* Linnaeus. Tolerably common.

Missouri gooseberry, *Ribes gracile* Michaux. Tolerably common.

Wild black currant, *Ribes floridum* L'Her. Not common.

Sycamore, *Platanus occidentalis* Linnaeus. Common bottomland form.

Wild crab, *Pyrus ioensis* (Wood) Bailey. Common on the Iowa river flood plains.

Hawthorne, *Crataegus* sp. Undoubtedly several forms of hawthorne are represented here. One or two dense thickets covering several acres each existed along the Iowa river and the open pastures are filled with them. These have been broken and deformed by cattle until no two are alike.

Black raspberry, *Rubus occidentalis* Linnaeus. Not common.

Dewberry, *Rubus villosus* Alton. I found it only in the high, dry openings on the oak ridges along the Iowa river. It probably occurs in similar situations along other streams.

Wild rose, *Rosa blanda* Alton. This was the common wild rose, although others undoubtedly occur.

Wild black cherry, *Prunus serotina* Ehrhart. Common.

Choke cherry, *Prunus virginiana* Linnaeus. Tolerably common.

Wild red cherry, *Prunus pennsylvanica* Linnaeus. Tolerably common in the upland timbers, particularly at Clay Bluffs.

Wild plum, *Prunus americana* Marshall. Common in small thickets in the bottom lands.

Kentucky coffee tree, *Gymnocladus dioica* Linnaeus. Common in the river bottom.

Honey locust, *Gleditsia tricanthos* Linnaeus. Common about Marshalltown along Iowa river.

False indigo, *Amorpha fruticosa* Linnaeus. Common roadside shrub.

Sumach, *Rhus glabra* Linnaeus. Common.

Poison ivy, *Rhus toxicodendron* Linnaeus. Common.

Wahoo, *Evonymus atropurpureus* Jacquin. Not common except at a few spots on Mormons Ridge.

Bittersweet, *Celastrus scandens* Linnaeus. Quite common.

Maple, *Acer saccharum* Marshall. Cultivated very commonly, especially along the streets of Marshalltown. A few found along the river may be native.

Soft, or white, maple, *Acer saccharinum* Linnaeus. One of the most common lowland trees.

Box elder, *Acer Negundo* Linnaeus. Also common along river.

Woodbine, *Psedera quinquefolia* Linnaeus. Common.

Frost grape, *Vitis vulpina* Linnaeus. This seems to be the common wild grape, although others may occur.

Red-osier dogwood, *Cornus stolonifera* Michaux. Common *Cornus*, but others probably are present.

Green ash, *Fraxinus pennsylvanica* var. *lanceolata* (Borkhausen) Sargent. Common.

Black ash, *Fraxinus nigra* Marshall. Not common.

Honeysuckle, *Lonicera dioica* Linnaeus. Not common.

Wolfberry, *Symphoricarpos occidentales* Hooker. Frequent.

Sheepberry, *Viburnum lentago* Linnaeus. Uncommon.

Elderberry, *Sambucus canadensis* Linnaeus. Common.

The timbered area is almost wholly confined to the valleys of the various streams and to the upland immediately adjacent. It is divided into two rather sharply differentiated groups: An upland form, in which oaks, hickories, ironwood, and wild cherries (particularly *P. pennsylvanica*) predominate; and the river bottom group, containing as the most conspicuous forms, willows, cottonwoods, elms, ash, maples, and hawthornes. Aside from this the country-side is dotted with groves about nearly every group of farm buildings. The trees in these groves vary greatly, but perhaps maples, willows, and the various conifers are more often planted than any others. Hedges of osage orange (*Maclura pumifera* (Raf.) Schneider) are found occasionally along the country roads. Several groves of catalpa also remain from a craze for catalpa planting which swept over the country a few years ago. They were planted as *C. speciosa* but as a matter of fact the majority of them proved to be *C. bignonioides* which winterkilled to some extent in this region.

Outside these wooded areas practically the entire surface of the county is under cultivation, the principal crops being corn, oats, and clover, although many others are cultivated to some extent. This condition of affairs has quite a marked influence

on the distribution of breeding as well as migratory birds. The more noticeable effects on breeding birds are discussed here.

The pure or almost pure stands of oak found at frequent intervals on hills along the streams contain comparatively few breeding birds. In such timber there is little or no undergrowth and birds find little shelter. The oven-bird, whip-poor-will, wood pewee and various hawks and owls frequented this woodland and where such timber had been cut off enough to allow a growth of hazel and other shrubs, the red-eyed vireo, warbling vireo, redstart, chewink, oven-bird, and yellow warbler are common. The open wooded pastures, both upland and bottom land,

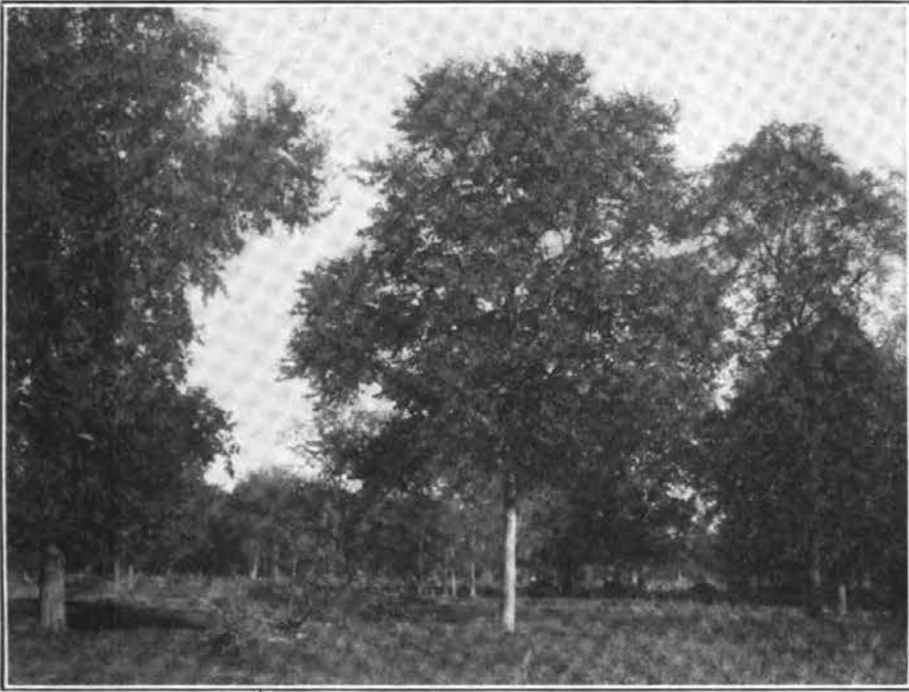


FIG. 13. Characteristic woodland pasture on the river bottom. The trees in the foreground are the Kentucky Coffee-tree. (*Gymnocladus dioica*.)

harbored the greatest variety of breeding birds, the most common being the crow, blue jay, chickadee, blue-bird, green heron, and song sparrow in the more densely wooded section; dickcissel, catbird, brown thrasher, indigo bunting, yellow-billed cuckoo, migrant shrike, and field sparrow in the shrub and open forest portions; while the open or nearly treeless pastures furnished acceptable nesting sites for the vesper sparrow, meadow lark and bobolink. The cultivated areas are not rich in breeding birds. The clover contains perhaps the greatest variety of

nesting birds, and the writer has found the field sparrow, red-winged blackbird, grasshopper sparrow, dickeissel, meadowlark, bobolink, and Maryland yellow-throat nesting in it. Dickeissels frequently build in weeds growing in oat and wheat fields, and the writer has found goldfinch nests in thistles in similar situations in other parts of Iowa. The cornfields are practically devoid of bird life, the prairie horned lark and the killdeer being the only two species which the writer has found commonly there during the nesting season.

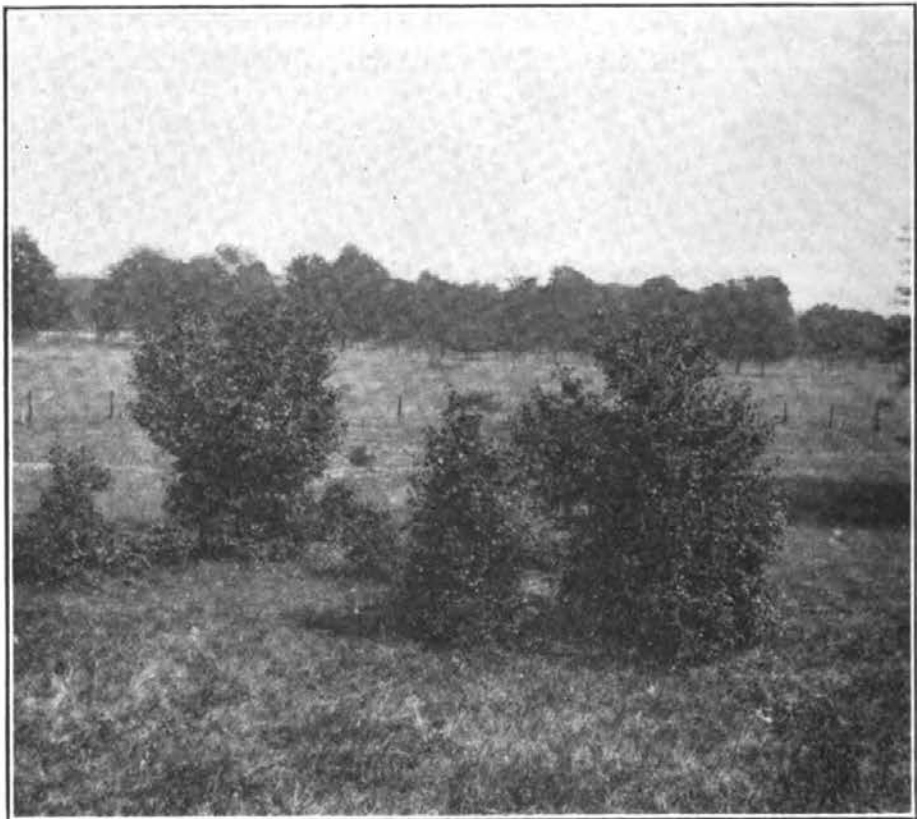


Fig. 14. Open lowland pasture with a scattered growth of Hawthorn (*Crataegus* sp.)

This leaves for consideration the towns and artificial groves, which contained the greatest concentration of bird life. The bronzed grackle was rarely found breeding except in the various groves of conifers scattered about the country. In Marshalltown the robin, Baltimore oriole, chipping sparrow, flicker, and red-headed woodpecker nested commonly in the trees and shrubs along the city streets. Every year the nighthawk nested on the roofs of buildings, although the writer never found it elsewhere.

The following birds were found to be breeding more frequently in the towns and country groves than in the natural nesting sites along the river, (Those marked with an asterisk were not found breeding in the native timber at all): *mourning dove, flicker, red-headed woodpecker, *kingbird, blue jay, *orchard oriole, *Baltimore oriole, *bronzed grackle, *chipping sparrow, rose-breasted grosbeak, yellow warbler, catbird, brown thrasher, western house wren, wood thrush and robin. Others frequenting these groves as freely as they do the native timber include the downy woodpecker, screech owl, goldfinch, cuckoos, and sparrow hawk.

It is evident that these groves have exerted in the past as they now do, an important influence on the local distribution of breeding bird population. Not even the increase of the English sparrow to a commanding position as far as numbers go seems to have any effect in driving other birds from their nesting sites. Around some farm yards these sparrows have filled with their nests every available nook about the buildings, and dozens of their unsightly structures appear in the near-by trees. Yet with them I have found large numbers of robins, mourning doves, chipping sparrows, and other birds nestling apparently undisturbed.

The only instance of actual destruction of other birds' nests by the English sparrow was one reported by Raymond Jarvis. In this case a robin's nest was entered by a sparrow which dropped out the eggs one at a time.

The absence of breeding marsh and aquatic birds was very noticeable. Only two small bits of marsh land came to my notice, although a few scattered "kettle holes" probably still exist in the northwestern part of the county. A small cat-tail swamp lying at the base of Mormons Ridge and an area near the Country Club which was marshy at some seasons furnished practically all of the breeding records for birds of this type. Of all the marsh-nesting species which are common a short distance to the north and west, the red-winged blackbird was the only common breeding species here.

MIGRATION DATA.

An area along Iowa river between the Country Club and the Marshalltown cemetery was chosen for a study of migration and as nearly as possible this area was covered each day. For two

seasons the route used was covered by the same observer at the same hour almost daily during the spring migrations, but because of press of other duties less extensively during the third season. It would seem that with all factors as nearly equal during each trip as it was possible to make them, the data secured should furnish a fairly reliable guide to the migratory movements of birds in this region. Once or twice a week trips were made over this territory and up the river to and including the Goose ponds. It was found that while more species would be seen on a single trip over the larger territory the number of new arrivals was not likely to be increased much over that obtained from the more limited area. Some interesting results were obtained from the more limited area. It was found that the number of species seen on a given day varied directly with the length of time spent in the field. On the other hand two or three hours in the early morning seemed to reveal as many new migrants as the longer trips. This probably was due entirely to local conditions. At this point the Iowa river valley is wide, but the timber fringe comparatively narrow. As it is used to the exclusion of any other migration line near Marshalltown, it follows that a careful working of two miles of this timber belt furnished almost as complete a list of the migrating forms as the more extended trip. The route followed each morning crossed and recrossed this timber and the adjacent pasture lands at frequent intervals, and to the best of my knowledge furnished a reasonably accurate list of the birds occupying the territory on that morning. On the other hand a trip covering ten miles of the river bottom offered opportunity to visit localities where other species which were known to be nesting or lingering from previous migration waves could be added to the day's list. One phase of these bird movements brought out repeatedly during the three season's observations was the tendency for a species to appear in large numbers on a certain date and after slowly decreasing for several days, suddenly to increase in numbers again. The goldfinch, a common and noisy species, well illustrates this point. These birds winter in small numbers but do not usually become common before the last of March. In 1913 they first appeared in numbers on March 31. On this date the species was marked common, on April 1 tolerably common, on April 3 several, and on April 5 and 6 three individuals were recorded

for each day. They were not recorded again until April 12 and 13 when they were common on both dates. They were then absent until April 19, when a single bird was noted. These birds became common on April 20 and are marked common until April 27, but with explanatory notes. Thus on the 23d a note says "greatly increased." That is, they were common from April 20 to 23, but their numbers increased notably on the 23d. Again they are noted "greatly increased" on May 2, a date which marked the end of the noticeable fluctuations until the breeding season begins. The data for this species in 1914 and 1915 show the same fluctuations in numbers.

Many interesting things were noted during these migration studies, full discussion of which must be reserved, however, for a future paper, but a few of the more interesting are included here.

Late August and early September of both 1913 and 1914 were marked by enormous flocks of sandpipers which were feeding on exposed mud flats around the Goose ponds. These flocks were composed principally of pectoral, least, semipalmated, solitary, and spotted sandpipers, and yellowlegs. In addition many others, including the white-rumped and Baird's sandpipers, killdeer and semipalmated plover, appeared regularly and sometimes in considerable numbers. These flocks were tame and afforded an unusual opportunity for close comparative study. As far as possible the opportunity was used and many hours were spent watching the various activities of the different species.

In 1914 the usual spring flood of Iowa river failed to materialize and the migrating ducks instead of spreading out over hundreds of acres of flooded fields were compelled to remain in the river proper. The Federal migratory-bird law prohibiting spring shooting was in force for the first season and it was very generally observed. Whether or not this had any relation to the numbers of the ducks, the fact remains that more waterfowl were seen during this season than in several previous years spent in various parts of Iowa. As these ducks were practically unmolested they became very tame and remained until long after the usual time of departure for the north. Many species remained until May 1 or later and practically all the latest spring

In 1915 the country was again alive with ducks, and while more species were present, these did not linger so late as in the previous year. Large numbers remained about a week or more and during that time became quite tame. A muddy willow-grown point projecting into the Goose ponds formed a favorable observation point. On March 31 at this place I noted the following fourteen species of ducks and geese in a few hours, all within twenty to thirty yards: mallard, gadwall, baldpate, green-winged teal, blue-winged teal, pintail, red-head, canvas-back, scaup, lesser scaup, ring-necked duck, ruddy duck, white-fronted goose, and Canada goose. This place of concealment looked out over a favorite feeding spot, and ducks of different species kept drifting in throughout the day. The numbers present varied from a few dozen to many hundreds and furnished an interesting study.

LOCALITIES.

It may be best to define the location of some of the places most frequently referred to in the following annotated list:

Mormons Ridge.—A rough, wooded ridge extending several miles north from the mouth of Minerva creek along the west bank of Iowa river.

Goose Ponds.—An abandoned channel of Iowa river which may be one or a series of ponds according to the stage of the water in the river. Northwest of Marshalltown on the west side of the river.

Cemetery.—Between Marshalltown and Iowa river.

Soldiers' Home.—Between the western part of Marshalltown and Iowa river.

City Park.—A tract of forty acres along the river just east of the cemetery.

Country Club.—On the Iowa river bottom one and one-half miles east of Marshalltown.

ANNOTATED LIST.

The annotated list following contains a total of 201 species, all but two of which are from personal records made between September 1, 1912, and September 7, 1915. A large percentage of these records is based on specimens actually collected, all of which are now in the Public Library at Marshalltown. An additional list of five species given in the hypothetical list includes those forms on which my data were not positive enough to war-

rant definite records. In addition to these the range of a number of species indicates that they should be found here, but the writer failed to discover them. Some of those which sooner or later are almost certain to be found are the loon (*Gavia immer*), Hutchin's goose (*Branta canadensis hutchinsi*), Virginia rail (*Rallus virginianus*), Henslows sparrow (*Passerherbulus henslowi henslowi*), and several species of longspurs (*Calcarius* spp.).

1. *Podilymbus podiceps*. Pied-billed Grebe. A tolerably common migrant from March 26 to May 22 and from August 22 to November 4.

A large flight of these grebes alighted on Iowa river on April 24, 1914. Over 100 were counted in a tramp of about three miles along the river. They continued unusually abundant until May 4, when ten birds were seen. In fall they were not as abundant as in spring, single birds being the rule. One bird remained on the pond in the cemetery from October 7 to November 4.

One was caught alive on the morning of April 24, 1914. It was on the ground in a large pasture and seemingly unable to rise. A specimen was collected August 27, 1913, on the Goose ponds.

2. *Larus argentatus*. Herring Gull. A rather rare migrant. On March 25, 1913, a flock of seven large gulls over the pond were rather doubtfully referred to this species. However, they were a considerable distance away and the identification was not absolutely certain. One was positively identified on March 30 of the same year and March 30, 1914, the writer secured a specimen in immature plumage at the Goose ponds. The writer has three other spring records, April 4, 1913, April 4, 1914, and March 20, 1915, and one fall record October 16, 1913, when one was seen eating a partly decayed fish.

3. *Larus delawarensis*. Ring-billed Gull. This species seemed to be more uncommon than the Herring Gull. While on several occasions there have been noted larger gulls which were supposed to be ring-billed gulls the writer has only one positive record, that of May 11, 1914, when a gull of this species in full plumage and with the black ring on the bill distinctly visible,

4. *Sterna forsteri*. Forester's Tern. A flock of ten Forester's Terns was seen over the Goose ponds on May 11, 1914. This flock and a single bird noted in the same locality May 22, 1915, constitute all the records the writer has for the county. It was probably a regular migrant which was missed because of lack of time to visit suitable localities.

5. *Hydrochelidon nigra surinamensis*. Black Tern. A common migrant from May 11 to May 25 and an uncommon fall migrant. On April 12, 1914, a flock of six were seen over Iowa river below Marshalltown, but no more were found until May 11, when forty were counted over the Goose ponds.

In the fall it was seen on August 22, 1913; July 25, 1914; August 5, 10, 19, and 22, and September 7, 1914.

6. *Phalacrocorax auritus auritus*. Double-crested Cormorant. On October 15, 1912, a cormorant of this species struck the court house tower in Marshalltown and was picked up the next morning. The bird was apparently uninjured and was kept alive for some time in the city park.

One was collected out of a flock of eighteen on May 11, 1914, and a second specimen secured out of a large flock was given to me by Mr. Henry Friese on October 14, 1914. A third was found along the shore of the Goose ponds on the same day. All three records were made in the same locality. The species was undoubtedly a regular migrant through this region.

7. *Pelecanus erythrorhynchos*. White Pelican. A migrant which rarely stopped in this locality. Mr. Henry Friese brought the writer an immature white pelican killed over the Goose ponds on September 28, 1913. The writer later learned of three others which were killed on the same day but failed to secure any of them. This bird was recorded in the Auk. (Vol. XXXI, p. 255, April, 1914).

The only other record is one of a single bird killed south of Marshalltown on May 4, 1914, and brought into the Public Library to be mounted.

8. *Mergus americanus*. Merganser. A rather rare migrant. On April 1, 1913, the writer saw the head of an adult male of this species in a farm yard, and on inquiry learned that it had been shot the day before on the Goose ponds. A pair was watched at the Goose ponds for some time on March 29, 1914.

9. *Lophodytes cucullatus*. Hooded Merganser. A tolerably common migrant from March 27 to April 24 and October 17 to November 15. It was usually found on the sluggish bayous of Iowa river and never appeared in great numbers. On April 4, 1913, Mr. R. Clay sent the writer a beautiful male to be mounted. On April 10, 1913, a male was secured by Mr. Friese and sent to the writer. Both of these specimens were taken on the Goose ponds. Three fall specimens were secured. Harold Buchwald brought one on October 29, 1913, and Mr. Friese two on October 27, 1914.

The hooded merganser was also a rare summer resident, three being flushed from a small pond on June 7, 1913.

10. *Anas platyrhynchos*. Mallard. An abundant spring and fall migrant from February 22 to May 11 and August 22 to December 13. In 1914 numbers of ducks remained until the second week in May and some mallards were in this flock. In 1913 and 1914 the first ducks of this species were noted on March 11 and 12 respectively. In 1915 the ice went out of the river February 12 and the first mallards were seen February 22. This species was usually the second duck to arrive in the spring, being preceded only by the pintail. Their favorite feeding grounds in spring were the flooded bottom land corn fields, where they picked up the waste grain. One female taken April 4, 1914, had a large handful of softened corn in the gullet and was barely able to fly. In the fall the large majority of the migrating birds were seen between October 16 and 27. The earliest fall record was a flock of twenty noted on August 22, 1913, and the latest, a single pair which remained about a little spring on the river bank until December 13, 1913. Single birds were taken on March 22 and 31, and April 4, 1914, and March 20, 1915.

The mallard was also a rare summer resident and probably bred occasionally. The following summer records are at hand: June 7, 1913, a single bird; May 25, 1914, one female; June 4, 1915, one male; and July 31, 1915, a flock of four on a small pond. Mr. Henry Friese informed the writer that he had noted these two pair of birds several times during July.

11. *Chaulelasmus streperus*. Gadwall. In the writer's experience the gadwall was an uncommon migrant and he has only the following records of its occurrence. March 25, 1913, one shot out of a small pond, and March 29, 1913, a lone female

collected; September 2, 1913, four birds were seen in a flock of blue-winged teal and one secured; a flock of six was noted April 11, 1914; three were seen September 22, 1914; a female was found in possession of a hunter at the Goose ponds October 24, 1914; a flock of ten was observed at the Goose ponds on March 29, 1915; and a pair at the same place on March 31, 1915. All of these birds were found on the Goose ponds, except the one recorded March 29, 1913, which was taken about four miles below Marshalltown on Iowa river.

12. *Mareca americana*. Baldpate. A rare migrant. On March 21, 1914, a flock of four was flushed from a small stream running into Iowa river and a fine male secured. On March 29, 1915, three were seen on the Goose ponds and four more on March 31. These are the only records of the species that the writer has for the region. Most hunters did not seem to know the duck.

13. *Nettion carolinense*. Green-winged Teal. An abundant spring migrant from March 14 to May 9. The species was unusually abundant in 1914, large numbers remaining along the river until April 11 and a few lingering until May 9. It was much less common in the fall from September 1 to October 24. March 24, 1913, Harold Buckwald brought in a female which was shot the previous day along Iowa river. A male was secured on April 4, 1914, at the Goose ponds. An injured female was found at the same place on September 1, 1913, and one was taken September 5, 1914. Three were secured on October 4, 1913,

14. *Querquedula discors*. Blue-winged Teal. The blue-winged teal was the most abundant duck of the section. In the spring migration it appeared from March 15 to May 25, although it was most common in late March and early April. In the fall migration from August 22 to November 3, it was much less common.

During the spring migration of 1914, these birds remained in numbers until May 16. As they were undisturbed they became very unsuspecting, and it was possible to walk slowly within twenty yards of a feeding flock before they flew. A few were reported by Mr. Friese to have remained throughout the summer of 1915, about the Goose ponds. Specimens were collected at various times.

15. *Spatula clypeata*. Shoveller. A tolerably common spring migrant from March 14 to May 11. This was one of the later migrants and was most common from April 25 to May 4. In the fall only scattered individuals or pairs were noted from September 5 to November 1. Mr. Clay gave the writer a female shoveller which was taken on Iowa river above Marshalltown, April 4, 1913. Others were collected May 3 and October 4, 1913.

16. *Dafila acuta*. Pintail. The pintail was the earliest and one of the most abundant spring migrants. It appeared from February 14 to April 4. In 1914 a few individuals remained until May 11 when a single bird was noted. This duck regularly arrived immediately after the breaking up of ice in the river. A heavy freshet on February 12, 1915, drove the ice out of the river and two days later the first pintails arrived. They were seen until February 27 when cold weather set in, and they were not noted again until March 28, when they appeared in great numbers. They were common until April 1, and no more were seen after that date. This was about two weeks later than the height of the migration in 1913 and 1914. The writer has no fall records for this region. Pintails were taken March 15, 1913, and March 21, 1914.

17. *Aix sponsa*. Wood Duck. The writer's only record is of a flock of six seen September 5, 1915, at the Goose ponds. He walked up behind a clump of willows within twenty yards of this flock and watched them for some time before they flew. This duck undoubtedly nested in the county in the past and Mr. Metcalf of Albion stated that he frequently saw them below Tama on Iowa river.

18. *Marila americana*. Redhead. On March 21, 1914, three redheads were flushed from Iowa river and one was wing-tipped. This bird fell on the opposite bank of the river, ran off into the weeds and was lost. On March 29, 1915, a flock of thirty redheads was observed on the Goose ponds, and later in the day four were seen with a flock of scaups. On March 31, two more were noted on the ponds. These are the only records the writer has for the region. It was probably a regular and not uncommon migrant in the spring.

19. *Marila valisineria*. Canvas-back. This duck was reported occasionally by hunters, but the writer's only record is

of a flock of six noted on the Goose ponds March 31, 1915. It was probably a more or less regular migrant through the county but did not appear in any numbers.

20. *Marila marila*. Scaup Duck. The writer has only spring records for this duck and few of them, although it undoubtedly occurred more frequently than these records show. One male was collected April 4, 1914, on the Goose ponds and a number were observed there on March 29 and 31, 1915. Except under favorable conditions it is not easy to distinguish this duck from the lesser scaup, and as a consequence this bird probably escaped notice many times.

21. *Marila affinis*. Lesser Scaup. The lesser scaup was found commonly as a spring migrant from March 13 to May 11. In the fall it appeared in smaller numbers from October 22 to November 14. On March 13, 1913, a female was secured from the roof of the Court House in Marshalltown. This bird had struck the tower the previous night and had been killed. Two others were collected on the Goose ponds April 19, 1913. As a spring migrant the lesser scaup was most abundant during the last week in March.

22. *Marila collaris*. Ring-necked Duck. The ring-necked duck or "Black Jack" was a regular spring migrant, but did not appear in any numbers except in 1915, when it was common from March 27 to March 31. The earliest date for the spring migration was March 21, 1913, when several were secured by hunters, and the latest was May 1, 1914, when a single male was seen on the river near the Country Club.

On April 25, 1915, a male was observed on the Goose ponds. When this bird saw the writer it submerged and swam with only the bill and eyes visible until out of gunshot when it rose from the water and flew away. My only fall records are of a pair which were seen on the Cemetery pond October 23, 1913, and a single bird seen October 31 in the same place. A female was secured March 31, 1914, and a pair March 31, 1915. All three were taken on the Goose ponds.

23. *Clangula clangula americana*. Golden-eye. The only record for this species is of seven birds secured out of a flock by hunters on December 6, 1913.

24. *Charitonetta albicollis*. Bufflehead. A male bufflehead was noted on the river near the Country Club on March 31, 1913.

A crippled bird (female) was found just above the Soldiers' Home on May 9, 1914. These are the only records the writer has for the species in this territory. It was probably a fairly regular migrant.

25. *Erismatura jamaicensis*. Ruddy Duck. The ruddy duck was noted only twice, both times in the spring. On May 2, 1914, a pair were seen swimming about in the Goose ponds and on March 31, 1915, another pair were seen at close range in the same pond. It was probably not an uncommon duck.

26. *Chen hyperboreus hyperboreus*. Snow Goose. A large flock of snow geese probably of this subspecies were noted in a pasture near the Goose ponds on March 15, 1913, but none were secured. Very few geese alighted in this territory unless forced to do so by stormy weather and no other snow geese were seen.

27. *Anser albifrons gambeli*. White-fronted Goose. A flock of about twenty-five of these geese were noted in the lower end of the Goose ponds on March 30, 1913. A convenient dike allowed approach within sixty yards to watch them for some time through the glasses. On March 31, 1915, three were seen in

28. *Branta canadensis canadensis*. Canada Goose. The Canada goose was a common spring migrant from March 7 to April 4. It was also common in the fall from October 12 to December 1. Most of them passed high over head without stopping, but occasionally they were driven down in numbers by unfavorable weather.

Although *B. c. hutchinsii* undoubtedly occurs, the writer never handled specimens. Two killed by Mr. Henry Friese October 12, 1913, and presented to the writer were typical *canadensis*.

A terrific wind and rainstorm the night of March 23, 1913, drove great numbers of these geese to the ground. They were heard passing back and forth over town and the next morning they were found to be common over the entire river bottom. By eight o'clock they had all disappeared.

In the spring of 1915 a flock of about twenty birds remained in a large corn field for nearly two weeks. They wandered about the field feeding on waste corn and left a perfect network of tracks, in the mud and snow. The little knoll where they roosted at night was covered with dung and feathers and gave

the impression of a great number of birds. This flock was last seen on March 31.

29. *Botaurus lentiginosus*. Bittern. A tolerably common migrant from April 5 to May 19. Less common migrant from August 27 to October 24.

A rare summer resident. A pair was seen about a small pond near Mormons Ridge through June and July of 1915, and undoubtedly nested. This species would be more plentiful if it were not used as a target by many gunners. Lack of suitable nesting sites also prevented its breeding in any numbers.

30. *Ixobrychus exilis*. Least Bittern. The least bittern was a rare migrant and also a rare breeding species. Two birds seen at the Goose pond on May 22, 1915, were the only migrating birds to come under observation.

On June 28, 1915, a nest was found in a small swamp near Mormons Ridge. At this time it contained four eggs. When the nest was again visited on July 23, it contained four downy young which were not over four or five days old.

31. *Ardea herodias herodias*. Great Blue Heron. A common spring migrant from March 28 to May 12. Much more common in the fall from July 25 to November 22. A male secured November 8, 1913, along Iowa river had his feet frost bitten but was otherwise in good condition. On April 8, 1913, Mr. Henry Friese brought in a male in fine plumage which had been shot at the Goose ponds. These herons became quite numerous during August and as they were unmolested got tame and unsuspecting. After September 1 they became rare as those which were not killed left the territory after the opening of the hunting season.

32. *Butorides virescens virescens*. Green Heron. A very common summer resident from April 24 to September 26. A single belated individual was found November 6, 1914, on Minerva creek. A female was seen flying from a nest in a tall elm on June 28, 1915, at Mormons Ridge. No attempt was made to reach this nest but one egg could be seen with the aid of the glasses.

33. *Nycticorax nycticorax naevius*. Black-crowned Night Heron. The black-crowned night heron was an uncommon spring migrant from May 3 to May 29 and a common fall migrant from July 27 to October 3. A single immature bird was taken on No-

vember 3, 1913, along Iowa river. During the first two weeks in September of 1913 and 1914 a small flock of these birds formed a roost in a clump of trees between the Goose ponds and Iowa river. They remained until September 12, 1913, and to September 22, 1914.

34. *Grus mexicana*. Sandhill Crane. According to the older hunters this bird was formerly common in this region. It is now rare and the only definite record that the writer has is of a flock of thirty-five seen April 1, 1913.

35. *Rallus elegans*. King Rail. Owing to the scarcity of suitable nesting sites this bird was a rare summer resident. An adult followed by a single downy young crossed the road in front of the writer near Mormons Ridge on July 13, 1915. A hunter told of seeing an adult and young in a bit of swampy land near the Country Club on July 25, 1915. On July 27 this spot was visited and an adult and eight downy young were found. These are the only records the writer has for the county.

36. *Porzana carolina*. Sora Rail. The sora is tolerably common as a spring migrant from May 3 to May 24. On May 22, 1915, ten birds were seen, which was the greatest number observed on one day. One was collected on May 17, 1913, at the Goose ponds and one was brought in which had been picked up along Linn creek on May 12. In the fall it was seen twice, a single bird September 18, 1914, and three September 22, 1914.

37. *Gallinula galeata*. Florida Gallinule. A rare migrant in both spring and fall. One was collected out of a flock of coots on May 4, 1914, at the Goose ponds. One was seen in the same place October 17, 1914. This bird probably occurred more frequently, but escaped notice.

38. *Fulica americana*. Coot. A common spring migrant from March 25 to May 24 and less common in the fall from September 22 to November 1. Coots were regularly shot by gunners and left lying along the banks of the river. Consequently they were seldom seen in any numbers except in 1914, when flocks of from ten to fifty were seen between April 11 and May 16. One taken October 12, 1913, is in the collection.

39. *Steganopus tricolor*. Wilson Phalarope. A pair was noted feeding on the mud flats at the Goose ponds May 2, 1914, and the male was collected. They were feeding in company with

a flock of yellowlegs when found. This is the writer's only record for the county.

40. *Gallinago delicata*. Wilson's Snipe. The Wilson Snipe or "Jack Snipe" was tolerably common in spring from April 15 to May 4 and a much more common migrant in fall from September 26 to November 18. A single bird remained about the sewer outlet at Marshalltown until November 18, 1913. One taken November 7, 1913, is in the collection.

41. *Macrorhamphus griseus griseus*. Dowitcher. A rare spring and fall migrant. One was secured from among a flock of sandpipers on August 10, 1914, and two others were seen on May 22, 1915. On both occasions the birds were found in a small swampy spot near the Goose ponds.

42. *Pisobia maculata*. Pectoral Sandpiper. This was the most common sandpiper of the region in both spring and fall migrations though far more abundant during the latter season. The spring migration extended from April 4 to May 22, and the fall from July 8 to November 18. The waters in the Goose ponds became low during July and August and great flocks of sandpipers fed over the mud flats thus exposed during the latter month. Though the fall migration was extended over a long period by straggling individuals or small flocks the sandpipers were most abundant from about August 10 to September 7. Some notes on this and succeeding species were published in the Wilson Bulletin, Vol. XXVI, p. 45.

43. *Pisobia fuscicollis*. White-rumped Sandpiper. Only two records are at hand for this species in spring; namely, May 4 and 8, 1914. Two birds were seen on each occasion. In the fall it was noted regularly from August 19 to 27, but between those dates was very common. One taken on August 19, 1914, was too badly shot to make a skin. A single straggler was collected November 7, 1913, at the Goose ponds. It was so fat that the skin broke open on the breast when it fell. This bird was recorded in the Wilson Bulletin, Vol. XXVI, p. 45.

44. *Pisobia bairdi*. Baird's Sandpiper. Noted as a spring migrant only in 1914 when a few were seen on several dates from April 25 to May 11. In the fall they were a tolerably common migrant from August 15 to September 7. They could readily be picked out in the great mixed flocks of sandpipers that fre-

quented the mud flats of the Goose ponds. One was taken September 7, 1914. For 1913 records see Wilson Bul. Vol. XXVI, p. 45.

45. *Pisobia minutilla*. Least Sandpiper. A common spring migrant from April 25 to May 22 and abundant in fall migration from July 8 to October 12. Next to the pectoral this species was the most numerous sandpiper, in the fall flocks. They were so common and tame that it was difficult to collect shore birds without getting them. They were most abundant during August and early September.

46. *Pelidna alpina sakhalina*. Red-backed Sandpiper. On October 6, 1913, after the bulk of the sandpipers had departed, four of this species were found feeding on the deserted mud flats around the ponds. One was taken at this time. On the 10th on again visiting the ponds the writer was surprised to find a flock of fifty-two in one place and eight in another. These flocks were very tame and allowed a close approach and were actually counted. Four specimens were taken from this flock. These birds have been recorded in Wilson Bul., Vol. XXVI, page 45.

47. *Ereunetes pusillus*. Semipalmated Sandpiper. The semipalmated sandpiper was observed in spring from May 4 to 8, 1914. In the fall it was common from August 3 to September 7 and a single belated bird was seen October 12, 1913. (Wilson Bul., Vol. XXVI, p. 45.)

48. *Totanus melanoleucus*. Greater Yellowlegs. The writer has only three records of the greater yellowlegs in Marshall county. A single bird was taken at the sewer outlet on April 23, 1913. Another bird was seen but not taken on the Goose ponds on October 6, 1913, (Wilson Bul., Vol. XXVI, p. 45), and a third seen near the same place August 10, 1914.

49. *Totanus flavipes*. Yellowlegs. A common migrant from April 11 to May 24 and abundant in the fall from August 3 to September 20. On October 20, 1913, one of this species was secured and another was seen on November 1. (Wilson Bul., Vol. XXVI, p. 45.) These two latter were probably late stragglers as no others had been seen later than September 20.

50. *Helodromas solitarius solitarius*. Solitary Sandpiper. A very common migrant from April 23 to May 31 and July 8 to October 7. (Wilson Bul., Vol. XXVI, p. 45.) The solitary sandpiper did not frequent the mud flats as constantly as the other sandpipers but was more often found along Iowa river and the smaller streams.

51. *Catoptrophorus semipalmatus inornatus*. Western Willet. A rare migrant, the only record being a bird secured at the Goose ponds on May 2, 1914. This bird was sent to Mr. H. C. Oberholser who identified it as the western form.

52. *Bartramia longicauda*. Upland Plover. The only two spring records that the writer has for this species are of single birds seen on June 7, 1913, and May 2, 1914. In the fall it was not an uncommon migrant from July 27 to September 1. These fall birds fed by preference on cut over clover or alfalfa lands, a fact which was accidentally discovered. The birds were wild and shy while in this locality which was in decided contrast to their rather unsuspecting ways in northwestern Iowa where they bred in considerable numbers a few years ago.

53. *Actites macularia*. Spotted Sandpiper. A very abundant migrant from April 23 to May 24 and from August 10 to October 8. (Wilson Bul., Vol. XXVI, p. 45.) Also a common summer resident and breeding species. Young birds partly grown were common along the river in July. The only nest of this species found was one reported by a grade school boy on June 2, 1914. This nest containing four eggs was destroyed by a sudden freshet in the river on June 8. A pair with three downy young were seen on July 8, 1914.

54. *Charadrius dominicus dominicus*. Golden Plover. A rare fall migrant. A female was taken on October 4, 1913. The bird was alone feeding on a mud flat and took wing at my approach. As it flew it was seen to be a new form and it was collected. (Auk. XXVI, p. 255, April, 1914.) A hunter stated that the day before he had taken four out of a flock of five at that point and this one may have been the survivor. A flock of twenty-five was noted on October 3, 1914, in almost the same place. This flock was feeding in the wheat stubble and was

55. *Oxyechus vociferus*. Killdeer. A common summer resident from March 14 to November 1. In the spring migration numbers of killdeer passed through this locality until about May 1, after which date only the breeding birds remained. Small flocks probably of breeding birds began to appear in late July. Gradually the flocks grew larger, the maximum number being present during the first ten days in October.

A pair with four downy young were seen along the Goose ponds on July 8, 1914. In June of 1915 Mr. Henry Friese sent two young killdeers just a few hours old which he had captured in his corn field.

56. *Aegialites semipalmata*. Semipalmated Plover. An uncommon migrant. One out of a flock of nine was taken September 1, 1913, while they were feeding on an extensive mud flat. It was also recorded on August 22 and 27 and September 20 of that fall. In the spring of 1914 two were noted along the shores of a small pond on May 3. These remained until the 8th when they were joined by another, and the three were last noted on May 10. Between August 10 and 22 from one to three birds were noted at the Goose ponds on various dates. The species was not found at all in 1915.

57. *Colinus virginianus virginianus*. Bob White. This species was local. On several farms that were visited where the birds were carefully protected small coveys could always be found but outside of these places the records are few. Three downy young were seen June 14, 1915, but no nests were found. Further down Iowa river it is reported to be more common.

58. *Tympanuchus americanus americanus*. Prairie Chicken. An uncommon permanent resident. Their numbers were somewhat increased during the winter by birds from farther north but in nearly three years of field work in this region the writer saw only seven flocks of these birds. The largest of these contained twenty-five birds and the smallest three. A nest was reported from north of Marshalltown in 1914, but by the time the place was visited the birds had either hatched or the eggs had been destroyed. It undoubtedly bred in small numbers throughout the country.

59. *Zenaidura macroura carolinensis*. Mourning Dove. An abundant migrant and summer resident from April 2 to Octo-

ber 10 and a rare winter resident. In the fall of 1912 three mourning doves remained about an open pasture until December 4. A bird reported by Mr. Henry Friese spent the winter of 1914-1915 about the barn yard of his place (the writer saw the bird February 21).

The mourning dove nested commonly throughout the region under discussion. The favored site seemed to be in the coniferous trees or fruit trees about farm buildings. On May 30, 1915, twelve nests containing eggs or young were found in a small grove of spruce containing possibly a hundred trees. On June 4, 1915, fourteen occupied nests were found in another little grove of conifers less than two miles distant from the one visited on May 30. Little attention was paid to the nesting of this species except in 1915. The earliest date noted on which eggs were found was May 23, 1915. The eggs hatched May 30. The latest date is July 16, 1915, when a nest containing two eggs was found. One nest discovered June 5, 1915, contained one egg. The second one was laid on June 6 and the eggs hatched on June 21. This gives an incubation period of fifteen days.

Most of the nests seen in this locality were of the usual type—that is flimsy, loosely woven platforms built in conifers, fruit trees, etc. Three unusual ones were noted. A nest found on June 6, 1913, was built in the hand of a stone figure on a monument in the Marshalltown cemetery. A very few sticks had been placed in the hand before the eggs were laid. This nest was about ten feet from the ground. Two pairs found in 1915 (May 30 and June 4) were using old robins' nests.

60. *Cathartes aura septentrionalis*. Turkey Vulture On October 4, 1913, the writer collected a juvenal female turkey buzzard at Clay Bluffs. (Auk, Vol. XXVI, p. 255, April, 1914.) The bird was resting on a willow stub near the water's edge and took wing as we approached. Another bird was seen the same day and again on October 12. On May 12, 1915, Mr. Charles Metcalf reported that he had found a nest (two eggs) of this species in a hollow stump near Mormons Ridge. June 24 the writer visited this nest with him and found a single downy young. The nest was visited at intervals till July 14 at which time the nestling was nearly full grown. The wing quills were developing rapidly and the body feathers were beginning to show through the down. A number of unsuccessful efforts were

made to watch the bird from a blind. A regular umbrella blind was used and when this failed a nearby pile of cord wood was converted into a hiding place with no better success.

61. *Circus hudsonicus*. Marsh Hawk. The marsh hawk was recorded every month in the year except January but was most common as a migrant in March and October. A single male secured by Hartley Vogt November 7, 1913, is the only one from this region in the collection. It is an uncommon summer resident and breeding species. During July of 1915, Mr. Friese found a nest of this species containing young.

62. *Accipiter velox*. Sharp-shinned Hawk. Hawks of all kinds were comparatively uncommon in this region, owing to the prevailing custom among the gunners of shooting every one that comes within range. The sharp-shin was found as a spring migrant from April 27 to May 22 and in fall from September 12 to October 21. Three specimens were taken as follows: An adult female, April 27, 1913; a male, October 12, 1913; and a female, September 12, 1914.

63. *Accipiter cooperi*. Cooper's Hawk. Recorded from April 3 to November 15 but never abundant. This species occasionally bred, as several eggs of "hen hawks" in the collections of boys in Marshalltown belonged to it. A young bird evidently not long out of the nest was seen at Mormons Ridge on July 1, 1915. One pair started to build in a tall willow along Iowa river in April, 1914, but disappeared before completing the nest.

64. *Buteo borealis krideri*. Red-tailed Hawk. Except the sparrow hawk, the red-tail was the most common hawk of the region. It was found in all months except January, being most abundant as a migrant in March and April and October and November. On April 29, 1914, a pair were noted about a nest in a tall cottonwood but they disappeared in a few days. A pair nested in 1914 in a little clump of giant cottonwoods on Iowa river about five miles above Marshalltown. No details as to this nest were secured. Mr. Friese gave the writer an immature red-tail which was shot October 19, 1913, just after it had boldly killed a chicken in his yard. A second specimen was secured on October 25, 1913. Mr. H. C. Oberholser has identified these two specimens as *B. b. krideri*.

65. *Buteo lineatus lineatus*. Red-shouldered Hawk. On October 25, 1913, an immature bird of this species was secured from a dense patch of timber along Iowa river. It is the only record of this hawk for the county. (Auk, Vol. XXXI, p. 255, April, 1914.)

66. *Buteo platypterus*. Broad-winged Hawk. A tolerably common migrant from April 1 to May 22 and August 21 to September 30. A single straggler was noted November 27, 1914. More broad-wings are shot by gunners than any of the other *Buteos* because of their habit of allowing a person to walk within easy gunshot before taking wing.

67. *Haliaeetus leucocephalus leucocephalus*. Bald Eagle. Harold Merryman brought in an adult male bald eagle on May 13, 1913. The bird had been killed with a twenty-two caliber rifle the previous day. It was found in an open pasture six or seven miles north of Marshalltown.

68. *Falco columbarius columbarius*. Pigeon Hawk. One noted September 21, 1913, by Mr. Howard Graham and the writer. We were looking at a flock of mourning doves sitting on a telephone wire when our attention was drawn to a bird much nearer to us. At first it was taken for another dove, but when the glasses were turned on it, it proved to be a hawk of this species. We walked slowly to within twenty feet of it and walked all around it. The bird paid little attention to us but made a dash at a mourning dove which flew by. It chased the dove around a little willow thicket and then started after another one which flew by, both birds passing quickly out of sight among the trees.

69. *Falco sparverius sparverius*. Sparrow Hawk. This was the most common hawk of the county. It was a common spring migrant and uncommon summer resident from March 15 to October 12. It was found in the greatest numbers in March, April and September. An adult male was taken September 12, 1913.

It was occasionally noted during the summer and on July 13, 1915, an adult female was seen accompanied by a barely fledged young bird. They were sitting on fence posts along a country road north of Albion. A nest was reported in 1914, but could not be visited until it was too late.

70. *Pandion haliaetus carolinensis*. Osprey. The Osprey was a rare migrant through Marshall county. The only spring record is of one seen April 29, 1914. It is rather more common in the fall and the writer has four records as follows: September 19, 1913, two were noted along Iowa river and one was taken (Auk, Vol. XXXI, p. 255, April, 1914). Another was seen September 26, 1913, and single birds were noted September 5 and 18, 1914.

71. *Asio wilsonianus*. Long-eared Owl. An uncommon breeding species. On April 3, 1913, four of these birds were found roosting in a small hawthorne tree overgrown by grape vines. About 226 pellets were collected under this tree. These have been examined by the Biological Survey and the following mammals and birds have been identified from them:

- 4 Song Sparrows (*Melospiza melodia*);
- 1 Robin (*Planesticus migratorius*);
- 1 Least Shrew (*Cryptotis parva*);
- 5 Short tailed Shrews (*Blarina brevicauda*);
- 3 House Mice (*Mus musculus*);
- 89 White footed Mice (*Peromyscus e. noveboracensis*);
- 70 Meadow Mice (*Microtus pennsylvanicus*);
- 18 Meadow Mice (*Microtus ochrogaster*).

On May 10, 1913, a nest of this species containing four eggs was found near the roost tree. The nest was about twenty feet from the ground in a vine covered tree. It was visited on May 12, 17, 24, 30, 31 and June 7, for the purpose of photographing the young. The parent birds invariably went through the same performance while the writer was about. The one on the nest remained until I actually started to climb the tree. Then it would swoop down at me, swerve to one side and land on a branch about thirty feet from the nest. This bird then commenced to make a curious moaning sound, roll its eyes and snap the mandibles together. About this time the other parent would appear on the scene and a duet of these sounds, interspersed with two other notes which might be described as a hoarsely uttered "wah-wah-wah—" and "wuk, wuk, wuk." followed. The feathers were ruffled, the wings partly spread and occasionally they made short flights from one tree to another while this concert was going on. On May 17 one young one and two eggs were found with the first egg having disappeared. A meadow

mouse (*Microtus sp.*) was found in the nest. On May 24, there were three young. The oldest one had grown considerably and was beginning to show traces of pin feathers. A second *Microtus* was found on this visit. On May 30 the oldest one had distinct feathers on the wings and showed faint black bars on the breast. On the last visit, on June 7, the oldest bird was found on a branch beside the nest. The wing quills were about two inches long. The others were in about the same state of development as this bird was on May 30. The difference in the size of these birds would seem to indicate that the parents begin incubation as soon as the first egg is laid.

Outside of this nesting pair and the four found roosting there are only two records. These were of single birds seen on August 27, 1913, and March 14, 1914.

72. *Asio flammeus*. Short-eared Owl. A regular winter visitor from October 7 to March 21. There is only one summer record for the county though it breeds regularly a little farther north. On August 19, 1914, a single bird of this species was seen near the Goose ponds. On August 21 one (presumably the same bird) was collected at this place.

73. *Strix varia varia*. Barred Owl. On November 15, 1913, Mr. Howard Graham and the writer were attracted by the noise made by a large flock of crows and found an owl of this species surrounded by them. We followed the bird for some time but finally lost it when it crossed the river. This is the writer's only record for the county.

74. *Otus asio asio*. Screech Owl. A common permanent resident and the most abundant owl of the county. On June 6, 1913, a nest of this species was found containing two young just able to fly. July 20, 1915, while walking along the street in Marshalltown about 8:00 p. m. the writer was viciously attacked by a screech owl. Investigation disclosed two barely fledged young in the tree under which he was passing. People who resided in the neighborhood said that these owls had made a regular practice of flying at people in the evening or even clutching at their hats as they did at mine.

75. *Bubo virginianus virginianus*. Great Horned Owl. On the evening of June 25, 1915, a great horned owl alighted in the top of a hickory tree, 100 yds. in front of a camp at Mormons Ridge

and proceeded to give a serenade. He was heard again on June 29 and July 1. This is the only bird of this species which the writer saw in the region.

76. *Nyctea nyctea*. Snowy Owl. This species was an irregular winter visitor. The writer saw no living birds during his stay, but was informed by Mr. Charles Metcalf that several had been seen during the month of January, 1914. There are a number of mounted specimens in the public library of Marshalltown without labels, but doubtless these are local birds.

The remainder of this paper will appear in Volume XXVI of these Proceedings.

U. S. DEPARTMENT OF AGRICULTURE
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