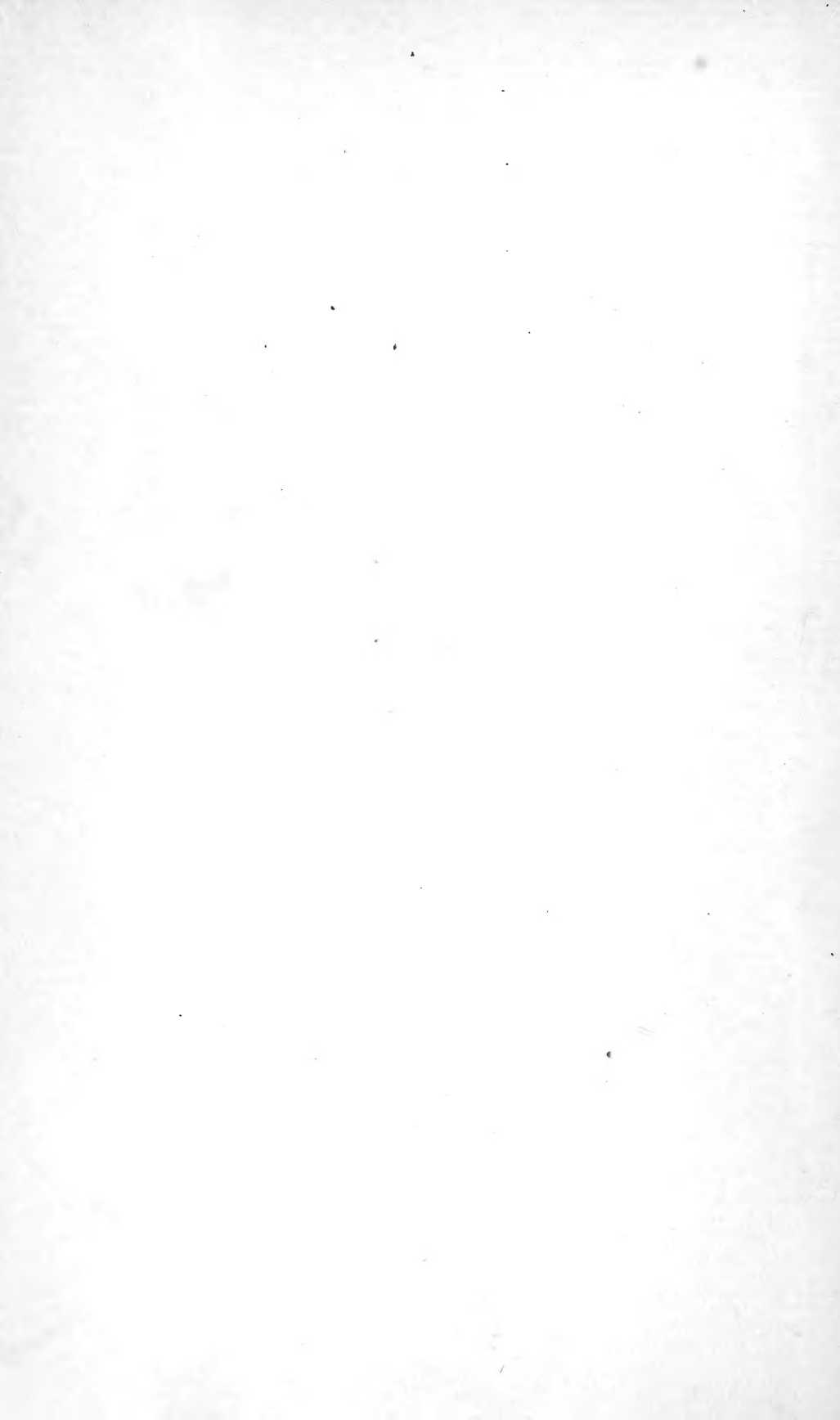
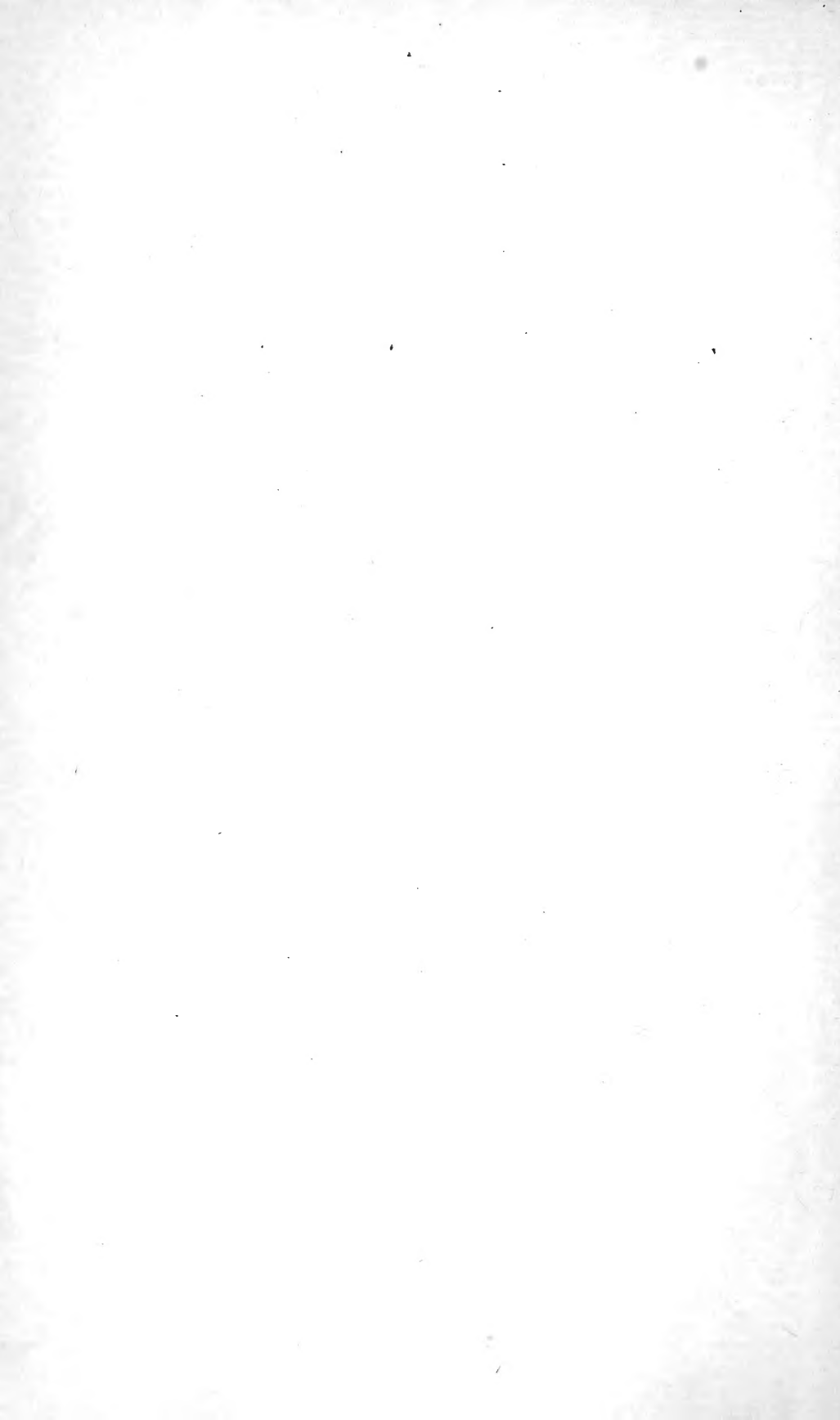


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ALEXANDER WILSON
THE FATHER OF AMERICAN ORNITHOLOGY.

From a drawing in the possession of the Academy of Natural Sciences of Philadelphia,
formerly the property of George Ord.

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BIRDS

THE
BIRDS OF EASTERN PENNSYLVANIA
AND
NEW JERSEY

WITH INTRODUCTORY CHAPTERS ON
GEOGRAPHICAL DISTRIBUTION AND MIGRATION

PREPARED UNDER THE DIRECTION OF THE
DELAWARE VALLEY ORNITHOLOGICAL CLUB

BY
WITMER STONE
Conservator Ornithological Section Academy of Natural Sciences of Philadelphia

PHILADELPHIA
DELAWARE VALLEY ORNITHOLOGICAL CLUB
1894



Soon after the organization of the Delaware Valley Ornithological Club in 1890, steps were taken to compile from the field notes of the members a list of the birds known by them to occur in the vicinity of Philadelphia, to serve as a nucleus for a future publication.

At a meeting of the Club held on February 2, 1892, a committee of three was appointed to take the matter in hand and to prepare a work, which should embody in a compact form, all the important results of the Club's ornithological investigations, in connection with a correct list of the birds to be found in the Delaware Valley and along the New Jersey seacoast.

The Committee entered immediately upon its duties, and it was agreed that the preparation and editing of the work should be entrusted to Mr. Stone, he having already collected a large amount of data, while the other members should confer with him and examine and revise the manuscript as the work progressed.

The Committee issued two circulars to ornithologists and sportsmen, calling for information, and received a large number of replies. From time to time it reported progress to the Club, delaying a final report, with the object of obtaining as much information as possible upon the work in hand.

At a meeting of the Club held May 17, 1894, the final report was submitted, and the committee was continued with full authority to proceed with the publication of the work, which is herewith presented.

GEORGE SPENCER MORRIS, }
SAMUEL N. RHOADS, } Committee.
WITMER STONE. }

PHILADELPHIA, *November 1, 1894.*

PREFACE.

THE object of the present publication is to provide the members of the Delaware Valley Ornithological Club, as well as other ornithologists of Eastern Pennsylvania and New Jersey, with a summary of our present knowledge of the birds of this district with regard to their abundance, distribution and time of occurrence; as well as to furnish a work of reference for ornithologists in general on the birds of these States.

No attempt is made to describe birds nor to treat of their habits, these matters being fully considered in the more general works on North American Ornithology to which the present volume should be considered supplementary—treating only of the status of the various species of birds as members of the Fauna of Eastern Pennsylvania and New Jersey.

We have endeavored to make the work as complete as possible, and besides presenting a large amount of hitherto unpublished matter, have brought together in one volume all the more important information contained in the various published lists and scattered notes on the birds of this district.

Recognizing the importance of a knowledge of the subjects of geographical distribution and migration of birds to the ornithologist of to-day and the increased value which attaches to his observations from the possession of such a knowledge, we have prepared a brief general outline of these subjects and a more detailed treatment of them with reference to the region under consideration. These chapters will, we hope, prove of value in turning the attention of beginners in the study of our birds, to these important lines of investigation.

In compiling the main portion of the work, the author has to express his thanks to the members of the Delaware Valley Ornithological Club for their valuable assistance in placing their notes and collections at his disposal; and especially is he indebted to Messrs. George S. Morris and Samuel N. Rhoads, his fellow-members of the

Committee on Publication, who have continually aided him with their assistance and advice.

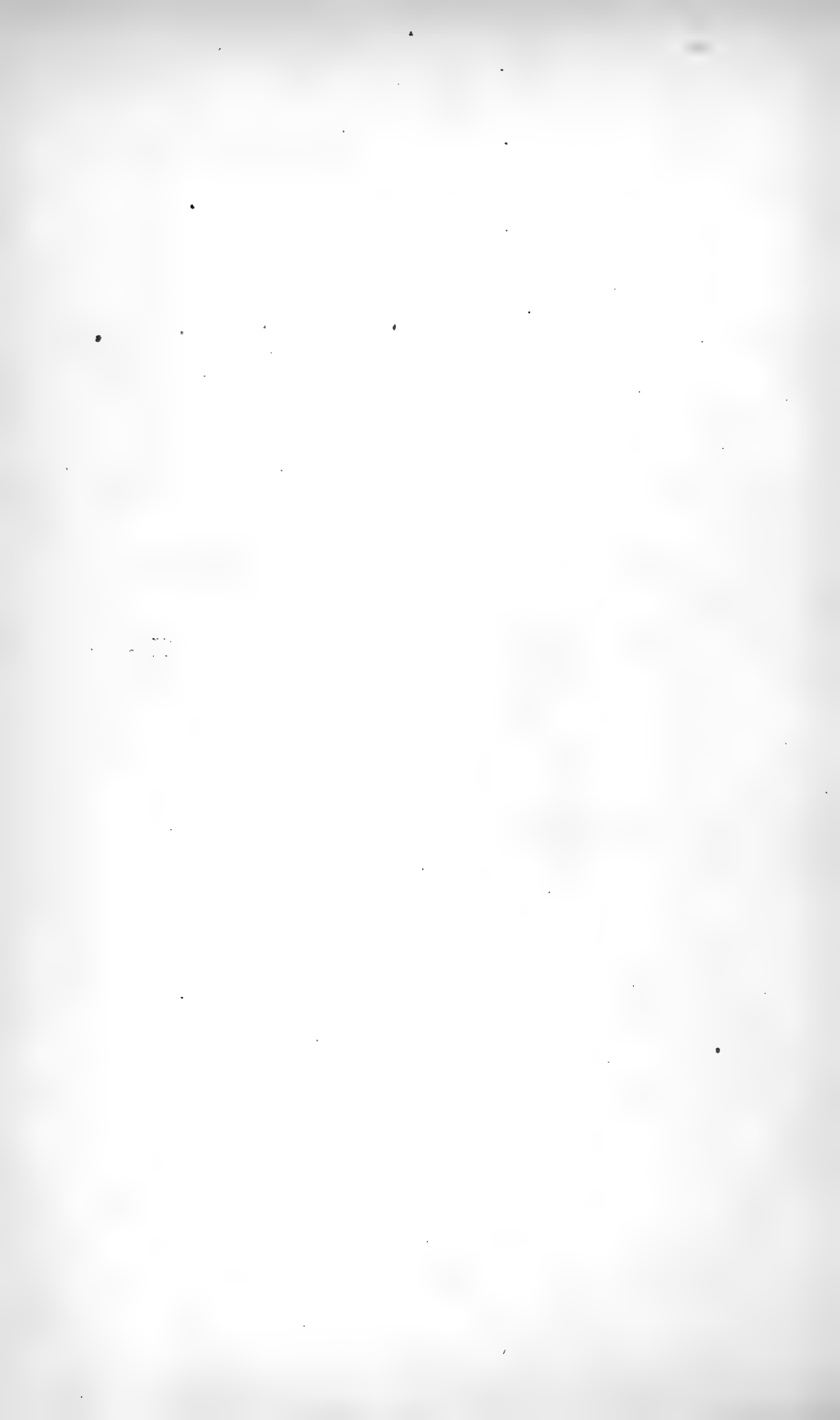
To Dr. C. Hart Merriam his thanks are also due for the permission to examine the lists of birds, known to breed at various points in Pennsylvania and New Jersey, which have been compiled by correspondents of the U. S. Department of Agriculture: to Dr. Edward J. Nolan, Librarian of the Academy of Natural Sciences of Philadelphia, for permission to publish the portrait of Alexander Wilson, which appears as a frontispiece; also to Dr. J. A. Allen and Mr. Frank M. Chapman, of the American Museum of Natural History, Mr. Robert Ridgway of the U. S. National Museum, and to the many correspondents in various parts of Pennsylvania and New Jersey—especially Messrs. August Koch, Josiah Hoopes, Philip Laurent, Prof. H. J. Roddy and Dr. J. W. Detwiler, who have so courteously rendered their assistance in the preparation of the present volume.

WITMER STONE.

ACADEMY OF NATURAL SCIENCES,
Philadelphia, November 6, 1894.

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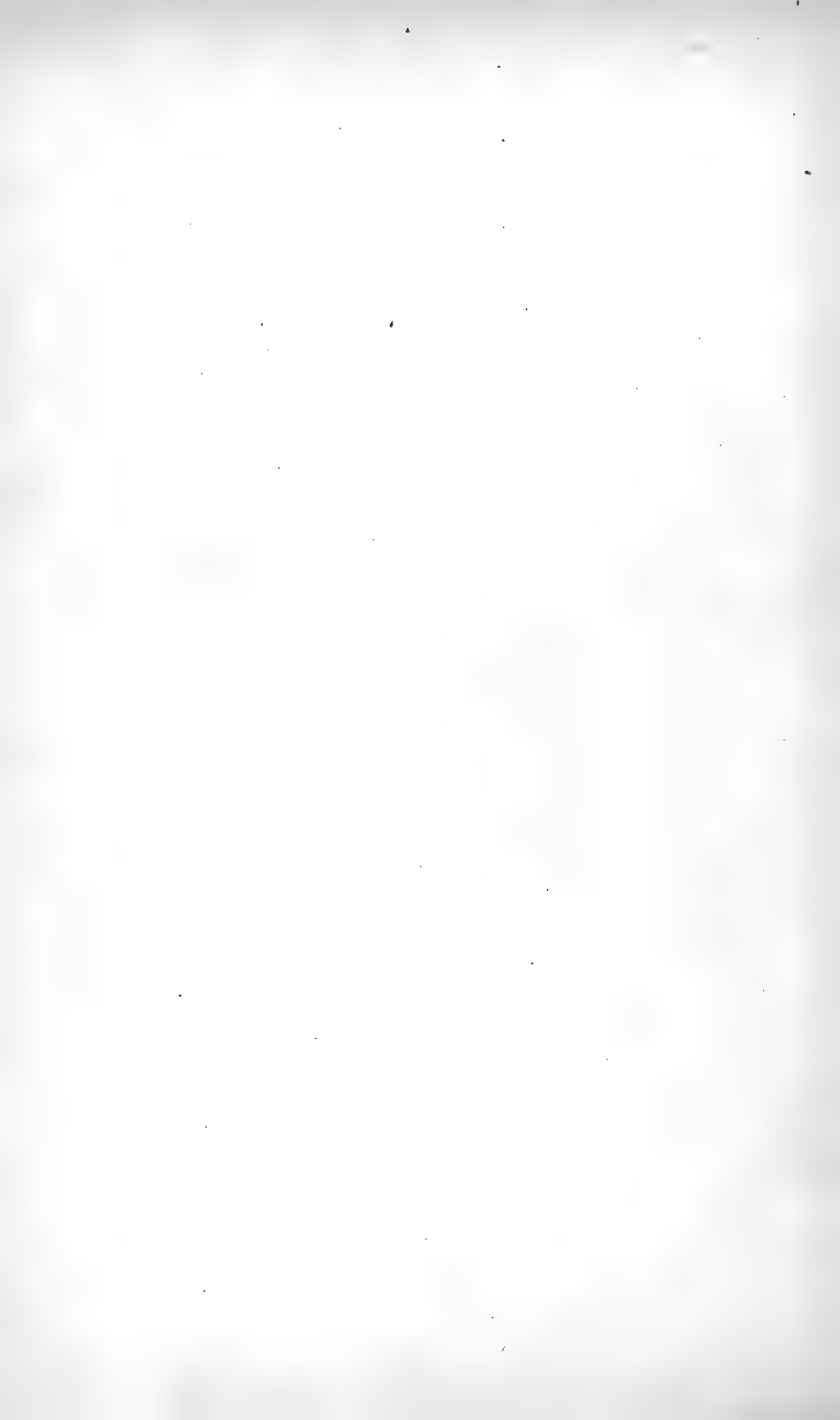
PART I.

GEOGRAPHICAL DISTRIBUTION
OF BIRDS

AND

BIRD MIGRATION.

CONSIDERED IN GENERAL AND WITH SPECIAL REFERENCE
TO PENNSYLVANIA AND NEW JERSEY.



I. GEOGRAPHICAL DISTRIBUTION OF BIRDS.

GENERAL LAWS OF GEOGRAPHICAL DISTRIBUTION.*

THE true home of a bird is the locality where it breeds; where the food and surroundings are best suited for its existence, and where it would probably remain permanently were it not for the changes due to the approach of winter, which drive it southward to a more congenial clime until the return of spring makes its home once more habitable.

In the wide extent of country through which a bird passes during its migrations, it is but a transient visitor, and is obviously not to be considered as one of the species native to that section.

It is evident then that all study of the distribution of bird life, and the laws which govern it, must be made during the breeding season, when all birds may be considered at home.

The distribution of birds, it should be remembered, is subject to the same general laws that govern the distribution of other animals, as well as plants. That is to say, where the conditions of climate and environment are suitable to the existence of certain species of birds, there we shall find certain species of mammals and plants; and where the character of bird life is decidedly different, there we may confidently expect a different flora. It can thus be easily seen how intimately related are the studies of the distribution of animals and plants, and how much aid they are likely to prove to one another. The distribution of life is dependent either directly or indirectly upon climate, the differences in the tropical, temperate and polar faunas

* The following papers should be consulted for a full discussion of this question :

J. A. Allen, "On the Mammals and Water Birds of East Florida * * * And a Sketch of the Bird-Faunæ of Eastern North America."—*Bull. Mus. Comp. Zool.*, II., p. 161.

Dr. C. Hart Merriam, "Results of a Biological Survey of the San Francisco Mountain Region and Desert of the Little Colorado, Arizona" (Part I.).—*North Amer. Fauna*, No. 3.

J. A. Allen, "Origin and Distribution of North American Birds."—*The Auk*, 1893, p. 97.

being well known instances. In different continents or countries far separated, the faunas and floras are usually radically different, being derived from different stocks; but in them all successive climatic zones of life will be experienced in passing in a general north or south direction.

A careful study of the breeding ranges of the birds of Eastern North America has clearly demonstrated this as regards our continent. The northern and southern limits of the breeding ranges of the various species fall along certain more or less distinct lines, where there are likewise decided changes in the flora as well as in the climate and general character of the country. In this manner the continent may be separated into several parallel zones, each of which marks the northern and southern limit of the breeding range of certain species.

Besides the Tropical Realm which reaches the coast of southern Florida, and the circumpolar Arctic Realm, five life zones are clearly marked in eastern North America. These are known as the (1) Louisianian, (2) Carolinian, (3) Alleghanian, (4) Canadian, (5) Hudsonian. Now it must not be supposed that the boundaries of these zones compare in any way with the regularity of the parallels of latitude, for they are, on the contrary, exceedingly broken and irregular. This is of course due to the topography of the country, as the elevated mountain ranges and plateaus, having of necessity a cooler climate than the surrounding lowlands, carry a more northern fauna and flora far southward, while on the other hand low open river valleys are always milder in climate, and thus furnish avenues by which the southern animals and plants extend their distribution northward. We therefore find the boundaries of these "life zones" extending up and down in a zig-zag manner as they follow the varying irregularities of the land. These irregularities of surface frequently make the lines of separation between one zone and another all the more strongly marked, since on the precipitous side of a mountain the change of climate as one ascends is much more rapid than is experienced in traveling northward on the level. The change in the vegetation is similarly sudden, the line between the coniferous and deciduous forests being usually quite apparent, and with the change in vegetation comes a corresponding change in the birds and other animals.

Of the four life zones already mentioned, three pass through Pennsylvania and New Jersey. The Carolinian Zone occupies the

whole of southern New Jersey and extends northward in a continually narrowing strip along the whole coast, terminating in narrow offshoots into the valley of the Hudson and Connecticut Rivers. In Pennsylvania it occupies the whole south-eastern corner of the state and pushes up the valley of the Susquehanna, following its tributaries into the low ground between the first ridges of the Alleghanies.

To the southward the Carolinian Zone sweeps along parallel to the mountains, and, rounding their southern extremity, bends north again, spreading over the upper Mississippi and Ohio Valleys, and again enters Pennsylvania in the south-western counties.

The same species of birds are found breeding throughout this area, though the presence, or, at least, abundance of certain species at particular localities is often dependent on the local environment. Generally speaking, however, a list of the breeding birds of any locality within the zone will correspond very closely with a similar list from any other station within its boundaries.

Certain birds do not range north of the Carolinian Zone, and are, therefore, useful in determining more exactly its northern boundary. Such are the Acadian Flycatcher, Cardinal, Worm-eating Warbler, Blue-winged Warbler, Kentucky Warbler, Yellow-breasted Chat, Carolina Wren, Tufted Titmouse, and others. The presence of any of these during the breeding season indicates a Carolinian element in the fauna of the locality.

The Alleghanian Zone, lying immediately north of the Carolinian, embraces all of the states of Pennsylvania and New Jersey not included in the latter, except the tops of the higher mountain ranges and portions of the elevated table land in the north central part of Pennsylvania. Generally speaking, this includes the entire breadth of the Appalachian mountain system in these two states, except the highest ridges already alluded to. The Alleghany Mountains (except the high ridges) to their southern extremity belong to this zone, and to the north it includes most of New York and New England and the valley of the St. Lawrence, as well as southern Michigan, Wisconsin and Minnesota.

The Alleghanian Zone forms the northern limit to the range of the following species, which occur regularly within its boundaries, though they are much more abundant in the Carolinian Zone, *i. e.*, the Wood Thrush, Brown Thrasher, House Wren, Field Sparrow, Chewink and Dove.

The Chestnut-sided Warbler, Rose-breasted Grosbeak, Least Flycatcher, Wilson's Thrush and Savanna Sparrow are also found breeding in the Alleghanian Zone, none of which occur, except as migrants, in the Carolinian Belt. The Scarlet Tanager, Black and White Warbler and Redstart are also characteristic species of the Alleghanian Zone, and, though they breed also in the Carolinian, are less abundant there.

The Canadian Zone occupies in Pennsylvania only the tops of the highest mountains and the elevated plateau region, where the deep hemlock forests, with their cold brooks and dense shade, still remain undisturbed. The passage from the Alleghanian to the Canadian Zone is here, as a rule, remarkably distinct, as the more northern birds keep strictly to the virgin forest, the cool shade of which affords them a congenial summer home. Where the forest has been removed the Canadian species for the most part disappear, and, judging from present indications, it would seem that this element in our fauna, which once undoubtedly extended over a much greater area than at present, may soon almost entirely disappear, as the lumbermen year by year encroach upon the forest tracts.

The Canadian Zone, as exhibited in the Alleghanies, consists of a series of isolated patches or "islands," which are quite separated from the main portion of the zone in the north, the elevation above the sea level in the isolated portions producing climatic conditions similar to those experienced in the lowlands at more northern latitudes. In addition to the mountain tops of Pennsylvania, Virginia and North Carolina, the Canadian Zone includes the Catskills and Adirondacks, while the main portion of the zone stretches from the White Mountains and Maine north to southern Labrador and Newfoundland, and northwest to southern Alaska. Between the Canadian and the Arctic lies the Hudsonian Zone.

Birds which characterize the Canadian Zone in the breeding season are the Canadian, Black-throated Blue, Blackburnian and Magnolia Warblers, the Winter Wren, Brown Creeper, Hermit and Olive-backed Thrushes. Many other species breed regularly in the more northern portion of the zone, such as the White-throated Sparrow, Three-toed Woodpecker, Tree Sparrow, Fox Sparrow, etc., but none of these have yet been found breeding either in the Pennsylvania mountains or farther south.

FAUNAL AREAS OF EASTERN PENNSYLVANIA AND NEW JERSEY—
THEIR PHYSICAL FEATURES AND CHARACTERISTIC BIRDS.

The three great faunal zones which pass through Pennsylvania and New Jersey may be divided into several well-defined regions, which differ more or less in their physical features and consequently in the character of their bird life.

In southern New Jersey two principal regions may be recognized, the Maritime Marshes and the Pine Barrens, with their Cedar Swamps, while as we pass westward through Pennsylvania there are the valleys of the Delaware, Schuylkill and Susquehanna—all of these are included in the Carolinian Zone. Farther north and northwest, between the large river valleys, are the Interior Uplands, where the Carolinian birds begin to disappear. Then follow the Blue Mountain range and the various detached ridges and foot hills of the Appalachian system, where the Alleghanian element is first met with, and finally the Alleghany mountain proper, capped with the deep Canadian hemlock forests.

The Maritime Marshes.—The great salt marshes of New Jersey stretch along the coast for one hundred miles, from Cape May to the head of Barnegat Bay, averaging about two miles in width in the lower portion and gradually narrowing northward. On the ocean side they are bordered by a narrow line of sand-hills which separates them from the low, shelving beach. Several large bays and sounds intervene between the marshes and the sand-hills, communicating with the ocean by narrow inlets. At several points the bays stretch back and carry the marshes several miles inland, as along the Great Egg Harbor and Mullica Rivers. The coast sand-hills sometimes become wide enough to support a scanty growth of Pines (*Pinus rigida*), and Scrub Oaks (*Quercus ilicifolia* and *Q. nigra*), in which the Fish Crows and Fish Hawks nest, while everywhere they are covered with a thick growth of Bay-berry (*Myrica cerifera*), and in this shelter a few Song Sparrows and Maryland Yellow-throats spend the summer.

The marshes themselves present throughout an even expanse of green sedges and marsh grasses, with a thick carpet of Salicornia. Everywhere thoroughfares and creeks of varying width wind their way in and out in an endless tangle, and at low tide their muddy banks and exposed flats form favorite feeding grounds for the migrating "shore birds" and the Clapper Rails which nest on the marshes.

In addition to the Rails, the most characteristic summer birds of the marshes are the Sharp-tailed and Seaside Sparrows, which breed everywhere in abundance. These three birds constitute the entire bird life of the salt marshes in summer, with the exception of a few Herons which resort there to feed. Nearer the mainland, however, where the water is not so salt and patches of cat-tails occur, Marsh Wrens, Red-winged Blackbirds and other species may be found breeding.

The Common Tern and Laughing Gull used to share the marshes with the Rails and Sparrows during the breeding season, but along with the Piping Plovers, Least Terns and Skimmers which used to breed regularly along the New Jersey coast, they have almost entirely disappeared, and only a few pairs are now to be seen during the summer.

The Pine Barrens.—Behind the marshes and occupying all of southern New Jersey, south of a line from Long Branch to Salem, lies the characteristic Pine Barren Region—the northern extremity of the great Atlantic Plain. This is a low, flat, sandy district, varied here and there with outcrops of yellow gravel and with numerous swamps scattered about throughout its extent. Some portions are mere dry wastes of loose sand supporting a scant growth of low Pines and Scrub Oaks, while in other sections are vast forests of tall Pitch Pines (*Pinus rigida*). Here and there are open cranberry bogs and small tracts of cultivated land.

In the forests the Pine Warbler is the most characteristic species of bird, while several species of Woodpeckers and the Great Horned Owls here find a congenial home. In the lower scrub growth, especially on the borders of the swamps, Chewinks and Prairie Warblers abound, together with Wood Pewees and Kingbirds.

The Cedar Swamps.—The swamps, however, harbor the greatest variety of birds, and furnish a most interesting field for the ornithologist.

These swamps are generally covered with a dense growth of White Cedar (*Chamaecyparis thyoides*), mingled here and there with patches of Red Maple, Pepper Bush (*Clethra alnifolia*), Magnolia (*M. glauca*) and Holly, making an almost impenetrable jungle. Here and there occur shallow ponds or lakes, which seem to have overflowed considerable areas of older thickets. The dead and rotten branches of the submerged trees and bushes everywhere raise their gaunt shapes from the dark water stained with the accumu-

lated vegetable matter, and upon them hang dense festoons of the gray beard-moss (*Usnea barbata*). Here the Parula Warblers abound, darting about among the tufts of moss in which their dainty nests are so securely hidden. Here, too, the clear note of the Hooded Warbler is heard throughout the nesting season, though this species is perhaps more plentiful in the holly thickets on the edge of the swamps. Cardinals and Catbirds are also at home in these thickets, and the anxious cries of the Carolina Chickadee frequently greet the ear. Probably the most characteristic bird of the swamps, however, is the White-eyed Vireo, whose clear and somewhat monotonous song is heard continually.

It is in the Pine Barren Region of New Jersey that an occasional Blue-gray Gnatcatcher or Mockingbird is most likely to be found, though both these birds are very scarce in this state, as well as in Pennsylvania.

The Lowlands of Pennsylvania.—South-eastern Pennsylvania is cut off sharply from the mountainous parts of the state by the Kittatinny or Blue Mountain, which extends in a nearly straight line from the Delaware Water Gap to the middle of Cumberland county, where it bends to the southward and crosses the Maryland boundary. The country to the south of this ridge is an undulating slope, comprising the valleys of the Delaware, Schuylkill and Susquehanna, and the slightly more elevated ground between them. North of these valleys, and immediately below the Blue Mountain, there is also a long valley extending diagonally across the state from north-east to south-west. The lower end of this valley—Cumberland Valley—is bounded on the south by another ridge, known as the South Mountain, and the same ridge reappears between Reading and Easton. In the intervening part, however, the more northern valley passes imperceptibly into the lowlands to the south.

Besides the South Mountain and its eastern extension the principal elevations in south-eastern Pennsylvania are the Welsh Mountain, Copper Mine Ridge and North Valley Hills, in Lancaster and Chester counties.

The greater part of New Jersey, north of the Pine Barrens, is identical with this portion of Pennsylvania in its fauna.

The characteristics of the several divisions of this region are as follows:

The Delaware Valley.—The country lying on each side of the Delaware River, including in New Jersey a narrow strip bounded on

the east by the Pine Barrens and stretching from Bucks to Chester county in Pennsylvania, and drained by the Delaware, Schuylkill and Brandywine, has quite a uniform bird fauna. It consists mainly of an open farming district, with interspersed patches of oak and chestnut woodland and occasional clumps of Red Cedar (*Juniperus virginiana*), while on some of the steeper banks of the rivers and creeks, on the Pennsylvania side, are scanty growths of Hemlock. The flat meadows below Philadelphia contain numerous open swamps and patches of woodland composed of Oak, together with Sweet Gum, Magnolia and Pepperbush, which recall the New Jersey swamps.

As a complete list of the birds which breed in the Delaware Valley will be found elsewhere, it is only necessary in this connection to mention the regular occurrence in suitable localities throughout this district of such distinctively Carolinian species as the Turkey Vulture, Barn Owl, Acadian Flycatcher, Cardinal, Rough-winged Swallow, Blue-winged Warbler, Kentucky Warbler, Worm-eating Warbler, Yellow-breasted Chat, Carolina Wren and Tufted Titmouse.

An occasional pair of Redstarts and Least Flycatchers remain here to breed, though the majority of them do not summer south of the Alleghanian zone.

The Susquehanna Valley.—The valley of the Susquehanna, stretching back from Chesapeake Bay, enters Pennsylvania in York and Lancaster counties and carries many southern plants and birds northward in abundance which are rare or unknown in the higher ground on either side. The deep hemlock woods which cover the steep and rocky banks of the river remind one strongly of the mountain forests of the Alleghanies, but we find no trace of mountain birds to complete the resemblance, although a few northern species of plants do occur.* The character of the bird fauna, though practically identical with that of the country to the east, is probably rather more Carolinian. No species occur, so far as is known, which are not also found in other portions of southeastern Pennsylvania, but the distinctively Carolinian species are much more abundant than elsewhere. Carolina Wrens seem to almost entirely replace the House Wrens, and their loud whistle is continually to be heard. Cardinals, Kentucky Warblers, Blue-winged Warblers and Worm-eating Warblers abound, and Louisiana Water-Thrushes occupy the shaded rocky

* *Sambucus pubens*, etc.

ravines of the rapid tributary streams, while Turkey Vultures breed among the rocks and congregate in numbers on the low sandy islands.

The Interior Uplands.—The bird fauna just described as characterizing the lowlands of south-eastern Pennsylvania extends also along the valleys between the Blue Mountain and South Mountain, and some of the species penetrate even farther, following the course of the larger rivers, and lend a Carolinian tinge to the fauna of the valleys lying to the north of the Blue Mountain. Generally speaking, however, the Carolinian element is not nearly so strongly marked in the valleys north of South Mountain and its eastern spurs, nor in the higher ground forming the water-sheds between the drainage of the Delaware, Schuylkill and Susquehanna.

The first appearance of Alleghanian species, such as the Chestnut-sided Warbler, and the increase in the numbers of species which are more characteristic of the Alleghanian than of the Carolinian zone, as, for instance, the Scarlet Tanager, Black and White Warbler, etc., is noticeable on the Welsh Mountain and Copper Mine Ridge in Lancaster county, and also in the eastern continuation of South Mountain between Reading and Easton.

The Appalachian District.—Between the Blue Mountain and the main crest of the Alleghenies is a series of sharp mountain ridges, cut and broken by river valleys, mainly those of the Susquehanna and its tributaries.

This region is Alleghanian in its fauna, and with it is to be considered the northwestern mountainous part of New Jersey. As has already been said, a few Carolinian birds are to be found in some of the valleys, especially the broad valley of the Susquehanna, but generally speaking the region is truly Alleghanian and is characterized by the occurrence in summer of such species as the Chestnut-sided Warbler, Purple Finch, Savanna Sparrow, Black-capped Chickadee, etc., which are not known as breeders in the Carolinian Belt.

The Alleghany and Pocono Mountains.—On the main Alleghany mountain, extending from Susquehanna to Lycoming county, Pa., and thence southwards to Somerset county, on the plateau region of north-central Pennsylvania and on the Pocono Mountain plateau, which occupies the north-eastern corner of the State, there probably existed a bird fauna almost the same as that of the Catskills in New York, and decidedly Canadian in its affinities.

Now, however, the rapid destruction of the primeval hemlock

forest, which formerly covered these mountains, has in most places driven away the more characteristic Canadian birds which were wont to breed in the cool dark woods and deep rhododendron swamps.

Regarding the disappearance and present extent of the hemlock forest, Mr. Dwight says:* “There was a time when the mountains of Pennsylvania were clothed with unbroken forest, the cool recesses of which afforded refuge for many species now found in reduced numbers in the few tracts of timber still untouched by the axe. At the present time the plateau region is in many places covered with farms, which often extend to the very crest line, and there is little suggestive of the top of a mountain range. Bits of the original forest, however, still remain in many places, and on North Mountain (which includes a large section of plateau in or adjacent to the southern part of Sullivan county) is found what is said to be the largest body of timber remaining uncut in the whole State.”

As regards the general character of these forests, we cannot do better than to quote from Mr. Dwight's description of North Mountain. He says :

“The forest is truly primeval ; the hemlock, the yellow birch and the maple are the characteristic trees, and attain great size. The hemlocks are scattered in considerable numbers through the forest, and tower above it, their huge trunks often four or five feet in diameter, marking them out as giants among their lesser brethren. The underbrush is often dense, and everywhere great logs, covered with moss, lie mouldering. Here and there you hear clear cold brooks that seem to imitate the song of the Winter Wren that is almost constantly heard along them. The drawling song of the Black-throated Blue Warbler and the sprightly one of the Canadian Warbler is heard on every hand. High up in the hemlocks the drowsy sounds of the Black-throated Green Warbler are heard, and the lively chatter of the Blackburnian Warbler catches the ear.”

Among other species which breed in these forests are the Cross-bill, Snowbird, Magnolia Warbler, Small-billed Water-Thrush, Brown Creeper, Golden-crowned Kinglet (?), Olive-backed Thrush and Hermit Thrush.

WINTER BIRDS.

As all species have certain limits within which they find a nesting ground suitable to their requirements, so also they have more or less

* The Auk, 1892, p. 129.

definite winter habitats. The boundaries of the latter are, however, influenced to a considerable extent by the severity of the season and the abundance of suitable food. When the crop of berries has been large and the weather during the early part of the season comparatively mild, many birds will winter farther north than they usually do, and will often brave very severe weather later in the season. Heavy snow storms, which completely cover the ground, and with it the food of many species of birds, cause a sudden migration farther south, where the ground is more open. It is on such occasions that we are favored with flying visits from Redpolls, Snow Buntings and other birds of the far north.

The distribution of birds in the Delaware Valley during the winter months is by no means uniform, some localities being much more frequented than others. The vicinity of the tide-water creeks on the New Jersey side of the river seems to furnish the most favorable winter quarters, while some of the dry uplands in Pennsylvania are nearly destitute of birds during the winter season. About Philadelphia the Song Sparrows and Tree Sparrows are universally distributed in low swampy tracts, the latter species usually in large flocks. On the river marshes quite a number of Swamp Sparrows also associate with them. Large flocks of Snowbirds, as well as flocks of Goldfinches, Purple Finches and a few Pine Finches are always present. White-breasted Nuthatches, Brown Creepers, Downy and Hairy Woodpeckers, Black-capped and Carolina Chickadees and Tufted Tits are generally distributed through woodland and orchards, and in sheltered thickets occur Cardinals, White-throated Sparrows, Carolina Wrens and Winter Wrens. Golden-crowned Kinglets also winter regularly in many places, and Cedarbirds and Blue Jays are generally to be found. Crows are very abundant all winter in immense flights, passing to and from their roosts in the evening and early morning. Hawks, too, occur in larger numbers in winter than at other seasons, and, though pretty generally distributed, the river meadows of Delaware county seem to be their great rendezvous. Here, on any winter morning, large numbers may be seen perched upon the solitary trees which dot the meadows, or lazily flapping out from the patches of woodland where they have roosted during the night. All the summer species are present, and in addition the Pigeon Hawk, Peregrine and Black Hawk. None of these, however, are very plentiful, and the Black Hawk is seldom seen far from the river meadows. Some other birds are also nearly or quite restricted

to these meadows during the winter. Meadowlarks occur there regularly in flocks, while over most of the higher ground a few miles back they are absent from November to March. A few Rusty Grackles sometimes winter with the flocks of Sparrows which frequent the marshes, and now and then flocks of Tit Larks, Horned Larks or Snow Buntings may be found there, though they are very erratic in their movements. Robins and Bluebirds usually winter in small numbers in sheltered spots in the vicinity of Philadelphia, and now and then one or two Flickers, Yellow-bellied Sapsuckers, Red-winged Blackbirds or Purple Grackles are seen, and more rarely Redpolls, Crossbills and Northern Shrikes.

On the New Jersey tide-water creeks, as already mentioned, birds are very numerous. Cardinals are very plentiful here all winter, and an occasional Hermit Thrush is found. Myrtle Warblers are also of regular occurrence in winter in New Jersey, frequenting the Pines and Cedars.

In the vicinity of Cape May, and on the eastern edge of the Pine Barrens, several species winter which have not been found farther north in the state at this season, or which only occur as stragglers. Fox Sparrows, Long and Short-billed Marsh Wrens and Cowbirds have been taken in the depth of winter, and Meadowlarks, Red-winged Blackbirds, Savanna Sparrows, Swamp Sparrows and Vesper Sparrows occur in abundance. A few Turkey Vultures are also generally to be seen in southern New Jersey throughout the winter.

On the salt marshes, from Atlantic City southward, a few Sharp-tailed Finches manage to survive the winter, while on the sand hills, all along the coast, Ipswich Sparrows occur, though not plentifully. Among the waterbirds, Scoters and Herring Gulls are present all winter along the shore line, while Loons and several species of Ducks inhabit the bays. Canada and Snow Geese occur regularly in Delaware Bay, and a few Little Auks, Brünnich's Murres and Razor-billed Auks enter the mouth of the river from the ocean, and nearly every winter one or two are taken as far up as Chester.

II. BIRD MIGRATION.

GENERAL DISCUSSION OF MIGRATION.*

THE semi-annual migration of birds, north-ward in the spring, and south-ward in the fall, is familiar to all who have paid any attention to ornithology. Only a very small proportion of our birds remain with us throughout the year, and, although we have quite a number of species present through the winter, after our summer species have left us, the greater number are visitors from farther north.

According to the character of their migration, the birds of any locality are generally arranged under four heads:

Residents, are those which are present throughout the year. In many cases however, these are more numerous in summer than in winter.

Summer Residents; those which breed at the locality under consideration, arriving from the south in the spring and returning again in the fall.

Transient Visitants breed farther north and winter farther south, passing through the specified locality on their migrations.

Winter Visitants occur during the winter, arriving from the north in the fall and returning again to their breeding grounds in the spring.

The habit of migration, probably, originating in the seasonal change of climate and failure of the supply of suitable food, has

* Every one interested in this subject should consult Mr. William Brewster's instructive paper on "Bird Migration" (Memoirs of the Nuttall Ornithological Club, No. I. Cambridge, Mass., 1886. Published by the Club.), which is a most valuable review of the subject, based upon the author's extensive experience. The observations of the Delaware Valley Ornithological Club, so far as they go, coincide entirely with Mr. Brewster's statements, and in the present chapter several direct quotations or abstracts have been taken from his paper as most clearly explaining the points under discussion.

Another valuable paper which should be consulted is "Report on Bird Migration in the Mississippi Valley, by W. W. Cooke (Edited and Revised by Dr. C. Hart Merriam), U. S. Dept. of Agriculture, Division of Economic Ornithology, Bulletin No. 2. Washington, 1888."

come to be a more or less hereditary habit, though the original causes still undoubtedly exert a very strong influence. Dr. C. Hart Merriam,* in treating of the subject, gives the following as the most potent causes of the spring migration of birds: 1. The food supply fails. 2. The climatic conditions become unsuited to their needs. 3. The approach of the breeding season gives rise to physiological restlessness. 4. The birds inherit an irresistible impulse to move at this particular time of year.

The fall migration is evidently due to similar causes, with the exception, of course, of the third.

Birds may be arranged in two groups, according to their manner of migration, viz.: day migrants and night migrants. The former include the Doves, Hawks, Hummingbirds, Chimney Swift, Night-hawk, Horned Lark, Crows, Jays, Grackles, Blackbirds, Swallows, Cedarbird, Tit Lark, Bluebird and Robin, and perhaps a few others.

The night migrants include the Woodpeckers, Cuckoos, Flycatchers (except the Kingbird), Meadowlark, Orioles, most of the Finches, the Vireos, Tanagers, Warblers, Wrens, Creepers, Nuthatches, Titmice and most of the Thrushes.

Among the water birds, the Bittern, Woodcock, Wilson's Snipe, Spotted Sandpiper and the Rails migrate exclusively by night, while the other species seem to move by day or night, according to circumstances, most diving birds migrating along the coasts by day but making their overland journeys by night.†

From an examination of the foregoing lists it will be seen that the more timid, shelter-loving birds migrate at night, and the bolder species, which are strong of flight or which associate in flocks, migrate by day. The reasons for this can easily be seen in the following quotation from Mr. Brewster's paper on Bird Migration: "Timid, sedentary, or feeble-winged birds migrate by night because they are either afraid to venture on long, exposed journeys by daylight, or unable to continue these journeys day after day without losing much time in stopping to search for food. By taking the nights for traveling they can devote the days entirely to feeding and resting in their favorite haunts. Good examples are Thrushes (except the Robin), Wrens, Warblers and Vireos. Bold, restless, strong-winged birds migrate chiefly, or very freely, by day because, being accustomed to seek their food in open situations, they are indifferent to concealment, and being further able to accomplish long distances rap-

* Bird Migration in the Mississippi Valley, p. 1, footnote.

† Brewster.

idly and with slight fatigue, they can ordinarily spare sufficient time by the way for brief stops in places where food is abundant and easily obtained. * * * Excellent examples are the Robin, Horned Lark and most Icteridæ. Birds of easy, tireless wing, which habitually feed in the air or over very extensive areas, migrate exclusively by day, because, being able either to obtain their usual supply of food as they fly, or to accomplish the longest journeys so rapidly that they do not require to feed on the way, they are under no necessity of changing their usual habits. The best examples are Swallows, Swifts and Hawks. Nocturnal and crepuscular birds, at least migratory species, are all strong-winged and accustomed to seek their food over wide areas. Hence, like Swallows, Swifts and Hawks, they migrate during the hours of their habitual activity.”

Day migrants perform their journeys either as scattered individuals or in compact flocks, there being comparatively little mixture of species. As regards night migrants, however, the case is different. All the species which are migrating on any particular night, being attracted by each other's notes,* become more or less mingled together in an immense column, not forming a compact flock but composed of individuals and small bunches flying sufficiently near to one another to be guided by the chirping of those just ahead. Observations made from lighthouses seem clearly to show this to be the nature of the night migrations, and it is really most natural, being merely a continuation of the actions of these same birds while feeding in the woodland during the day; when they go shifting from tree to tree, the various species intermingled and all slowly following the lead of those just ahead of them. The leaders of these migratory flights are probably old birds which have had the experience of previous migrations and have thoroughly learned the route of travel. The experience of most of the leading ornithologists of this country, however, seems to show that the old birds of most if not all species migrate southward before their young, leaving the nesting-ground soon after the moult is completed and entrusting their young to the guidance of later migrants, often belonging to quite different species.

Migrating birds seem to follow the same course year after year, so that it is possible to map out pretty exactly their principal lines of flight, and this has been actually done in Europe, where the matter

*Birds migrating by night keep up a continual chirping, a kind of calling and answering as it were, to avoid being separated from each other. This can often be distinctly heard as they pass overhead.

has been carefully studied. These lines of flight follow the courses of rivers, valleys, mountain chains, or coast lines, which, to the eyes of the migrants, flying high in the air, are distinctly outlined for many miles, provided the night be clear, and thus form easily recognizable landmarks.

It follows from this that observers situated on the regular lines of flight, as, for instance, in a large river valley, are liable to see many more migrants than will be found at points on either side of them. Some transient species, indeed, will likely occur regularly at the former locality which will seldom or never be seen at the latter. The summer resident birds also arrive in the lowlands (along lines of flight) sooner than in the elevated regions of the same latitude, pushing up the river valleys where the signs of spring first appear, and spreading out into the hills and mountains as the climate there becomes congenial.

The influence of meteorology upon bird migration is a matter of great importance, but which requires much careful investigation. In general, it may be said that the bulk of migration occurs on clear nights, and that birds do not start to migrate in stormy or cloudy weather, though they are frequently overtaken by storms while on the wing, and it is at such times that they become bewildered and fly against the lighthouses, where so many annually kill themselves.

In the spring, warm weather hastens migration and cold weather retards it, while in the fall the reverse is the case, though the migration is more irregular and lagging and lasts for a longer period than in spring (*i. e.*, so far as each species is concerned).

During migrations the flight of birds is by no means continuous, and although some migration probably occurs on every clear night, the numbers which start during or immediately after a hot spell (*i. e.*, in spring) are enormous compared with those migrating in cooler weather. Thus, instead of a uniform flight of birds we have a series of "waves" or "rushes" with corresponding rests or lulls between them.

During these waves, which seem to occur on the night following the sudden change of temperature and generally continue on the following night, the increase of birds at a given station is clearly apparent, and to record the time of occurrence and duration of the waves is an easy matter. While each species has a certain average time of arrival at a given station, the exact date, especially when it first arrives in abundance, is dependent upon the weather. Some-

times a sudden rise in temperature with its accompanying bird-wave will bring a species a week or more earlier than the average time, or a cold, wet spell of weather will delay its arrival correspondingly.

MIGRATION IN THE VICINITY OF PHILADELPHIA.

The spring migration in the vicinity of Philadelphia begins early in February with the arrival from farther south of scattered bunches of Robins, Bluebirds, Purple Grackles, and a few other species which often occur in small numbers during the winter.

About the middle of the month, on the first clear spring-like day when the temperature rises to 60° or 70° F., a well marked wave takes place. Purple Grackles, Red-winged Blackbirds, Robins, Bluebirds and a few Flickers are the principal species, the Grackles being the most numerous. The greater part of these early migrants seem to pass farther north.

From the time of occurrence of the first well-marked wave, the species above mentioned continue to pass in increasing numbers during favorable weather, but there is usually no other decided wave until about the middle of March.

During this month, in addition to the species already mentioned, the principal migrants are the Meadowlark, Pewee, Field Sparrow, Fox Sparrow, Cowbird, Dove, Canada Goose and Killdeer Plover, together with a few Yellow-bellied Sapsuckers, Savanna Sparrows, Vesper Sparrows, Myrtle Warblers and Rusty Grackles. None of these birds, however, arrive—at least in abundance—before the middle of the month.

Up to April 1 no migrants have been recorded in the records that we have examined which do not occur occasionally in winter, either at Philadelphia or a little farther south in New Jersey, except the Canada Goose and Chipping Sparrow, which latter species has been once or twice noticed during the last week of March.

After the first of April, however, the strictly summer species and transients begin to arrive. There are generally several well marked waves during the month, their most characteristic species being the Hermit Thrush, Ruby-crowned Kinglet, Chipping Sparrow, Chimney Swift, Barn Swallow, Bank Swallow, Myrtle Warbler, House Wren, Thrasher, Chewink, Black and White Warbler, Maryland Yellow-throat and Solitary Vireo.

A number of other species sometimes arrive during the last week of April, when there often occurs a wave which seems to be a fore-

runner of the great "Thrush and Warbler waves" of May, and which brings the first stragglers of many species which are really characteristic of the latter month.

The following list includes such species as have been noted—generally in small numbers—from April 20 to 30 in the vicinity of Philadelphia, but which do not arrive in force until May :

Kingbird,	Black-throated Green Warbler,
Crested Flycatcher,	Parula Warbler,
Orchard Oriole,	Water-Thrush,
Scarlet Tanager,	Catbird,
Red-eyed Vireo,	Wilson's Thrush,
Yellow Warbler,	Wood Thrush.

About the first of May the species just mentioned, together with many Warblers, etc., arrive in abundance and form the first great "Warbler wave." Thousands of Thrushes, Warblers and Vireos, pass through at this time and the woods seem fairly alive with birds. Several other waves occur during May, which are mainly characterized by Warblers, and indeed, for the first three weeks of the month these birds seem to be passing almost continuously. By the 20th of the month, however, the migration begins to wane, and although stragglers of many species are seen until the 30th, and some Blackpoll Warblers linger as late as June 6, there are rarely any migratory waves after May 20.

As regards the departure of the winter birds, the records of the Club show that the Herring Gulls leave the Delaware River about April 4, and they seem to desert the meadows at Atlantic City, N. J., about the same time.

Winter Wrens,* Fox Sparrows and the bulk of the Snowbirds generally leave Philadelphia by April 15, while the Brown Creepers and Golden-crowned Kinglets stay a few days later.

Most of the White-throated Sparrows have departed by May 1, but a few occur regularly as late as the 16th of the month, and one was seen in 1888 on May 27. The straggling Snow-Birds have usually left by May 1, but occasionally one is seen a few days later; May 10 being the latest date recorded.

The first evidence of the fall migration in the vicinity of Philadelphia is seen during the last week in July, or, perhaps, earlier, when the old birds of several species leave their breeding grounds

* One has been recorded as late as May 5.

and apparently pass slowly southward. By the middle of August most of the Swallows, Kingbirds and Orioles have disappeared from the interior, and begin to congregate along the river valleys, coast lines and other avenues of migration, whence they pass southward gradually as they are joined by flocks from farther north.

Immense congregations of Kingbirds and several species of Swallows are familiar sights at this time along the New Jersey coast.

Grackles, Red-winged Blackbirds, Robins and Bluebirds collect in flocks by August 1, or earlier, but they do not apparently journey southward till later in the season. The pioneer migrants from the north reach Philadelphia during the first week of August, the Water-Thrush and Redstart being the earliest to arrive. During the latter part of the month—August 20–31—many other species arrive, such as the Canadian, Black-throated Blue, Chestnut-sided, Bay-breasted, Blackburnian, Magnolia, and Wilson's Warblers, and the Wilson's Thrush. None of these birds, however, are abundant at this time, and seem to pass through quickly. The majority of these August Warblers that have been collected seem to be old birds, while the large majority of those which pass through later are, as is generally known, birds of the year.

The bulk of the Warblers, Vireos, Tanagers and the Thrushes, which characterize the May migration in spring, pass through in the fall from September 10 to October 1, and by the end of the first week of the latter month nearly all the stragglers have disappeared.

The October birds correspond in general to those of the April migration, occurring, of course, in inverse order, and by November 1 only a few Hermit Thrushes, Fox Sparrows, Field Sparrows and Myrtle Warblers are left of the migrating birds, while all the winter visitants have arrived in force.

The Snowbirds begin to arrive as early as September 27, though they are not common before the middle of October. The first White-throated Sparrows are seen about September 20, while on the coast the Herring Gulls arrive at Atlantic City about October 1.

Such is a brief outline of the spring and fall migrations in the vicinity of Philadelphia.

Study of Migration in the Delaware Valley—Methods and Results.

—The general subject of bird migration having always been a matter of deep interest to the Delaware Valley Ornithological Club and of great importance in the study of ornithology, we feel justified in adding a few extracts from the records of the Club, which serve to

further illustrate several important points. As regards the number and time of occurrence of bird-waves during several years, the data collected by the Club show a remarkable correspondence, as also a similarity in the species of birds which composed the several waves. This can readily be seen from the following comparison of the waves of 1890 and 1891, the date of each wave being given, followed by the most characteristic species.

1890.	1891.
Feb. 12-14. Purple Grackle. Robin. Bluebird. Red-winged Blackbird. Flicker.	Feb. 18-19. Purple Grackle. Robin. Bluebird. Red-winged Blackbird. Flicker.
Feb. 26-27. Same.	Feb. 23-25. Same.
April 3-4. Flicker. Chipping Sparrow.	April 5. Flicker. (Chipping Sparrow.)* Myrtle Warbler. Pewee.
April 12-14. Chipping Sparrow. Hermit Thrush. Myrtle Warbler. (Thrasher.) (Barn Swallow.) (House Wren.)	April 12-14. Pewee. Chipping Sparrow. Hermit Thrush. Barn Swallow. (Thrasher.)
April 22-23. Chimney Swift. Hermit Thrush. (Black and White Warbler.)	April 18-19. Chimney Swift. Barn Swallow. Hermit Thrush. (House Wren) (Maryland Yellow-throat.) April 23. Thrasher. Myrtle Warbler. House Wren. Black and White Warbler. Maryland Yellow-throat. (Wood Robin.) (Black-throated Blue W.)

* Species in parentheses were migrating during the wave, but only in small numbers.

April 26-27.	April 27-28.
Myrtle Warbler.	Wood Robin.
Maryland Yellow-throat.	Oven-bird.
Black and White Warbler.	(Black-throated Blue W.)
	(Tanager.)
April 30-May 1.	May 2.
May 4-5.	
May 10-11.	May 9-10.
May 18.	May 18-19.

The May waves were composed of the various Warblers, Vireos, Thrushes, etc., and a list of the species is unnecessary.

It will be noticed that the migration up to the middle of April was almost parallel, then the season of 1891 was earlier, until May, when the season of 1890 was in advance, as the wave of May 10-11, 1890, was the last large one, while in 1891 the corresponding wave (as regards size and species) was the movement of May 18-19.

In the investigations of bird migration carried on by the Club during the past three years, the observers have been stationed immediately around Philadelphia, so that the time of arrival of the various species at the different stations has not been in any regular order—*i. e.*, the records of one locality uniformly earlier than those of another—as would have been the case had the observers been located at different points along the Delaware Valley. Nevertheless the records from the more southerly stations *averaged** earlier than those from farther up the valley, and likewise the arrivals at stations situated close to the river are generally earlier than at those farther back on the higher ground.

This may be seen from the accompanying table of first arrivals of twenty species at five stations during the spring of 1890.

* For example, taking the twenty birds given in the table, in fourteen cases Tinticum was the first station to report, in one case it was the second, in two cases the third, in two the fourth, and in one it was the last.

Summing up the arrivals at the other stations, we have

	T.	H.	W.	O.	G.
1st	14	9	5	4	1
2d	1	5	5	3	3
3d	2	2	6	5	5
4th	2	3	3	6	2
5th	1	1	1	2	9

Which by averaging will place the stations in the above order.

	<i>Tinicum.</i>	<i>Haddonfield.</i>	<i>Wynnewood.</i>	<i>Olney.</i>	<i>Germantown.</i>
Hermit Thrush	Apr. 5	Apr. 9	Apr. 12	Apr. 10	Apr. 13
Ruby-crowned Kinglet	Apr. 11	Apr. 10	Apr. 12	Apr. 12	Apr. 12
Brown Thrasher	Apr. 3	Apr. 14	Apr. 13	Apr. 13	Apr. 30
House Wren	Apr. 12	Apr. 20	Apr. 12	Apr. 27	Apr. 30
Yellow Palm Warbler.	Apr. 12	Apr. 12	Apr. 13	Apr. 23	Apr. 27
Chewink	Apr. 27	Apr. 23	Apr. 26	Apr. 26	May 1
Black and White Warbler	Apr. 27	Apr. 23	Apr. 24	Apr. 27	Apr. 30
Kingbird	Apr. 26	Apr. 30	May 5	May 7	May 14
Crested Flycatcher	Apr. 30	Apr. 30	May 5	May 7	May 14
Maryland Yellow-throat	Apr. 24	Apr. 24	Apr. 24	Apr. 27	Apr. 30
Wood Robin	May 1	Apr. 30	Apr. 30	Apr. 25	Apr. 30
Indigo-bird	May 10	May 1	May 7	May 7	May 10
Hummingbird	May 1	May 7	May 10	May 10	May 7
Baltimore Oriole	May 1	May 1	May 4	May 1	May 1
Rose-breasted Grosbeak	May 1	May 4	May 1	May 1	May 10
Redstart	May 1	May 4	May 1	May 1	May 3
Black throated Blue W.	May 1	May 4	May 1	May 4	May 3
Scarlet Tanager	May 1	May 9	May 9	May 3	May 4
Blackpoll Warbler	May 4	May 6	May 7	May 11	May 7
Canadian Warbler	May 11	May 9	May 11	May 11	May 10

Most of the earliest arrivals were reported from a tract of marsh and woodland situated at Tinicum, immediately on the Delaware river, ten miles below Philadelphia. The next reports generally came from the vicinity of the tide-water creeks near Haddonfield, N. J., five miles from the river and eight miles southeast of Philadelphia.

The other three stations were all situated on higher ground, from four to eight miles back from the river. Of these Wynnewood generally furnished the earliest records, probably partly on account of the valleys of the Darby Creek and Schuylkill River leading directly towards it. Olney and Germantown were usually the last stations to report an arrival, being situated farthest up the river as well as back from it. The thickly built portion of Philadelphia intervening directly between these stations and the river, to the south, may also have affected the arrival of migrants—especially at Germantown.

The full records of the spring migration at these stations show that those species which exhibit the greatest diversity in time of arrival are the migrants of early spring, many of which often occur in winter in small numbers, so that a few stragglers would be very likely to reach one station or another before any general migration took place.

On the other hand, those species which show the greatest uniformity in time of arrival are the May migrants from farther south, especially such as were abundant the first day on which they were seen.

The time of arrival of a species at the same station for a number of years varies within certain limits according to the state of the weather, temperature, etc., as has already been stated, though the variation is often comparatively slight, especially in the case of species arriving after April 1, as may be seen from the following table, which gives the date of first occurrence of fifty species at Germantown, Pa., for eight consecutive years:

	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.
Flicker	Apr.10	Mar.24	Mar.26	Mar.30	Mar.28	Mar.26	Mar.30	Apr. 2
Chimney Swift . .	Apr.22	Apr.23	Apr.22	Apr.20	Apr.15	Apr.22	Apr.16	Apr.27
Hummingbird . .	Apr.29	May 12	May 12	May 14	. . .	May 7	May 11	. . .
Kingbird.	May 6	May 11	May 7	May 6	May 6	May 14	May 1	May 4
Crested Flycatcher.	May 2	May 12	May 3	May 1	May 8	May 1	Apr.30	May 3
Pewee.	Apr. 3	Mar.20	Mar.21	Mar.22	Mar.27	Mar.27	Mar.31	Apr. 3
Wood Pewee. . .	May 6	May 15	Apr.30	May 13	May 12	May 14	May 6	May 17
Acadian Flycatcher	May 15	May 6	May 8	May 2	May 10	. . .	Apr.25	. . .
Red-winged Black- bird.	Mar. 4	Feb. 19	Feb. 19	Feb. 21	Mar. 13	Mar. 12	Feb. 25	Mar. 9
Meadowlark . . .	. . .	Feb. 10	Mar. 19	Mar. 21	Mar. 14	Mar. 12	Feb. 23	Mar. 17
Baltimore Oriole .	May 5	May 4	May 2	May 2	May 7	May 1	May 1	May 3
Purple Grackle. .	Mar.16	Mar. 7	Feb. 19	Feb. 21	Mar. 2	Feb. 13	Feb. 18	Mar. 6
White-throated Sparrow.	Sep. 17	Sep. 21	Sep. 24	Sep. 24	Sep. 22	Sep. 21	. . .	Sep. 22
Chipping Sparrow.	Apr. 8	Apr. 9	Apr. 8	Mar.31	Mar.29	Apr. 8	Apr.13	Apr. 4
Field Sparrow . .	Apr.11	Apr. 7	Apr. 9	Apr. 2	Mar.29	Mar.13	Mar.15	Mar.26
Snowbird	Oct. 12	Oct. 2	Oct. 6	Sep. 29	Sep. 27	Oct. 4	Oct. 1	. . .
Chewink.	Apr.22	Apr.23	Apr.27	Apr.18	Apr.11	May 1	Apr.18	Apr.24
Indigo-bird . . .	May 16	May 11	May 7	May 12	May 12	May 10	May 8	May 10
Scarlet Tanager. .	May 9	May 12	May 5	May 8	May 9	May 4	Apr.28	May 3
Barn Swallow . .	Apr.22	Apr.19	Apr.21	Apr.12	Apr.22	Apr.19	Apr.19	Apr.24
Red-eyed Vireo. .	May 7	May 11	May 4	Apr.29	May 5	Apr.30	May 2	May 3
Black and White Warbler.	Apr.30	May 4	Apr.27	Apr.21	Apr.20	Apr.30	Apr.24	May 1
Parula Warbler. .	May 2	Apr.22	May 5	May 1	Apr.27	Apr.30	Apr.19	Apr.30
Yellow Warbler .	May 6	May 4	May 2	May 5	May 11	May 1	May 8	May 4
Black-throated Blue Warbler. .	May 9	May 11	May 5	May 1	May 5	May 3	Apr.28	May 2
Myrtle Warbler. .	May 2	Apr.10	May 2	Apr.25	Apr.20	Apr.27	Apr.18	Apr. 7
Magnolia Warbler.	May 16	May 16	May 13	May 6	May 10	May 11	May 9	May 3
Chestnut-sided Warbler.	May 10	May 16	May 6	Apr.30	May 9	May 2	May 2	May 3
Bay-breasted Warbler.	May 19	May 11	. . .	May 15	May 10	May 11	May 10	. . .
Blackpoll Warbler.	May 10	May 7	May 5	May 10	May 10	May 7	May 11	May 7
Blackburnian Warbler. . . . .	. . .	May 11	May 13	May 1	May 10	Apr.28	Apr.24	May 12

	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.
Black-throated								
Green Warbler	May 2	May 11	May 5	Apr.26	May 5	May 2	Apr.19	Apr.30
Yel. Palm Warbler.			Apr.13	Apr.18	Apr.11	Apr.13	Apr.12	. . . .
Oven-bird	Apr.30	May 3	Apr.29	Apr.30	May 3	May 3	Apr.29	Apr.30
Water-Thrush		May 10	May 6	May 4	May 5	May 5	Apr.19	May 4
Maryland Yellow-								
throat	Apr.29	Apr.24	Apr.28	Apr.30	May 6	Apr.30	May 1	May 3
Chat	May 2	May 12	May 5	May 5	May 11	May 5	May 10	May 3
Canadian Warbler.	May 19	. . . .	May 5	May 13	. . . .	May 10	May 12	May 15
Redstart.	May 2	May 4	May 3	May 1	May 4	May 3	Apr.29	Apr.30
Catbird	May 2	May 4	May 3	May 5	May 5	May 5	May 4	Apr.30
Brown Thrasher	Apr.24	Apr.25	Apr.28	Apr.15	Apr.22	Apr.30	Apr.19	Apr.30
House Wren	May 3	Apr.27	Apr.24	Apr.28	Apr.14	Apr.30	Apr.19	May 5
Winter Wren. . . . .	. . . .	Sep. 25	Sep. 27	Sep. 24	Sep. 22	Sep. 19	. . . .	. . . .
Brown Creeper . . . . .	. . . .	Sep. 20	Oct. 8	Sep. 29	Sep. 20	Sep. 24	. . . .	. . . .
Wood Thrush	May 2	May 1	May 1	May 1	May 3	Apr.30	Apr.23	May 2
Wilson's Thrush . . . . .	. . . .	May 11	Apr.25	May 3	May 6	May 2	Apr.28	May 4
Olive-backed								
Thrush	May 11	May 17	May 5	May 4	May 6	May 3	May 4	May 5
Hermit Thrush	Apr.13	Apr. 7	Apr. 9	Apr. 3	Apr.10	Apr.13	Apr.12	Apr. 3
Robin.	Mar. 7	Mar.10	Feb. 28	Feb.19	Mar. 7	Feb. 26	Feb. 24	Mar. 9
Bluebird.	Mar.18	. . . .	Feb. 17	Feb.21	May 8	Feb.23	Feb. 17	Mar. 9

In cases where there is considerable diversity in the time of arrival of a species the earliest dates are often based upon early stragglers, sometimes single birds, and in such cases the date of the second occurrence generally corresponds pretty closely with the first occurrence of other years.

In studying migration, complete daily lists of all the birds seen should be kept by the observer; the best results being obtained by covering, as nearly as possible, the same section of country every morning at about the same time, and recording the *exact* number of individuals of each species seen. With a little practice this will be found to be almost if not quite as easy as the use of such elastic and indefinite terms as "common," "abundant," "several," etc. These field notes can be jotted down in a rough note book or on printed blanks, and afterwards entered in a book with perpendicular columns for the days and a column at the left for the names of the birds. A curve of temperature variation carried along the top of the page will show the coincidence of high temperature with increase in migrants, and notes on the general state of the weather, etc., may be entered at the head of each daily column.

When data from several different stations are to be combined for the study of migratory waves and their relation to meteorology, it

will be found advisable to select a few common, easily recognized species, including, of course, both early and late migrants.

An idea of how the daily notes of several observers may be arranged so as to illustrate graphically the progress of the migration may be seen in the accompanying cut (Fig. 1), which shows the

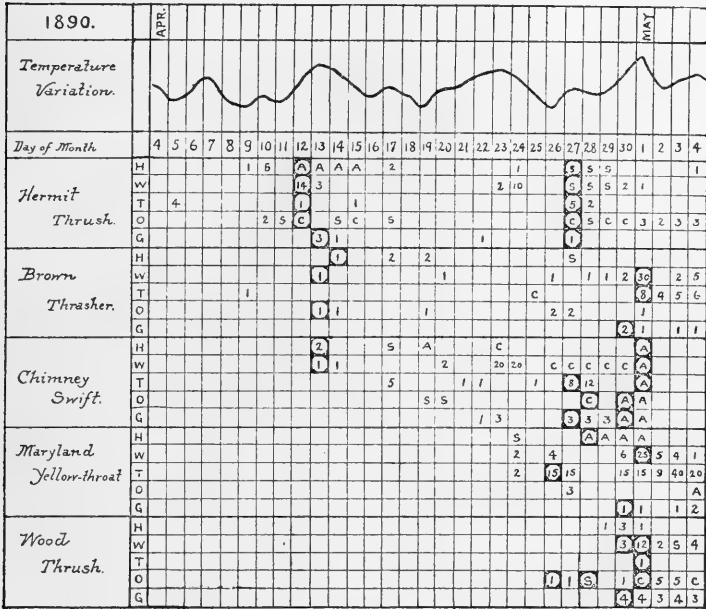


Fig. 1. Migration of Five Species, April-May, 1890. (A. = Abundant, S. = Several, C. = Common.)

daily variation in the numbers of five species at the five stations already mentioned. The first arrivals and decided increases in numbers (marked with heavy black squares), as will be noticed, occur on days when the temperature curve reaches the highest points.

By taking the total number of individuals of any species for several successive days and plotting them in the same manner as a temperature curve we can obtain a "migration curve," which will show graphically the fluctuation in the numbers of birds present. As a matter of fact the best results are obtained by adding together

the daily numbers of several species which migrate at the same time, and plotting the totals. Fig. 2, A, represents such a curve, showing the fluctuation of the April migration of 1891, based upon the Flicker, Chipping Sparrow and Brown Thrasher, which were among the most numerous species moving at this time. Fig. 2, B, is a curve of temperature variation covering the same period, based upon the daily maximum temperature. By comparing the two the coincidence

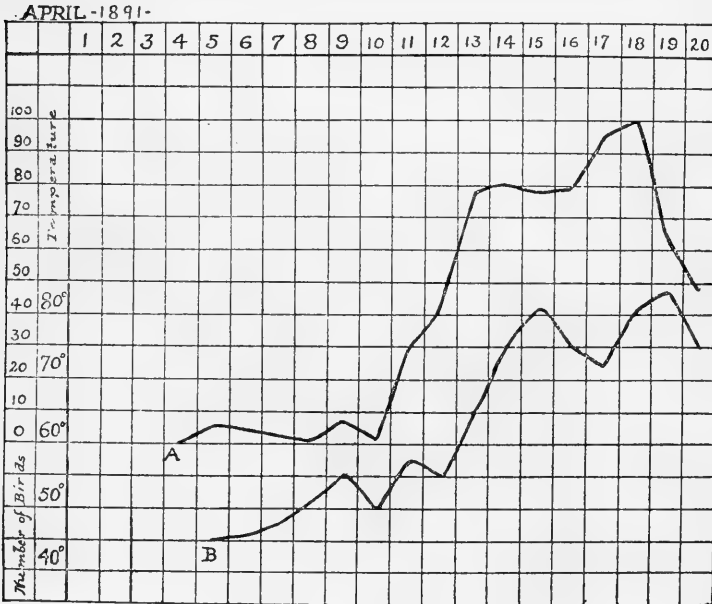


Fig. 2. A = Migration Curve, B = Temperature Curve.

of a marked increase in the number of birds with a decided rise in temperature is at once apparent, the two curves being nearly parallel. It will be noticed, however, that elevations in the migration curve generally begin a little later than those in the temperature curve. This shows graphically the well-known fact that "bird waves" occur a day or two *after* a decided increase in temperature.

BIRDS FOUND WITHIN TEN MILES OF PHILADELPHIA.

For the more especial use of the members of the Delaware Valley Ornithological Club, the following "local" list has been prepared

of such species as have occurred within ten miles of Philadelphia. This circle forms a convenient limit for such a list, and includes most of the favorite collecting grounds in the vicinity of the city.

The list has been arranged according to the time of occurrence of the species, and in the case of rarities the records upon which the entries stand will be found in the general annotated list.

Doubtless many additions can be made to the list of water birds, as our opportunities for obtaining information regarding the species found along that part of the Delaware River included within the circuit have been limited, and it is reasonable to expect almost any of the coast species to occur there as stragglers.

The species have been arranged in ten groups, and as no names have been repeated, some of the groups may appear misleading. For instance, many species are given in Group II. which might be looked for in III. The following explanation will prevent any misunderstanding by combining the groups under the more usual headings :

Resident Birds, Group I.

Birds which occur in the Breeding Season, Groups I., II., III. and IV.

Winter Visitants, Groups V., VI. and VII.

Transients, Groups VIII. and IX. (and of course many of III., IV., etc.)

Birds which occur in Winter, Groups I., II., V., VI. and VII.

I. Resident Birds. Generally distributed all year.

More Common in Winter.	Abundance nearly the same all year.	More Common in Summer.
Red-tailed Hawk,	Woodcock,	Great Blue Heron,
Red-shouldered Hawk,	Quail,	Sparrow Hawk,
Broad-winged Hawk,	Horned Owl,	Blue Jay,
Cooper's Hawk,	Screech Owl,	Meadowlark,
Sharp-shinned Hawk,	Barn Owl,	Goldfinch,
Long-eared Owl,	Downy Woodpecker,	Song Sparrow,
Hairy Woodpecker,	Cardinal,	Swamp Sparrow,
Crow,	Carolina Wren,	Field Sparrow,
White-breasted Nuthatch, Cedarbird,		Tufted Titmouse,
		Robin,
		Bluebird.

II. Species which are of rare or irregular occurrence in winter, but common Summer Residents.

Night Heron,	Kingfisher,	Red-winged Blackbird,
Killdeer,	Flicker,	Purple Grackle,
Turkey Vulture,	Pewee,	Vesper Sparrow.

III. Common Summer Residents.

Green Heron,	Baltimore Oriole,	Oven-bird,
Spotted Sandpiper,	Cowbird,	Maryland Yellowthroat,
Yellow-billed Cuckoo,	Indigo-bird,	Blue-winged Warbler,
Hummingbird,	Chewink,	Kentucky Warbler,
Chimney Swift,	Chipping Sparrow,	Worm-eating Warbler,
Nighthawk,	Grasshopper Sparrow,	Chat,
Kingbird,	Barn Swallow,	House Wren,
Crested Flycatcher,	Rough-winged Swallow,	Brown Thrasher,
Acadian Flycatcher,	Red-eyed Vireo,	Catbird,
Wood Pewee,	White-eyed Vireo,	Wood Thrush.
Orchard Oriole,		

IV. Summer Residents which are rare or local (many are common as transients).

Wood Duck,	Whip-poor-will,	Warbling Vireo,
Least Bittern,	Least Flycatcher,	Black and White Warbler,
King Rail,	Bank Swallow,	Prairie Warbler,
Virginia Rail,	Tree Swallow,	Pine Warbler,
Field Plover,	Cliff Swallow,	Yellow Warbler,
Osprey,	Purple Martin,	Louisiana Water-Thrush,
Black-billed Cuckoo,	Scarlet Tanager,	Redstart,
Red-headed Woodpecker,	Yellow-throated Vireo,	Long-billed Marsh Wren.

V. Winter Visitants of regular occurrence.

Herring Gull,	Snowbird,	Tit Lark,
Ring-billed Gull,	Tree Sparrow,	Winter Wren,
Black Hawk,	White-throated Sparrow,	Brown Creeper,
Pigeon Hawk,	Pine Finch,	Black-capped Chickadee,
Marsh Hawk,	Purple Finch,	Golden-crowned Kinglet.
Short-eared Owl,		

VI. Winter Visitants of irregular occurrence or rare.

Little Auk,	Swan,	Red-bellied Woodpecker,
Brünnich's Murre,	Black Scoter,	Horned Lark,
Kittiwake,	White-winged Scoter,	Prairie Horned Lark,
Arctic Tern,	Surf Scoter,	Crossbill,
Leach's Petrel,	Duck Hawk,	White-winged Crossbill,
Stormy Petrel,	Goshawk,	Pine Grosbeak,
Shoveller,	Acadian Owl,	Snow Bunting,
European Widgeon,	Snowy Owl,	Lapland Longspur,
Canvas-back,	Hawk Owl,	Redpoll,
Lesser Snow Goose,	Barred Owl,	Northern Shrike.
White-fronted Goose,		

VII. Species which occur occasionally in winter, but are mainly transients.

Horned Grebe,	Black Duck,	Brant,
Pied-billed Grebe,	Baldpate,	Canada Goose,
Holbøll's Grebe,	Green-winged Teal,	Coot,
Loon,	Blue-winged Teal,	Wilson's Snipe,
Red-throated Loon,	Pintail,	Yellow-bellied Sapsucker,
Cormorant,	Redhead,	Rusty Grackle,
Golden-eye,	Scaup,	Fox Sparrow,
Buffle-head,	Lesser Scaup,	Savanna Sparrow,
Ruddy Duck,	Ring-neck,	Myrtle Warbler,
Merganser,	Old-squaw,	Red-breasted Nuthatch,
Red-breasted Merganser,	Snow Goose,	Hermit Thrush.
Mallard,		

VIII. Common Transients.

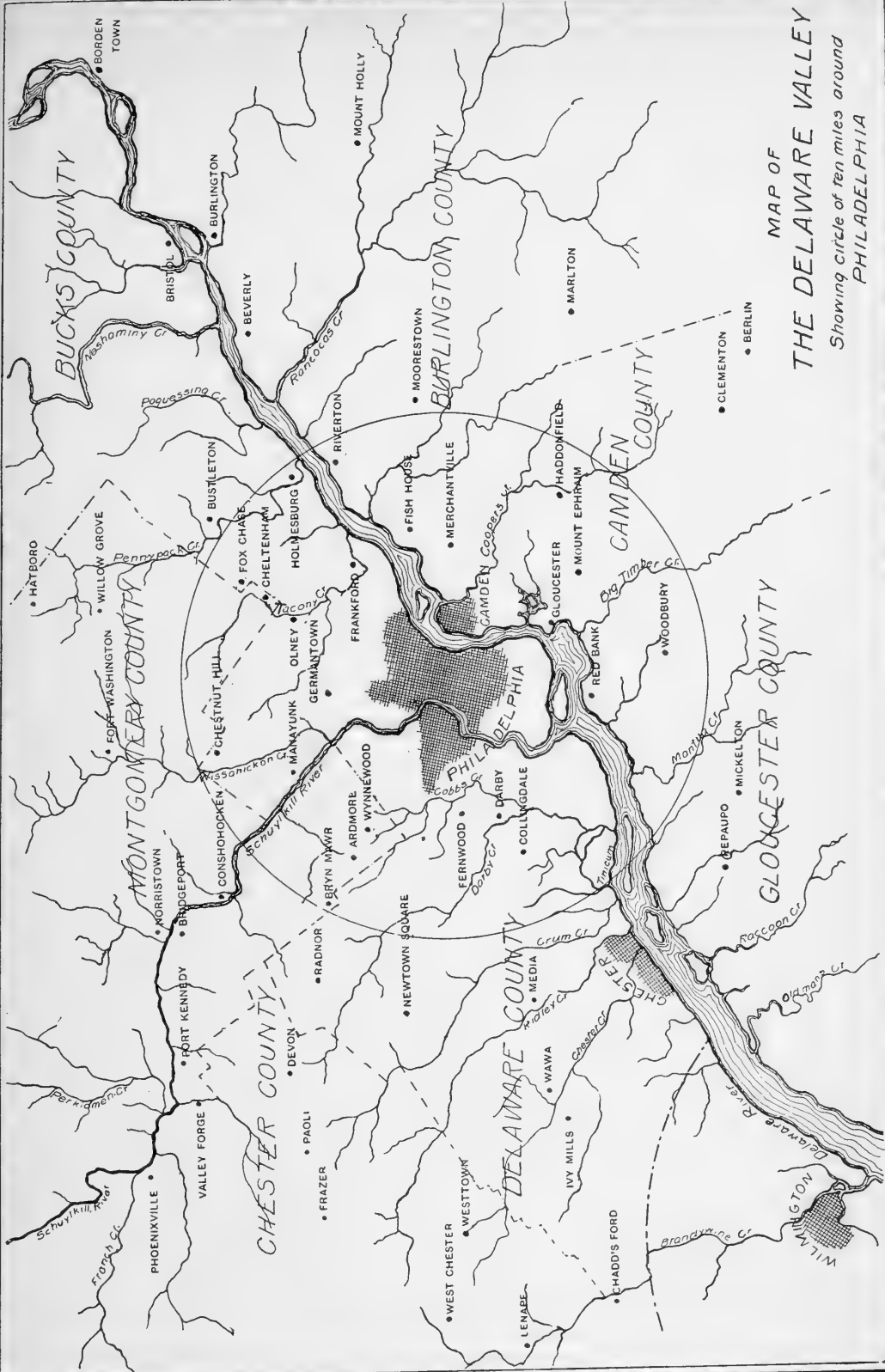
Common Tern,	Magnolia Warbler,	Water-Thrush,
Sora Rail,	Chestnut-sided Warbler,	Connecticut Warbler,
Solitary Sandpiper,	Bay-breasted Warbler,	Wilson's Warbler,
Bob-o-link,	Parula Warbler,	Canadian Warbler,
Rose-breasted Grosbeak,	Blackpoll Warbler,	Ruby-crowned Kinglet,
Solitary Vireo,	Blackburnian Warbler,	Wilson's Thrush,
Nashville Warbler,	Black-throated Green	Gray-cheeked Thrush,
Black-throated Blue	Warbler,	Olive-backed Thrush,
Warbler,	Yellow Palm Warbler,	

IX. Rare or irregular transients.

Gannet,	Pectoral Sandpiper,	Bronzed Grackle,
Laughing Gull,	White-rumped Sandpiper,	White-crowned Sparrow
Bonaparte's Gull,	Red-backed Sandpiper,	Golden-winged Warbler
Gull-billed Tern,	Semipalmated Sandpiper,	Tennessee Warbler,
Least Tern,	Sanderling,	Cape May Warbler,
Black Tern,	Willet,	Mourning Warbler,
White Egret,	Semipalmated Plover,	Hooded Warbler,
Florida Gallinule,	Piping Plover,	Short-billed Marsh Wren,
Yellow Rail,	Turnstone,	Gnatcatcher,
Dowitcher,	Yellow-bellied Flycatcher,	Bicknell's Thrush.

X. Rare Stragglers.

Black Skimmer,	Oyster-catcher,	Summer Tanager,
Caspian Tern,	Ruffed Grouse,	Loggerhead Shrike,
Little Blue Heron,	Wild Pigeon,	Philadelphia Vireo,
Snowy Heron,	Bald Eagle,	Brewster's Warbler,
Glossy Ibis,	Swallow-tailed Kite,	Orange-crowned Warbler,
Black Rail,	Fish Crow,	Prothonotary Warbler,
Clapper Rail,	Yellow-headed Blackbird,	Yellow-throated Warbler,
Purple Gallinule,	Sharp-tailed Finch,	Mockingbird,
Purple Sandpiper,	Lincoln's Finch,	Bewick's Wren,
Marbled Godwit,	Black-throated Bunting,	Brown-headed Nuthatch.
Hudsonian Godwit,	Blue Grosbeak,	



MAP OF
THE DELAWARE VALLEY
 Showing circle of ten miles around
PHILADELPHIA

PART II.

ANNOTATED LIST

OF THE

BIRDS OF EASTERN PENNSYLVANIA

AND

NEW JERSEY.

WITH A BIBLIOGRAPHY OF ORNITHOLOGICAL LITERATURE
RELATING TO PENNSYLVANIA AND NEW JERSEY.

INTRODUCTORY EXPLANATIONS.

THE following purports to be a complete list of such birds as have been recorded as occurring in those parts of Pennsylvania and New Jersey lying east and south of the Alleghany Mountains. The list has been based mainly upon the experience of the members of the Delaware Valley Ornithological Club, drawn from their collections and field notes. In order, however, to make it more accurate, it has been necessary to consult as well the experience of others. With this end in view, all the published matter relating to the ornithology of this section, as far as known and available to the compiler, has been consulted, and correspondence has been carried on with ornithologists in various parts of Pennsylvania and New Jersey.

The material thus collected necessarily contained much that is misleading and erroneous, and the elimination of such matter has proved a most difficult task. Many published errors have been easily traced out by correspondence and examination of specimens; but concerning many other records which seemed improbable or doubtful we have been unable to obtain any further information whatever, and have, therefore, been compelled to leave them out, as it was considered better to err in this way than to include statements which might prove erroneous. We trust that the omission of published records which we thought required verification, will induce those who may be able to verify them to forward us the desired information.

In order that the grounds upon which many species are included may be clearly understood, we would state that actual specimens taken within the region under consideration (or so labelled on good authority), have been examined by the author in the case of all the species contained in the list with the exception of the following:*

*Of the following rare species authentic specimens taken in the district have been examined, but no captures have been made for a number of years:

<i>Sterna forsteri</i> ,	<i>Accipiter atricapillus</i> ,
<i>Sterna fuliginosa</i> ,	<i>Dryobates borealis</i> ,
<i>Crex crex</i> ,	<i>Melospiza lincolni</i> ,
<i>Recurvirostra americana</i> ,	<i>Ampelis garrulus</i> ,
<i>Ereunetes occidentalis</i> ,	<i>Helminthophila lawrencei</i> ,
<i>Limosa hemastica</i> ,	<i>Helminthophila celata</i> ,
<i>Charadrius dominicus</i> ,	<i>Dendroica townsendi</i> .
<i>Ectopistes migratorius</i> ,	

Fratercula arctica,
Cepphus grylle,
Stercorarius pomarinus,
Stercorarius parasiticus,
Sterna tschegrava,
Sterna maxima,
Sterna trudeaui,
Sterna s. acyflavida,
Sterna paradisæa,
Sterna dougalli,
Fulmarus glacialis,
Puffinus major,
Procellaria pelagica,
Phalacrocorax carbo,
Pelecanus erythrorhynchos,
Pelecanus fuscus,
Histrionicus histrionicus,
Camptolaimus labradorius,
Somateria dresseri,
Somateria spectabilis,
Chen caerulescens,
Anser a. gambeli,
Branta nigricans,
Ajaja ajaja,
Guara alba,
Plegadis autumnalis,
Tantalus loculator,
Ardea t. ruficollis,
Grus americana,
Crymophilus fulicarius,

Phalaropus tricolor,
Himantopus mexicanus,
Scolopax rusticola,
Macrorhamphus scolopaceus,
Micropalama himantopus,
Tringa maritima,
Tringa ferruginea,
Limosa fedoa,
Tryngites subruficollis,
Numenius borealis,
Ægialitis n. circumcincta,
Ægialitis wilsonia,
Tympanuchus cupido,
Columbigallina p. terrestris,
Buteo b. harlani,
Scotiaptex cinerea,
Surnia u. caparoch,
Conurus carolinensis,
Milvulus tyrannus,
Milvulus forficatus,
Tyrannus verticalis,
Contopus borealis,
Empidonax p. traillii,
Quiscalus major,
Coccothraustes vespertinus,
Chondestes grammacus,
Dendroica auduboni,
Dendroica dominica,
Seiurus n. notabilis,
Sitta pusilla.

These are included upon what we consider reliable authority. In most cases actual specimens are referred to which were recorded as captured in Pennsylvania or New Jersey. Occasionally, however, no actual reference to specimens was obtainable, but when the occurrence of the species was in every respect probable, and it was reported to occur by such reliable authorities as Turnbull, Cassin, etc., the species has been entered in the list accompanied by the statement of these authors. Such species are:

<i>Phalacrocorax carbo</i> ,	<i>Ardea t. ruficollis</i> ,	<i>Tryngites subruficollis</i> ,
<i>Pelecanus erythrorhynchos</i> ,	<i>Himantopus mexicanus</i> ,	<i>Numenius borealis</i> ,
<i>Pelecanus fuscus</i> ,	<i>Macroramphus scolopaceus</i> ,	<i>Ægialitis wilsonia</i> ,
<i>Histrionicus histrionicus</i> ,	<i>Micropalama himantopus</i> ,	<i>Tympanuchus cupido</i> ,
<i>Camptolaimus labradorius</i> ,	<i>Tringa ferruginea</i> ,	<i>Empidonax p. traillii</i> .

The following explanations will serve to make clear the nature of the notes accompanying each species:

Immediately beneath the name is given the breeding range and winter distribution of the species, which will show the relation which its occurrence in our district bears to its line of migration and its winter and summer home. The statements are taken from Ridgway's Manual, and other sources, but in many cases, owing to lack of exact data, they are necessarily only approximate; the detail of distribution west of the Alleghanies, moreover, has not been attempted.

The first general statement is intended to describe the character of the occurrence of the species in the district under consideration or in a certain part of it. If the species occurs elsewhere in Pennsylvania or New Jersey under different circumstances (*i. e.*, if it is a transient in the lowlands but breeds in the mountains) an additional statement to that effect is added.

The dates of the arrival and departure of migrants are based upon the records of the Delaware Valley Ornithological Club, from the vicinity of Philadelphia, as far as inland species are concerned, while for coast birds they generally refer to the time of occurrence at Atlantic City, N. J.

In the case of rare species a more detailed account is often given, including a list of specimens which have been taken in eastern Pennsylvania or New Jersey, with data.

It has been thought better to include those species which have become extinct or which are only accidental stragglers in our district in their regular systematic place in the list for convenience of reference, but all such species have their numbers enclosed in brackets, so that they may be readily distinguished.

All important statements are followed by the name of the person upon whose authority they are quoted, and in the case of published matter a brief reference to the place of publication is added. In the case of Turnbull's "*Birds of East Pennsylvania and New Jersey*" and Warren's "*Report on the Birds of Pennsylvania*," special reference has often been omitted, so wherever these authors' names occur the statements for which they are quoted will be understood to be taken from the above works.

At the end of the Bibliography will be found a list of authors not only of published matter, but also of the manuscript notes, etc., which have been used in the preparation of the following pages.

The only abbreviations used in references contained in the list are "B. N. O. C.," *Bulletin Nuttall Ornithological Club*, and "O. & O.," *Ornithologist and Oölogist*.

Family Podicipidæ—The Grebes.

Only three species occur in Pennsylvania and New Jersey.

1. *Colymbus holbœllii* (REINH.). **Holbœll's Grebe.**

BREEDING RANGE—Arctic America and N. E. Asia.

WINTER DISTRIBUTION—Southward on the Atlantic coast to Virginia.

Rare winter visitant on the coast, most plentiful during the migrations. One specimen was found dead at Atlantic City, Feb. 1, 1883, by Mr. G. S. Morris, and several are recorded by Mr. Laurent from Five-mile Beach (*O. & O.*, 1892). This species occurs also on the lower Delaware, a specimen in the collection of Mr. Witmer Stone having been taken near Chester, Oct., 1891; while another, in the collection of Mr. C. A. Voelker, was shot in the same locality, Feb., 1894. Stragglers have sometimes been taken farther inland—one in Lancaster county, Pa., March 25, 1847 (*Libhart, Birds of Lanc. Co.*), and several in Lycoming county (*Koch*). The specimen in Mr. Voelker's possession is in full adult plumage, but the others we have examined are in immature dress.

2. *Colymbus auritus* LINN. **Horned Grebe.**

BREEDING RANGE—Northern N. A., chiefly north of U. S.

WINTER DISTRIBUTION—Southward to S. Atlantic States.

Winter visitant and more abundant in migrations, though not very common or regular in its occurrence. In the vicinity of Philadelphia it is found mostly on the Delaware and the tide-water creeks from November to May 3. Mr. Laurent records it as common at Five-mile Beach, N. J., from late in October to March (*O. & O.*, 1892).

3. *Podilymbus podiceps* (LINN.). **Pied-billed Grebe.**

BREEDING RANGE—Whole of N. A. except extreme north and south.

WINTER DISTRIBUTION—Southward to S. A.

Seen mostly during the migrations and less commonly in winter; a

few may, however, breed in secluded parts of southern New Jersey. Specimens have been secured in the vicinity of Philadelphia as late as March 5 (Haddonfield, N. J., *W. L. Abbott, M. D.*), and as early as August 25 (Olney, Pa., *G. S. Morris*). On the coast it seems to be rarer than inland.

At Lake Hopatcong, in northern New Jersey, this species is reported to breed regularly, and was observed there by Mr. S. N. Rhoads during the breeding season. Dr. J. W. Detwiler has also found it nesting at Hopedale, Pike Co., Pa., in 1868.

Family Urinatoridæ—The Loons.

Only two species occur in the region covered by this list.

4. *Urinator imber* (GUNN.). Loon.

BREEDING RANGE—Northern U. S. northward.

WINTER DISTRIBUTION—Southward to Gulf of Mexico.

Common transient on the New Jersey coast and less frequent inland. Quite a number winter regularly at Barnegat Bay, Atlantic City, Five-mile Beach, etc. Most plentiful April 12–30 and Oct. 3–Nov. 1.

At Lake Hopatcong, N. J., a pair is reported by residents to breed every year (*S. N. Rhoads*), and it has been found throughout the summer at Hopedale, Pike Co., Pa. (*Detwiler*).

5. *Urinator lumme* (GUNN.). Red-throated Loon.

BREEDING RANGE—Arctic regions.

WINTER DISTRIBUTION—Southward to coast of S. Atlantic States.

Rare, but apparently of regular occurrence along the New Jersey coast during migrations and less frequent in winter. Occurs also for some distance up Delaware Bay.

Family Alcidae—The Auks and Guillemots.

Five species of this family occur in our district, and all are winter visitants from the far north. The Little Auk, Razor-billed Auk and Brünnich's Murre occur along the coast with considerable regularity, but the Black Guillemot and Puffin are very rare.

6. *Fratercula arctica* (LINN.). Puffin.

BREEDING RANGE—Bay of Fundy to Greenland.

WINTER DISTRIBUTION—Southward to Long Island.

Very rare straggler in winter.

One specimen in the possession of Mr. Joseph Krider was killed about 1876 on the Delaware river near Chester (*Warren's Report*). We can find no definite record of its occurrence on the New Jersey coast.

7. *Cephus grylle* (LINN.). Black Guillemot.

BREEDING RANGE—Newfoundland to Maine.

WINTER DISTRIBUTION—Southward to Long Island.

Turnbull states that this species is a rare straggler on the New Jersey coast "as far south as Cape May," and Krider (*Field Notes*) mentions having obtained two specimens at Egg Harbor. We can find no other records for New Jersey nor any positive evidence of its occurrence in Pennsylvania.*

8. *Uria lomvia* (LINN.). Brünnich's Murre.

BREEDING RANGE—Gulf of St. Lawrence, northward.

WINTER DISTRIBUTION—Southward to the coast of New Jersey.

Regular winter visitant along the New Jersey coast, though apparently not very common. Occasional also on the lower Delaware river (*Voelker*). One specimen, which we have examined, was taken by Mr. C. H. Shearer, Dec. 11, 1893, in Dauphin county, Pa., on the Susquehanna river.

* The Roddy specimen (*Warren's Report*) proves to be "something else," and no trace can be found of a specimen having been in the Lancaster museum. We can obtain no positive data regarding specimens secured in Pennsylvania by C. D. Wood and J. Krider.

9. *Alca torda* LINN.. Razor-billed Auk.

BREEDING RANGE—Eastern Maine, northward.

WINTER DISTRIBUTION—Southward to New Jersey.

Winter visitant on the New Jersey coast, and probably almost as common as the preceding. A female was secured by Mr. Scott at Long Beach, Feb. 7, 1878, (*B. N. O. C.*, 1879) and several have been observed by Mr. Laurent at Five-mile Beach (*O. & O.*, 1892), while one specimen was secured by Dr. W. L. Abbott as far south as Cape May.

10. *Alle alle* (LINN.). Little Auk. Dovekie.

BREEDING RANGE—Arctic regions.

WINTER DISTRIBUTION—Southward to New Jersey.

Regular winter visitant along the New Jersey coast, varying in abundance from year to year. A number of specimens have been taken at Long Beach by Mr. W. E. D. Scott (*B. N. O. C.*, 1879) and one was taken in Cape May county by Dr. W. L. Abbott, Dec. 17, 1878. One specimen was also taken on the Delaware river at Camden, N. J., Dec., 1878 (*Trotter, B. N. O. C.*, 1879.)

Family Stercorariidæ—The Jaegers.

Two species occur as rare visitants from the north.

11. *Stercorarius pomarinus* (TEMM.). Pomarine Jaeger.

BREEDING RANGE—Arctic regions.

WINTER DISTRIBUTION—Southward to coast of New Jersey.

Rare straggler in migrations and in winter along the New Jersey coast. Two specimens were taken at Long Beach, Dec., 1876 (*Scott, B. N. O. C.*, 1879), and one is reported to have been secured on the Susquehanna river at Harrisburg, Pa., many years ago *in summer* (*Turnbull*).

Another straggler was taken on the Susquehanna river in Lan-

caster county, Pa., by Mr. Vincent Barnard, and still another at Eaglesmere, Sullivan county, Pa. (*Warren's Report*).*

12. *Stercorarius parasiticus* (LINN.). Parasitic Jaeger.

BREEDING RANGE—Arctic regions.

WINTER DISTRIBUTION—Southward to coast of New Jersey.

Rare straggler on the New Jersey coast.

One was shot at Atlantic City by a fisherman in the winter of 1891-2 and reported at a meeting of the D. V. O. C. by Mr. J. F. Brown.

Family Laridæ—The Gulls and Terns.

Eighteen species of this family have been reported on the New Jersey coast or on the large rivers. The only ones, however, which occur regularly are the Black-headed Gull, Common Tern and Least Tern, all of which were formerly abundant breeders, and the Herring Gull, Ring-billed Gull, Bonaparte's Gull, Forster's Tern and Black Tern, the first two of which are winter visitants and the others transients. Of the rare visitants the Kittiwake, Black-backed Gull and Arctic Tern are stragglers from the north, while the Caspian, Gull-billed, Royal, Trudeau's, Cabot's, Roseate and Sooty Terns are stragglers from the south.

13. *Rissa tridactyla* (LINN.). Kittiwake.

BREEDING RANGE—Arctic regions.

WINTER DISTRIBUTION—Southward to New Jersey and Great Lakes.

Very rare winter visitant on the New Jersey coast. One or two specimens have been shot during the past few years at Atlantic City, N. J., and a specimen was exhibited by Mr. C. A. Voelker at a meeting of the D. V. O. C., which was reported to have been taken by a gunner in the interior of New Jersey in November, 1893.

*The specimen recorded by Turnbull as shot below Philadelphia by John Krider seems doubtful, as Krider says in his Field Notes, p. 79, that he shot into a flock of Black-bellied Plover, and, upon picking up the dead birds, found one of them to be a *Pomarine* Jaeger! It would seem hardly likely to have been a Jaeger at all.

Dr. Warren records two specimens from Pennsylvania, one shot near Lancaster and the other in the collection of Mr. Joseph Krider, from near Philadelphia.

14. *Larus marinus* LINN. Black-backed Gull.

BREEDING RANGE—Coasts of north Atlantic.

WINTER DISTRIBUTION—Southward to New Jersey.

Rare winter visitant along the New Jersey coast, a few, however, probably occur every year. One was taken by Dr. W. L. Abbott in Cape May county January 29, 1879, and two more in the same locality at about the same time. Another was taken at Tuckerton, N. J., March, 1894,* by Jillson Bros. Two were also seen by Mr. S. N. Rhoads, on the meadows at Atlantic City, on March 13, 1888, and Mr. Scott records the species as a regular winter visitant at Long Beach (*B. N. O. C.*, 1879).

15. *Larus argentatus smithsonianus* COUES. Herring Gull.

BREEDING RANGE—Atlantic coasts, southward to New England.

WINTER DISTRIBUTION—Southward to West Indies.

Abundant winter resident all along the New Jersey coast and up the Delaware river to Philadelphia, occasionally also on the Schuylkill and Susquehanna. The majority arrive at Atlantic City October 1, and depart by April 1, but stragglers have been secured as early as the last week in September (*De Haven*), and in Cape May county Dr. W. L. Abbott obtained one as late as April 14.

During migrations small flocks have been noticed some distance inland, apparently driven thither by storms. Five were noticed flying high over head in central Chester county, Pa., May, 1891 (*Stone*), and a similar occurrence was noted at Willowgrove, Pa., by Mr. G. S. Morris. Mr. Wm. Whitaker also secured a specimen October, 1893, on a mill dam at Cedar Grove, Philadelphia, five miles from the Delaware.

16. *Larus delawarensis* ORD. Ring-billed Gull.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—Southward to Cuba and Mexico.

Common winter resident along the coast and occasional on the

*All in collection Acad. Nat. Sci., Phila.

Delaware and Susquehanna rivers. Arrives and departs about the same time as the preceding. Apparently most numerous during migrations.

17. *Larus atricilla* LINN. Laughing Gull. Black-head.

BREEDING RANGE—Atlantic coast, New England southward.

WINTER DISTRIBUTION—West Indies and Mexico to S. A.

Summer resident on the New Jersey coast; formerly abundant, breeding in large colonies on Brigantine Beach and the beaches and islands of Cape May county. It has now, however, become quite rare during the breeding season, though a few pairs still nest near Brigantine (*De Haven*) and in the vicinity of Sea Isle City.

During August and September this species occurs more plentifully in flocks all along the coast, ranging as far north as Pt. Pleasant, and is especially numerous in lower Delaware bay. Arrives at Atlantic City April 26 to May 1 and departs Sept. 20–October 1. During migrations it occurs as a straggler on the Delaware and Susquehanna rivers.

18. *Larus philadelphia* (ORD). Bonaparte's Gull.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—Coast of Southern States.

Tolerably common transient along the coast, and some probably occur in winter. Occasionally found on the Delaware and Susquehanna rivers during migrations. One was taken at Atlantic City as early as August 21, 1892 (*De Haven*).

**19. *Gelochelidon nilotica* (HASSELQ.). Gull-billed Tern.
Marsh Tern.**

BREEDING RANGE—Brazil to Long Island.

WINTER DISTRIBUTION—Southern Mexico and southward.

Rare visitant along the New Jersey coast, where it is reported to have bred formerly.*

Occasional straggler on the Delaware river, and one specimen is recorded by Dr. Warren from Chester county, Pa., on the authority of Mr. H. B. Graves.

* As late as 1886 according to Mr. Harry G. Parker (*O. & O.*, 1886, p. 138).

20. *Sterna tschegrava* LEPECH. Caspian Tern.

BREEDING RANGE—Nearly cosmopolitan, "breeding in isolated and widely separated localities."

WINTER DISTRIBUTION—Same.

Rare straggler along the New Jersey coast and accidental inland.

Two were shot on the Susquehanna at Marietta, Pa., Sept. 21, 1847 (*Libhart, Birds of Lanc. Co.*), and one was mounted several years ago by Mr. Joseph Krider, said to have been shot near Chester, Pa. (*Warren's Report*).

21. *Sterna maxima* BODD. Royal Tern.

BREEDING RANGE—Coasts and inland waters of U. S. north to 40°.

WINTER DISTRIBUTION—Tropical coasts.

Rare straggler on the New Jersey coast during summer, and accidental inland.

Dr. Warren records one taken by Mr. H. B. Graves in Chester county, Pa., Sept., 1879.

22. *Sterna sandvicensis acuflavida* (CABOT). Cabot's Tern.

BREEDING RANGE—Coasts of S. Atlantic and Gulf States.

WINTER DISTRIBUTION—Coasts of S. A.

Rare straggler along the New Jersey coast in summer. One specimen was shot at Grassy Bay, August, 1861 (*Turnbull*).

[23.] *Sterna trudeaui* AUD. Trudeau's Tern.

BREEDING RANGE—Atlantic coast of S. A.

WINTER DISTRIBUTION—Same.

Accidental. One specimen is mentioned by Audubon as having been secured at Great Egg Harbor, N. J., but no subsequent records are known for Pennsylvania or New Jersey.

24. *Sterna forsteri* NUTT. Forster's Tern.

BREEDING RANGE—Temperate N. A., mainly on the large inland waters

WINTER DISTRIBUTION—Coasts of Brazil, etc.

Apparently a regular though rather rare transient on the New

Jersey coast, and a few may possibly have bred there in former years, although we can find no positive records.*

Dr. W. L. Abbott secured a number of specimens April 26 to June 3, 1877-1882, in Cape May county, and Mr. Scott records two taken May 14, 1877, at Long Beach, N. J., where he considered them rare. (*B. N. O. C.*, 1879.)

25. *Sterna hirundo* LINN. Common Tern.

BREEDING RANGE—Atlantic coasts as far north as New England and Canada.

WINTER DISTRIBUTION—Coast of S. Atlantic States southward.

Formerly an abundant summer resident along the New Jersey coast, breeding in great numbers on the marshes.† About 1883 it was nearly exterminated, owing to the great numbers slaughtered for millinery purposes. Quite recently, however, it appears to be again increasing in numbers, at least in the vicinity of Atlantic City, where several pairs were found breeding in July, 1893, (*Stone and Morris*). During migration it is more numerous all along the coast. At Five-mile Beach this species occurs from April to October (*Laurent, O. & O.*, 1892), and at Long Beach it arrives May 12 (*Scott, B. N. O. C.*, 1879).

A few occur during the migrations on the Delaware and Susquehanna rivers, and stragglers have been taken at various points inland.

26. *Sterna paradisæa* BRÜNN. Arctic Tern.

BREEDING RANGE—Arctic regions to Massachusetts.

WINTER DISTRIBUTION—Southward to Long Island.

Rare straggler on the New Jersey coast in autumn or winter.

The only records of its occurrence that we can find are two specimens recorded by Dr. Warren, which were shot by Mr. C. D. Wood in September on the Delaware river below Philadelphia; and one

*Although this species breeds mainly in the interior of the United States, it has been found to be a summer resident, in small numbers, at Cobb's Island, Virginia (*Brewster, B. N. O. C.*, 1882, p. 126).

†All the nests observed by us have been situated on patches of dry sedge washed up on the salt meadows, but Mr. Wm. Rogers states that these birds formerly laid their eggs in the loose sand along the beach in the same manner as the Least Terns.

secured by Dr. J. W. Detwiler on the Lehigh river in autumn; we have seen none of these specimens.*

27. *Sterna dougalli* MONTAG. Roseate Tern.

BREEDING RANGE—Atlantic coast of N. A. formerly to New Jersey and Massachusetts.

WINTER DISTRIBUTION—Gulf coast and S. A.

Rare straggler on the New Jersey coast during summer. Formerly it is reported to have bred there in considerable numbers. We have no definite records of its occurrence during the last few years.

28. *Sterna antillarum* (LESS.). Least Tern.

BREEDING RANGE—S. Atlantic States to Massachusetts.

WINTER DISTRIBUTION—Gulf coasts and S. A.

Formerly an abundant summer resident along the New Jersey coast † but now nearly exterminated as a breeder and seen only sparingly during migrations. The inability of this species to survive the onslaught of the millinery collectors, as the Common Tern seems to have done, is doubtless due to its habit of always nesting on the sandy beaches where it is sure to be disturbed.

The Least Tern formerly arrived at Long Beach May 12 and the bulk left by August 25 (*Scott, B. N. O. C.*, 1879). Stragglers have been taken on the Delaware river, below Philadelphia, and on the Susquehanna. Dr. J. W. Detwiler also reports the capture of a specimen on the Lehigh river, near Bethlehem.

29. *Sterna fuliginosa* GMEL. Sooty Tern.

BREEDING RANGE—Tropical and sub-tropical sea coasts to N. Carolina.

WINTER DISTRIBUTION—Tropical coasts.

Very rare straggler on the New Jersey coast. One was shot at Long Beach about 1870 by Mr. A. P. Brown (*Stone*). It also occurs as an accidental visitor in Pennsylvania. Dr. Warren records two specimens secured in Chester county (one in Spring, 1878), two in Delaware county and several in Lycoming county. Dr. J. W. Detwiler has taken it on the Lehigh river, near Bethlehem, Pa.

*This species has been taken on Long Island as early as August.

†Up to 1883 (*Warren's Report*). A few may still breed on the coast, but we can find no recent records.

**30. *Hydrochelidon nigra surinamensis* (GMEL.).
Black Tern.**

BREEDING RANGE—Temperate N. A., mainly on inland waters.

WINTER DISTRIBUTION—Gulf and S. A. coasts.

Transient, occurring during the fall migration on the New Jersey coast, but much less abundant than formerly. Mr. Scott states that it arrived at Long Beach in 1879, about June 11, and soon became common. Although it remained all summer, it was not known to breed. (*B. N. O. C.*, 1879.) We have no definite records of the occurrence of this species on the New Jersey coast in spring, though a few have probably been taken.

Stragglers have been reported from the Delaware and Susquehanna rivers.

Family Rynchopidæ—The Skimmers.

Only one species occurs on our coast.

31. *Rynchops nigra* LINN. Black Skimmer.

BREEDING RANGE—Sea coast of warmer parts of America to New Jersey.

WINTER DISTRIBUTION—Coasts of tropical America.

Formerly a common summer resident on the New Jersey coast, though probably always rather local, breeding at Brigantine Beach, Little Egg Harbor and in Cape May county. Arrived June 10 and remained till September 25.

Now quite rare, though a few are still reported to breed near Tuckerton (*Jillson*),* and a specimen was shot from a flock at that locality August, 1893.

Dr. Warren records one shot by Mr. C. D. Wood near Philadelphia in September, 1880.

* Mr. Harry G. Parker reports them breeding plentifully on Seven-mile Beach as late as 1886. (*O. & O.*, 1886, p. 138.)

Family Procellariidæ—The Petrels and Shearwaters.

Six species have occurred on the coast of New Jersey, but they are all pelagic, and only approach the shore when driven in by storms.

The Sooty Shearwater and Leach's and Wilson's Petrels seem to be of most frequent occurrence, while the others are very rare.

32. *Fulmarus glacialis* (LINN.). Fulmar.

DISTRIBUTION—North Atlantic Ocean.

Very rare straggler. One was found exhausted in Bergen county, N. J., early in December, 1891. (*Henry Hales, O. & O.*, 1892, p. 38.) We know of no other records of its occurrence in either Pennsylvania or New Jersey.

33. *Puffinus major* FABER. Greater Shearwater.

DISTRIBUTION—Atlantic Ocean generally.

A rare straggler to the New Jersey coast and accidental inland. One found dead in Chester county, Pa., a few years ago (*Michener, Birds of Chester Co.*) is the only occurrence that we are acquainted with.*

34. *Puffinus stricklandi* RIDGW. Sooty Shearwater.

DISTRIBUTION—North Atlantic from Newfoundland Banks to S. Carolina.

Occurs on the fishing grounds off the New Jersey coast and occasionally visits the shore. One specimen is in the collection of the Academy of Natural Sciences of Philadelphia, which was taken many years ago on the New Jersey coast, and another which was shot below Atlantic City, June 3, 1893, by Prof. J. Remington.

Mr. Laurent also records two shot at the fishing banks off Five-mile Beach by Capt. John Taylor (*O. & O.*, 1892).

35. *Procellaria pelagica* LINN. Stormy Petrel.

DISTRIBUTION—North Atlantic, southward to Newfoundland Banks and casually farther.

Very rare straggler. Turnbull (in 1869) says that a specimen

* Audubon's Shearwater (*Puffinus auduboni*, Finsch) is said by Audubon to occur as far north as Sandy Hook, and Giraud records it from Long Island, but we can find no positive record of its capture on the New Jersey coast.

was captured under Market street bridge, Philadelphia, "a few years ago," and Krider (*Field Notes*) refers to the same specimen, stating that he shot it from a large flock which had probably been driven in by a heavy storm. We have no other records.

36. *Oceanodroma leucorhoa* (VIEILL.). Leach's Petrel.

DISTRIBUTION—Seas of the Northern Hemisphere.

Irregular straggler to the coast and up the rivers generally during severe storms.

The following specimens have been secured:

West Chester, Pa., Sept., 1879, Dr. George Martin (*Warren's Report*).
 Tinicum, Del. Co., Pa., Dec. 18, 1890, W. V. Wilbank.
 Atlantic City, N. J., Aug. 24, 1893, I. N. DeHaven.

37. *Oceanites oceanicus* (KUHLE). Wilson's Petrel.

DISTRIBUTION—Cosmopolitan, on the high seas.

Occasional on the New Jersey coast, generally after storms.

This seems to be the most common Petrel on the ocean off the coast of New Jersey. Several were secured at sea off Barnegat Light, August 10, 1879, by Mr. W. E. D. Scott (*B. N. O. C.*, 1879), and one was found dead at Pt. Pleasant by Mr. A. P. Brown, Aug., 1891. Mr. Laurent also records this species as common on the fishing banks off Five-mile Beach (*O. & O.*, 1892).

Family Sulidæ—The Gannets.

Only one species occurs in our district.

38. *Sula bassana* (LINN.). Gannet.

BREEDING RANGE—Coasts of North Atlantic.

WINTER DISTRIBUTION—Virginia to Gulf of Mexico (?).

Transient visitant along the coast, but apparently rare, as we can find very few records of its capture. One was secured by fishermen on the Delaware river at Salem, N. J., May 25, 1890 (*Stone*), and another was taken at Atlantic City the same year. Another specimen was shot April 26, 18—, by Capt. John Taylor, on the fishing banks off Five-mile Beach (*Laurent, O & O.*, 1892).

Family Phalacrocoracidæ—The Cormorants.

Two species occur on the New Jersey coast.

39. *Phalacrocorax carbo* (LINN.). Common Cormorant.

BREEDING RANGE—Northern New England to Greenland, N. Europe, etc.

WINTER DISTRIBUTION—Southward on the Atlantic coast to New Jersey.

Rare migrant and perhaps also a winter visitant on the coast, associating with the following species. We know of no record of its capture.

40. *Phalacrocorax dilophus* (SW. & RICH.). Double-crested Cormorant.

BREEDING RANGE—Bay of Fundy, northward.

WINTER DISTRIBUTION—Southward to Maryland.

Common along the New Jersey coast during migrations and occurs also in winter; occasional on the lower Delaware river.

A few remain all summer at Beach Haven, N. J. (*Rhoads*), and one was seen at Atlantic City, June 19, 1892 (*Stone*), but we can find no indications of their ever breeding there.

Family Pelecanidæ—The Pelicans.

Both species of Pelicans which are found in eastern North America have been reported in former years as rare visitors on the coast of New Jersey, but neither is likely to occur again.

[41.] *Pelecanus erythrorhynchos* GMEL. White Pelican.

BREEDING RANGE—Western U. S. and Gulf Coast.

WINTER DISTRIBUTION—Tropical America.

Casual straggler in former years. Turnbull (1869) says that this species has been seen at rare intervals on the Delaware and near Cape May, and Dr. C. C. Abbott (*Birds of N. J.*) mentions a

mounted specimen said to have been killed near Tuckerton, N. J.,* and states that he saw three of these birds flying off Sandy Hook in February, 1864. Peale† also records the capture of a pair many years ago on the Delaware, a few miles below Philadelphia.

[[42.] *Pelecanus fuscus* LINN. **Brown Pelican.**

BREEDING RANGE—Atlantic coasts of Tropical America, to N. Carolina.

WINTER DISTRIBUTION—Tropical America.

Turnbull records one specimen shot off Sandy Hook in 1837, in summer.

Family Anatidæ—The Ducks and Geese.

Thirty-seven species of this family have been taken in eastern Pennsylvania and New Jersey. With the exception of the Wood Duck and Black Duck, they all occur in our district as winter visitors or transients, and as they habitually frequent the shores of large bodies of water during the winter months, the only localities at which they occur in numbers are on the coast of New Jersey and on the lower parts of the Delaware and Susquehanna rivers, which form the heads respectively of Delaware and Chesapeake bays.

On the New Jersey coast ducks have become very scarce of late years as compared with the numbers which were formerly found there, and most of the migrant flocks now pass on to the Virginian coast and bays to spend the winter.

Of the New Jersey coast ducks, the Black Duck is the most abundant, and after it the Scaup Ducks. The other species which occur are the Buffle-head, Widgeon, Teal, Pintail, Redhead, Mallard, Golden-eye, American and Red-breasted Mergansers and Canada Goose, while off the coast the true sea-loving species are plentiful, *i. e.*, the Brant, Old-squaw and three Scoters.

The species given above comprise the bulk of the Ducks found on the Chesapeake and Delaware Bays, but the Scaup Ducks are here

* Jillson Brothers, reliable taxidermists, who have lived all their lives at Tuckerton, never heard of Pelicans being seen there.

† See *Water Birds of North America*, Vol. II., 137.

the most numerous species, and on the Chesapeake the Canvas-back also occurs, though in rapidly decreasing numbers.

The Hooded Merganser, Gadwall, Ring-neck, Ruddy Duck, Shoveller, Snow Goose and Swan, are everywhere less common, and are quite rare on the New Jersey coast, while the following are mere stragglers: English Widgeon, Harlequin, American and King Eiders, Lesser Snow, Blue and White-fronted Geese and Black Brant.

Many of the rare species on our coasts and bays are stragglers from the west, where they are plentiful; such are the Shoveller, Snow, Lesser Snow, Blue and White-fronted Geese and Black Brant, while the Mallard is much more plentiful in the west than in the east.

43. *Merganser americanus* (CASS.). American Merganser. Sheldrake.

BREEDING RANGE—Northern U. S., northward.

WINTER DISTRIBUTION—Southward to Texas.

Tolerably common transient on the bays along the coast and up the larger rivers, arriving about Oct. 15. Some remain all winter, and the last leave in the spring, about the end of April. (Once noted at Atlantic City, N. J., as late as May 5—*De Haven*.)

Mr. A. Koch reports finding flocks of young birds with the old ones on the Susquehanna river near Williamsport, and considers that they breed there every season. This species may breed sparingly in other parts of northern Pennsylvania.

44. *Merganser serrator* (LINN.). Red-breasted Merganser.

BREEDING RANGE—Northern border of U. S., northward.

WINTER DISTRIBUTION—Southward throughout U. S.

Common transient and partly winter resident on the coast and bays, but apparently not found inland as frequently as the preceding. Occurs most abundantly from the latter part of October to December, and in spring, April 5 to first week of May. Some are reported all summer at Anglesea by Capt. Taylor and Mr. Laurent (*O. & O.*, 1892), and Mr. Scott records the same thing at Long Beach, saying that he considers such birds to be barren individuals, as no nests have ever been found (*B. N. O. C.*, 1879).

45. *Lophodytes cucullatus* (LINN.). Hooded Merganser.

BREEDING RANGE—N. A. in general.

WINTER DISTRIBUTION—More southerly.

Not very abundant and rarer on the coast than in the interior, occurring during migrations and in winter.

Mr. A. Koch has shot an adult male in July in the vicinity of Williamsport, Pa., and has also secured several half-grown birds in July and August, 1888, so that the species undoubtedly breeds in the mountainous parts of Pennsylvania.*

46. *Anas boschas* LINN. Mallard.

BREEDING RANGE—Northern Hemisphere at large.

WINTER DISTRIBUTION—Temperate regions.

Tolerably common during migrations, and in winter on the large rivers, but rather rare on the New Jersey coast.

Mr. A. Koch reports that it formerly bred on the Susquehanna near Williamsport, and that individuals are still said to occur in summer on Loyalsock creek. Dr. C. C. Abbott says that it formerly bred in Mercer county, N. J. (*Birds of N. J.*)

47. *Anas obscura* GMEL. Black Duck.

BREEDING RANGE—Middle States to Hudson Bay.

WINTER DISTRIBUTION—Southward to S. Atlantic States.

Very common winter resident on the New Jersey coast and bays and up the large rivers. Arrives October 15–November 1, and remains till about March 15.

Some are seen all summer at Anglesea, N. J. (*Taylor*), and they are said to breed at Tuckerton, N. J., by the Jillson Bros., taxidermists of that place. In Pennsylvania Dr. J. W. Detwiler has found them breeding on the Lehigh river below Bethlehem.

48. *Anas strepera* LINN. Gadwall. Gray Duck.

BREEDING RANGE—Temperate regions of the Northern Hemisphere.

WINTER DISTRIBUTION—S. Atlantic States (in U. S.).

Rather rare transient. Specimens are occasionally shot on the New Jersey coast and on the Delaware and Susquehanna rivers.

* As this duck breeds in suitable locations throughout its range, there is no reason why it should not be found nesting in other secluded parts of Pennsylvania and New Jersey.

49. *Anas penelope* LINN. European Widgeon.

BREEDING RANGE—Northern portions of Old World.

Rare straggler during migrations or in winter on the coast or large rivers. One was shot on the Delaware near Chester, Pa., March, 1887 (*Voelker*), and several are reported to have been taken at Tuckerton, N. J., about 1880 (*Forest and Stream*, 1882, p. 86). Mr. Chapman also records one shot at Englewood, N. J., by Mr. Cornelius Demarest in Spring of 1880 or 1881 (*Auk*, 1889, p. 302).

50. *Anas americana* GMEL. Baldpate. American Widgeon.

BREEDING RANGE—Chiefly north of U. S.

WINTER DISTRIBUTION—Southward to Cuba and Guatemala.

Tolerably common transient, seen mostly in fall, from the latter part of October to middle of November.*

51. *Anas carolinensis* GMEL. Green-winged Teal.

BREEDING RANGE—Chiefly north of U. S.

WINTER DISTRIBUTION—Southward to Honduras and Cuba.

Tolerably common transient on the larger rivers, but apparently rare on the New Jersey coast. Mr. A. Koch reports that these birds are seen occasionally along Loyalsock creek, near Williamsport, Pa., during summer, and probably breed there.

52. *Anas discors* LINN. Blue-winged Teal.

BREEDING RANGE—Northern N. A. in general.

WINTER DISTRIBUTION—Southward to West Indies and Northern S. A.

Common transient mainly on fresh water, occurring most plentifully in September and April.

53. *Spatula clypeata* (LINN.). Shoveller.

BREEDING RANGE—Northern part of Northern Hemisphere.

WINTER DISTRIBUTION—Southward to Panama. In America mostly confined to the Western States.

* Ord states that a few formerly bred on "Duck Creek," Delaware. (*Notes to Wilson's Ornithology.*)

Rare during migrations and in winter. The following specimens have been shot recently:

Anglesea, N. J., winter 1888-9, Capt. John Taylor (*Laurent*).
Atlantic City, N. J., winter 1888, I. N. DeHaven.

54. *Dafila acuta* (LINN.). Pintail.

BREEDING RANGE—Northern U. S. northward.

WINTER DISTRIBUTION—Southward to Cuba and Panama.

Tolerably common transient, mostly seen from the last of October to the middle of November.

55. *Aix sponsa* (LINN.). Wood Duck. Summer Duck.

BREEDING RANGE—Temperate N. A. and Cuba.

WINTER DISTRIBUTION—About the same.

Common summer resident on fresh water, breeding in retired localities throughout Pennsylvania and New Jersey. Migrants arrive about April 1, and some remain throughout the winter.

56. *Aythya americana* (EYT.). Redhead.

BREEDING RANGE—Maine northward.

WINTER DISTRIBUTION—Southward to Mexico.

Transient and occasional winter visitant, not common on the coast but mostly seen on the large rivers, especially on the Susquehanna, last of October to March.

57. *Aythya vallisneria* (WILS.). Canvas-back.

BREEDING RANGE—Northwestern U. S. northward.

WINTER DISTRIBUTION—Southward to Mexico.

Tolerably common transient on the lower Susquehanna river, but very rare elsewhere in Pennsylvania and in New Jersey. Becoming scarcer yearly.

**58. *Aythya marila nearectica* STEJN. Greater Scaup.
Bluebill.**

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—Middle States to Florida.

Very common on coast, bays and rivers from the last of October to April 15, though rarer in midwinter. Has been seen at Long Beach, N. J., as late as May 1. (*Scott, B. N. O. C.*, 1879.)

59. *Aythya affinis* (EYT.). Lesser Scaup.

BREEDING RANGE—Chiefly north of U. S.

WINTER DISTRIBUTION—Southward to Guatemala.

Common winter visitant, so generally confused with the preceding that it is hard to determine their relative abundance.

Dr. Warren states on the authority of Dr. Van Fleet that a pair of this species were noted all summer for two seasons in Northumberland county, Pa., which would indicate that they occasionally breed.

60. *Aythya collaris* (DONOV.). Ring-necked Duck.

BREEDING RANGE—Northern border of U. S. northward.

WINTER DISTRIBUTION—Southward to Guatemala.

Not very common on bays and larger rivers, early November to March.

61. *Glaucionetta clangula americana* (BONAP.). Golden-eye. Whistler.

BREEDING RANGE—Maine, northward.

WINTER DISTRIBUTION—Southward to Cuba and Mexico.

Common transient and winter visitant, last week of October to April 1, on coast and large rivers.

62. *Charitonetta albeola* (LINN.). Buffle-head. Butter-ball.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—Southward to Cuba and Mexico.

Very common all winter on coast, bays, and up the larger rivers, November 1 to April 15.

63. *Clangula hyemalis* (LINN.). Old-squaw. Long-tail.

BREEDING RANGE—Northern parts of Northern Hemisphere.

WINTER DISTRIBUTION—Southward to Chesapeake Bay.

Abundant winter resident along the coast and occasionally inland along the large rivers. Occurs from late in October to the middle of April.

64. *Histrionicus histrionicus* (LINN.). Harlequin Duck.

BREEDING RANGE—Newfoundland and northern Rocky Mts., northward.

WINTER DISTRIBUTION—Southward to Middle States.

Very rare winter visitant on the coast, according to Turnbull. Dr. C. C. Abbott (*Birds of N. J.*) records two specimens shot off Tuckerton, N. J., but we can find no recent records.

[65]. *Camptolaimus labradorius* (GMEL.). Labrador Duck.

Formerly winter visitant to the New Jersey coast, but now extinct. Turnbull says (in 1869) "a few are seen every season."

66. *Somateria dresseri* SHARPE. American Eider.

BREEDING RANGE—Maine to Newfoundland and S. Labrador.

WINTER DISTRIBUTION—South to the Great Lakes and Long Island.

Very rare winter visitant along the coast. Mr. John Krider (*Field Notes*) records four specimens secured by him at Barnegat, N. J., in February, but we know of no other records, although other specimens have no doubt been secured.

67. *Somateria spectabilis* (LINN.). King Eider.

BREEDING RANGE—Northern part of Northern Hemisphere.

WINTER DISTRIBUTION—South to the Great Lakes and Long Island.

Very rare winter visitant along the coast. Mr. John Krider (*Field Notes*) shot two males at Egg Harbor and a female at Tuckerton, N. J., many years ago. We can find no other records.

68. *Oidemia americana* SW. & RICH. American Scoter.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—Southward to New Jersey and the Great Lakes.

Common winter resident off the beach and sometimes in the inlets after severe storms. Casual also on the large rivers inland.

69. *Oidemia deglandi* BONAP. White-winged Scoter.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—Southward to Chesapeake Bay.

Tolerably common winter visitant off the beach on the New Jersey coast.

70. *Oidemia perspicillata* (LINN.). Surf Scoter.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—Southward to the Carolinas.

Common winter resident off the New Jersey coast from October to late in April. Apparently the most abundant species of Scoter. Occasional on the larger rivers.

71. *Erismatura rubida* (WILS.). Ruddy Duck.

BREEDING RANGE—British America to Guatemala (rarely in U. S.).

WINTER DISTRIBUTION—Southward.

Occasional winter visitant along the coast, and plentiful on the rivers, arriving on the Chesapeake about the second week of October.

72. *Chen hyperborea* (PALL.). Lesser Snow Goose.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—South to southern U. S (rare eastward).

Very rare winter visitant. A pair were secured in the Philadelphia market by Mr. John Cassin many years ago, which were said to have been taken in the vicinity. Another was shot by Mr. W. V. Wilbank on the Delaware river above Chester, Dec., 1890, and is now in his possession.

73. *Chen hyperborea nivalis* (FORST.). Greater Snow Goose.

BREEDING RANGE—Arctic N. A. (Greenland).

WINTER DISTRIBUTION—Lower Mississippi Valley and coast of S. Atlantic States.

Rather rare winter visitant, occurring only on the large bays.

74. *Chen caerulescens* (LINN.). Blue Goose.

BREEDING RANGE—Eastern shores of Hudson Bay.

WINTER DISTRIBUTION—Coasts of Gulf of Mexico.

Rare winter visitant on the large bays (*Turnbull*). We can find no definite records of its recent capture.

75. *Anser albifrons gambeli* (HARTL.). American White-fronted Goose.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—Southward to Mexico and Cuba.

Rare winter visitant on the coast and rivers. Dr. C. C. Abbott records one shot at Barnegat, N. J., many years ago (*Birds of N. J.*), and Mr. Chas. A. Voelker says that one was shot on the Delaware in 1877.

76. *Branta canadensis* (LINN.). Canada Goose.

BREEDING RANGE—Northern U. S., rare south of 42° N.

WINTER DISTRIBUTION—Southward to Gulf of Mexico.

Common transient and winter resident on the New Jersey coast and bays, and seen regularly inland during its migratory flights. Arrives about Oct. 15, and remains till April 15, while some linger as late as May 12.

77. *Branta bernicla* (LINN.). Brant.

BREEDING RANGE—Within the Arctic Circle.

WINTER DISTRIBUTION—Atlantic sea-coast.

Common transient off the New Jersey coast, and some winter there regularly. Stragglers occur along the larger rivers in Pennsylvania, and Dr. Warren records one taken at Harrisburg, Jan., 1890, and another from Bucks county in the possession of Mr. D. Frank Keller.

78. *Branta nigricans* (LAWR.). Black Brant.

BREEDING RANGE—North-western N. A.

Very rare winter visitant, a straggler from the West. One specimen was secured by Mr. Geo. N. Lawrence at Egg Harbor, Jan., 1846 (*Turnbull*), and Mr. Scott records two specimens shot by gunners at Long Beach, N. J., April 5, 1877. (*B. N. O. C.*, 1879.)

79. *Olor columbianus* (ORD.). Whistling Swan.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—Coast of S. Atlantic States.

Not common, transient and winter visitant along the coast and on large bays.

One was shot on the Delaware at the mouth of Darby creek, Dec., 1890, by Mr. W. V. Wilbank.

Family Plataleidæ—The Spoonbills.

Only one species occurs in America.

[80.] *Ajaja ajaja* (LINN.). **Roseate Spoonbill.**

BREEDING RANGE—Tropical America, to the Gulf States.

An accidental straggler. One specimen was shot a number of years ago on the Conestoga creek, Lancaster county, Pa. (*Libhart—Birds of Lanc. Co.*), and is still (1894) in the collection of the Linnean Society of Lancaster.

Family Ibirdidæ—The Ibises.

Two species have occurred in our district.

[81.] *Guara alba* (LINN.). **White Ibis.**

BREEDING RANGE—Tropical America, to N. Carolina and southern Illinois.

Very rare straggler. One was shot by Turnbull at Great Egg Harbor, N. J., in the summer of 1858, and another was secured at Tuckerton, N. J., by the Jillson brothers in 1891 (*Rhoads*). Dr. Warren also states that he has a specimen in his possession which was said to have been killed in Pennsylvania about 1860.

[82.] *Plegadis autumnalis* (HASSELQ.). **Glossy Ibis.**

BREEDING RANGE—Southeastern U. S. and West Indies.

Very rare straggler. Mr. John Krider secured a specimen just below Philadelphia, in 1866 (*Turnbull*).

Family Ciconiidæ—The Storks.

Only one species is found in the eastern United States.

83. *Tantalus loculator* LINN. **Wood Ibis.**

BREEDING RANGE—Tropical and warm-temperate America.

Rare straggler. One specimen was shot by Mr. M. Ely on the

Susquehanna river, Lancaster county, Pa., in July, 1862 (*Libhart—Birds of Lanc. Co.*), and in July, 1883, Dr. A. C. Treichler secured another in the same county. Mr. A. Koch also obtained one in Lycoming county, and Mr. Pennock states that one was shot by Vincent Barnard in Chester county, Pa., many years ago.

Family Ardeidæ—The Herons and Bitterns.

Ten species of this family have been found in our district. Of these the Green, Night and Great Blue Herons are the most generally distributed, the first two breeding throughout south-eastern Pennsylvania and New Jersey, the third being more local in the nesting season. The Least Bittern is less common but also breeds, while the Common Bittern is a transient. The White Egret, Snowy and Little Blue Herons formerly bred in southern New Jersey, but are now only stragglers during migrations, while the Yellow-crowned and Louisiana Herons are very rare.

84. *Botaurus lentiginosus* (MONTAG.). Bittern.

BREEDING RANGE—Temperate and tropical N. A. to Guatemala.

WINTER DISTRIBUTION—Mostly south of the Middle States.

Tolerably common transient along the coast, but apparently rare inland. Arrives at Long Beach, N. J., April 20 (*Scott—B. N. O. C.*, 1879). Dr. W. L. Abbott has taken it in Cape May county as late as Nov. 19.

Mr. W. H. Buller reports that he has noticed them all summer in the vicinity of Marietta, Pa., and Dr. Geo. R. Ross considers that they breed at Lebanon, Pa. (*Warren's Report*). Dr. J. W. Detwiler has taken nest and eggs of this species on the Lehigh river near Bethlehem, Pa.

85. *Ardetta exilis* (GMEL.). Least Bittern.

BREEDING RANGE—Temperate and tropical America.

WINTER DISTRIBUTION—Southern U. S., southward.

Rather common summer resident at various points along the New Jersey coast: Cape May (*Stone*), Anglesea (*Laurent—O. & O.*, 1892), etc., and also in the interior: Princeton (*Scott—B. N. O. C.*, 1879),

near Trenton (*McCadden*), Holmesburg Junc., Phila. (*Fowler*), and doubtless many other localities. Dr. Detwiler has found it breeding near Bethlehem, Pa.

86. *Ardea herodias* LINN. Great Blue Heron.

BREEDING RANGE—Hudson Bay to northern S. A.

WINTER DISTRIBUTION—Mostly south of the Middle States.

Common summer resident, arrives April 1 and remains till November 15, occasional also in winter. Seen mainly along the large streams and on the coast, where it is most plentiful during the latter part of September. No doubt there are several heronries of this species in secluded localities in eastern Pennsylvania and in the swamps of southern New Jersey. Mr. Harry G. Parker visited one on Seven-mile Beach in 1886 (*O. & O.*, 1886, p. 138), and Mr. Laurent states that a few breed at Anglesea, N. J. (*O. & O.*, 1879.)

87. *Ardea egretta* GMEL. White Egret.

BREEDING RANGE—Warmer parts of N. A., northward to New Jersey.

WINTER DISTRIBUTION—Florida, southward.

Rather rare, seen mostly during August and September, when they seem to straggle northward from their breeding grounds. They are most frequently seen at this time along the coast (as far north as Pt. Pleasant—*Stone*), but some are secured nearly every year on the larger streams inland. Up to 1877 they bred near Townsend's Inlet, N. J. (*Scott—B. N. O. C.*, 1879), and a few may still breed in the state.

88. *Ardea candidissima* GMEL. Snowy Heron.

BREEDING RANGE—Tropical and warmer temperate America, northward, formerly to New Jersey.

WINTER DISTRIBUTION—Florida, southward.

Straggler from the south, apparently rarer than the preceding, though it occurs about the same time. Formerly reported to have bred in southern New Jersey,* a heronry having been visited by Mr. H. G. Parker as late as 1886 on Seven-mile Beach. (*O. & O.*, 1886, p. 138).

* There seems to be some confusion between these two "White Herons" and the young of the Little Blue Heron, which is also white, so that it is not always clear to which of the three some of the published records refer.

[89.] *Ardea tricolor ruficollis* (GOSSE.). Louisiana Heron.

BREEDING RANGE—Tropical and warm temperate N. A.

Very rare straggler from the south. Turnbull states that it has occasionally been obtained on the New Jersey coast, but we can find no records of recent captures.

90. *Ardea cœrulea* LINN. Little Blue Heron.

BREEDING RANGE—Tropical and warm temperate N. A.

WINTER DISTRIBUTION—Florida, southward.

Rare straggler from the south. Many years ago it bred in Cape May county, N. J. The following specimens have been secured:

Two specimens from New Jersey in the collection of the Academy of Natural Sciences of Philadelphia, secured many years ago. One specimen shot at Tuckerton, N. J., October, 1893, by Jillson (*Rhoads*). Dr. Warren also mentions two or three shot in south-eastern Pennsylvania during the last ten years.

91. *Ardea virescens* LINN. Green Heron.

BREEDING RANGE—Temperate N. A., northward to Ontario.

WINTER DISTRIBUTION—Middle and northern S. A.

Very common summer resident, distributed everywhere along the coast and in the interior. Arrives April 1st and departs about October 1st.

92. *Nycticorax nycticorax naevius* (BODD.). Night Heron.

BREEDING RANGE—Whole of N. A., except extreme north.

WINTER DISTRIBUTION—Mainly south of the Middle States.

Very common summer resident, occurring along all the large streams inland, but is rarer on the coast. Arrives about April 25th, and most depart by the middle of October, though Dr. W. L. Abbott obtained one in Cape May county as late as November 7. During the breeding season they associate together in large numbers and nest in patches of woodland, occupying the same ground year after year. One of these heronries which we have visited is situated near Port Kennedy, Montgomery county, Pa., and another is reported near Lititz, Lancaster county. Dr. Warren also mentions one near Blue Rock, Berks county, Pa.

93. *Nycticorax violaceus* (LINN.). Yellow-crowned Night Heron.

BREEDING RANGE—Tropical and sub-tropical America, northward to N. Carolina and casually farther.

Very rare straggler from the south. Turnbull says that it has been seen on the borders of the Schuylkill near Philadelphia.

In late years only two captures have come to our notice. Both of these specimens were mounted by Mr. Chas. A. Voelker, and were exhibited before the Club; one was secured in May, 1892, near Cape May, N. J., and the other during the same season near Phoenixville, Pa. The latter had the ovaries so distended as to make it highly probable that it was breeding somewhere in the immediate vicinity.

Family Gruidæ—The Cranes.

Only one species has been reported from this district.

[94.] *Grus americana* (LINN.). Whooping Crane.

BREEDING RANGE—Interior N. A., northward to Saskatchewan.

Very rare straggler in former years. Turnbull states that he saw three off the inlet at Beesley's Point, N. J., in 1857, and Wilson mentions it as occurring along the coast during his time, and records one nest found at Cape May.*

Family Rallidæ.—The Rails and Coots.

Ten species occur in Pennsylvania and New Jersey. Only three, however, are of very common occurrence, the Clapper Rail and Virginia Rail as summer residents and the Sora as a transient.

The King Rail is tolerably common in summer, and the Florida Gallinule and Coot in the migrations, but the other species are quite rare.

* Dr. Ezra Michener (*Birds of Chester Co.*) states that a specimen of the Sandhill Crane (*G. mexicana*) was shot on White Clay creek, Chester county, Pa., and presented to him. Subsequently it went to the museum of Swarthmore College, and was presumably destroyed by fire when the college was burned, so that it is impossible to verify the identification.

95. *Rallus elegans* AUD. King Rail.

BREEDING RANGE—Fresh-water marshes, northward to Middle States, casually to Wisconsin.

WINTER DISTRIBUTION.—Southern U. S.

Summer resident on the fresh water marshes, but not very common. It has been found breeding along the Brandywine at Pocopson, Chester county, Pa. (*Stone*), on the Delaware marshes at Repaupo, N. J. (*Stone*), and in Delaware county, Pa. (*Reiff*). Dr. J. W. Detwiler has also found it breeding on the Lehigh river near Bethlehem, Pa.

96. *Rallus crepitans* GMEL. Clapper Rail. Mud-hen.

BREEDING RANGE—Atlantic coast marshes, northward to Long Island, casually to Massachusetts.

WINTER DISTRIBUTION.—S. Atlantic coasts, casually to New Jersey.

Abundant summer resident on the salt marshes of New Jersey from Pt. Pleasant to Cape May, April 15 to Nov. 25. At Anglesea Mr. Laurent states that they remain all winter during mild seasons. (*O. & O.*, 1892.) Very rarely they straggle inland during migrations, as Dr. Warren mentions a specimen in his collection which was shot in Sept., 1880, near Chester, Pa., by Mr. Geo. R. Hoopes.

97. *Rallus virginianus* LINN. Virginia Rail.

BREEDING RANGE—Whole of N. A. to Hudson Bay.

WINTER DISTRIBUTION.—Southward to Guatemala and Cuba.

Summer resident in fresh marshes and in bogs and swamps along the coast, though apparently not in the true salt marshes except in migrations. Not very abundant inland, but rather plentiful along the New Jersey coast.

Arrives May 1 and remains till Oct. 25, or occasionally later.

98. *Porzana carolina* (LINN.). Sora. Carolina Rail.

BREEDING RANGE—Temperate N. A., from northern U. S. northward.

WINTER DISTRIBUTION.—Southward to West Indies, Middle America and northern S. A.

Abundant transient on the marshes of the Delaware and other large streams, as well as the brackish marshes near the coast.

Dr. Warren considers that the Sora breeds occasionally in Chester county, Pa., as he has secured specimens there on July 20 and Aug.

12, 1884. Mr. Thos. S. Gillen has occasionally found it breeding at Ambler, Montgomery county, Pa., and in the northern counties of Pennsylvania, and probably New Jersey also, it is a more frequent breeder.

99. *Porzana noveboracensis* (GMEL.). Yellow Rail.

BREEDING RANGE—Northern U. S. to Nova Scotia and Hudson Bay.

WINTER DISTRIBUTION—Southward to Cuba and Bahamas.

Rare transient, generally noted in fall. Some probably occur on the Delaware marshes every year, but are seldom seen on account of their seclusive habits.

Mr. Chas. A. Voelker mounted a specimen which had been secured in the fall of 1891 in Delaware county, Pa., and has received several others during previous years. Dr. Warren also mentions two which were taken in the same locality early in July, 1882, which would indicate that they bred in the vicinity.*

A specimen was taken by Mr. W. L. Baily at Palmyra, N. J., Oct. 13, 1886, and another by Mr. Geo. Richards at Hackensack, N. J., Sept. 30, 1893 (*Forest and Stream*, XLI, p. 336).

100. *Porzana jamaicensis* (GMEL.). Black Rail.

BREEDING RANGE—Southern U. S. to Massachusetts.

WINTER DISTRIBUTION—Southward to West Indies and northern S. A.

Rare transient, apparently rarer than the preceding. Formerly it is said to have bred in Cape May county, N. J. (*Turnbull*), and there is a set of eggs in the collection of the Academy of Natural Sciences of Philadelphia labeled New Jersey. It may still occur as a rare breeder.

The following specimens have been taken :

Chester, Del. Co., Pa., Sept., 2 specimens (*Warren's Report*).

Delaware Co., Pa., spring 1877 or 1878, C. A. Voelker.

Lebanon Co., Pa., Aug., 1879, Geo. R. Ross (*Warren's Report*).

Lebanon Co., Pa., Aug., 1880, Geo. R. Ross (*Warren's Report*).

Mouth of Big Timber creek, N. J., Sept., 1886, Wm. Rogers.

Salem, N. J., Wm. Patterson.

Mouth of Big Timber creek, N. J., Sept. 22, 1887, W. J. Sherratt (*O. & O.*, 1887, p. 206).

* An egg in the collection of the Philadelphia Academy is labeled New Jersey.

[101.] *Crex Crex* (LINN.). Corn Crane.

BREEDING RANGE—Northern parts of Eastern Hemisphere.

Very rare straggler from Europe.

One specimen was secured by Mr. Wm. Patterson at Salem, N. J., in 185—, and another was obtained by Mr. John Krider near Bridgeton, N. J., June, 1856. Both specimens are in the collection of the Academy of Natural Sciences of Philadelphia.

102. *Ionornis martinica* (LINN.). Purple Gallinule.

BREEDING RANGE—Tropical and warm temperate America, east of the Plains.

Very rare straggler from the south. The following specimens have been taken in southern Pennsylvania and New Jersey :

League Island, Phila., Sept., 1848, J. Krider (*Turnbull*).

Trenton, N. J., Nov. 2, 1864 (*Abbott—Birds of N. J.*).

Cape May, N. J., May, 1892, C. A. Voelker.

Tuckerton, N. J., Jillson Bros., several specimens (*Rhoads*).

103. *Gallinula galeata* (LICHT.). Florida Gallinule.

BREEDING RANGE—New England and British America.

WINTER DISTRIBUTION—Tropical America.

Regular transient but not very common. Most of the specimens secured in Pennsylvania and New Jersey have been taken on the Delaware and Susquehanna rivers. Occurs May 1–10 and September 8–October 20. The following specimens have been secured during recent years :

Delaware River, September 17, 1881, Dr. W. L. Abbott.

Delaware River, September, 1877, Dr. W. L. Abbott.

Andalusia, Pa., September, 1893, Dr. Henry Tucker.

Philadelphia, Pa., May, 1888, flew into an open window (*Stone*).

Chester county, Pa., May 11, 1879, Dr. B. H. Warren (*Warren's Report*).

Chester, Del. Co., Pa., September 8, 1880, Dr. B. H. Warren (*Warren's Report*).

Chester, Del. Co., Pa., September 15, 1880, Dr. B. H. Warren (*Warren's Report*).

Philadelphia market, October 20, 1883, Dr. B. H. Warren (*Warren's Report*).

104. *Fulica americana* GMEL. Coot.

BREEDING RANGE—Northern U. S., northward.

WINTER DISTRIBUTION—Southern U. S. to Central America and West Indies.

Transient but apparently not very common, though more plentiful

in fall than in spring. Frequents mainly the large rivers and bays, occurring during the early part of April and again in the latter part of September and early October.

One specimen was secured in the Philadelphia market on January 18, 1877, by Dr. W. L. Abbott, which would indicate that they occasionally winter in the vicinity.

In northern Pennsylvania the Coot is an occasional summer resident, as Dr. J. W. Detwiler took a nest and six eggs in 1875 on an island in the Lehigh river below Bethlehem, Pa.

Family Phalaropidæ.—The Phalaropes.

Three species have occurred.

105. *Crymophilus fulicarius*. (LINN.). Red Phalarope.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—Southward to the Middle States.

Rare winter visitant off the New Jersey coast. Dr. Warren mentions two specimens in the possession of Mr. C. D. Wood which were said to have been shot in New Jersey; and Dr. C. C. Abbott (*Birds of N. J.*), records one shot at Hackensack, N. J., June 27, 1863. We can find no records of recent captures of this species.

106. *Phalaropus lobatus* (LINN.). Northern Phalarope.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—South to Central America (chiefly maritime).

Rare transient on the New Jersey coast, and straggler up the Delaware and Susquehanna rivers. Two were secured in Cumberland county, Pa., in 1843, by Prof. Baird (*Birds of Carlisle*), and another was taken on the Delaware at the mouth of Rancoocas creek by Dr. C. C. Abbott many years ago (*Birds of N. J.*). One was also shot in May, 1892, on Delaware Bay, and exhibited before a meeting of the Club by Mr. C. A. Voelker.

107. *Phalaropus tricolor* (VIEILL.). Wilson's Phalarope.

BREEDING RANGE—Interior of N. A., northward to Oregon, Saskatchewan, etc.

WINTER DISTRIBUTION—Southward to Brazil and Patagonia.

Very rare visitant on the coast during migrations. Dr. C. C. Abbott records two specimens, one secured at Deal Beach, Monmouth county, N. J., and the other at Atlantic City, many years ago (*Birds of N. J.*). We can find no other records.

Family Recurvirostridæ.—The Avocets and Stilts.

Two species have occurred in our district.

108. *Recurvirostra americana* GMEL. American Avocet.

BREEDING RANGE—Temperate N. A., northward in the interior to the Saskatchewan.

WINTER DISTRIBUTION—Southward to Guatemala, Cuba and Jamaica.

Very rare straggler on the New Jersey coast. Formerly it bred regularly in Cape May county and probably at other points, arriving late in April and departing in October (*Turnbull*, 1869).

The only recent records that we know of are one specimen shot by Mr. I. N. DeHaven, near Tuckerton, N. J., "last of August, 1886," and one seen by Mr. W. E. D. Scott at Long Beach, N. J., May 20, 1877 (*B. N. O. C.*, 1879).

109. *Himantopus mexicanus* (MÜLL.). Black-necked Stilt.

BREEDING RANGE—Temperate N. A., Texas to northern U. S. in the interior.

WINTER DISTRIBUTION—To West Indies and northern S. A.

Very rare straggler on the New Jersey coast. Formerly it bred regularly in Cape May county and also on Egg Island, Delaware Bay (*Turnbull*, 1869). We know of no recent captures of this species.

Family Scolopacidæ.—The Snipe and Sandpipers.

Twenty-eight species of this family are found in the district under consideration. Only three, however, occur as breeders—the Woodcock, Spotted Sandpiper and Bartramian Sandpiper.

The following species are regular transients on the coast: Dowitcher, White-rumped, Least, Red-backed and Semipalmated Sandpipers, Sanderling, Greater and Lesser Yellow-legs and Hudsonian Curlew, while inland occur the Solitary Sandpiper and Snipe.

Rarer coast migrants are the Long-billed Dowitcher,* Knot, Pectoral Sandpiper, Western Sandpiper,* Marbled Godwit, Willet and Long-billed Curlew, while the remaining species are very rare, *i. e.*, Stilt, Curlew, Buff-breasted and Purple Sandpipers, Hudsonian Godwit and Eskimo Curlew.

The European Woodcock is an accidental straggler inland.

[110.] *Scolopax rusticola* LINN. European Woodcock.

BREEDING RANGE—Northern part of Eastern Hemisphere.

Rare straggler from Europe. The following specimens have been secured:

Northampton Co., Pa., J. Mack (*Detwiler*).

Chester Co., Pa., end of Nov., 1886, David M. McFarland (*Warren's Report*).

New Jersey, Sept., 1889, game dealer (*Warren's Report*).

111. *Philohela minor* (GMEL.). American Woodcock.

BREEDING RANGE—Eastern U. S. to Canada.

WINTER DISTRIBUTION—About the same.

Resident, though much less common in winter. Although still quite generally distributed, it is becoming yearly a less common breeder, and is found mainly during migrations. Migrants arrive March 10–18, and depart by Nov. 1.

112. *Gallinago delicata* (ORD). Wilson's Snipe.

BREEDING RANGE—Northern U. S., northward.

WINTER DISTRIBUTION—Southern U. S. to northern S. A.

Common transient, frequenting open swamps and meadows, both inland and on the coast.

* Stragglers from the West.

Occurs in the spring, March 20 to May 10, and in fall during October, though it seems to be much rarer in the latter season. Occasionally individuals seem to remain during winter, as one was taken as late as Nov. 25 by Dr. W. L. Abbott in Cape May county, N. J., and another in mid-winter, about 1875, by Mr. S. N. Rhoads, at Haddonfield, N. J.

The Snipe breeds occasionally in northeastern Pennsylvania, but not in the southern part of the State. Such specimens as have been taken in this section or in New Jersey during summer have proved to be wounded individuals which were unable to migrate.

113. *Macrorhamphus griseus* (GMEI.). Dowitcher.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—Gulf States and Mexico to West Indies and S. A.

Common transient on the New Jersey coast. Occurring May 6–20, and again July 20–Oct. 1. Mr. Scott also secured specimens as early as July 6, 1877, at Long Beach (*B. N. O. C.*, 1879).

Stragglers have been taken in Lancaster and Chester counties, Pa. (*Warren's Report*).

114. *Macrorhamphus scolopaceus* (SAY). Long-billed Dowitcher.

BREEDING RANGE—North-western N. A. (?)

WINTER DISTRIBUTION—Mexico to S. A.

This western representative of the preceding species occurs with it in small numbers, especially in the fall migration, and though comparatively rare is probably to be found every year.

115. *Micropalama himantopus* (BONAP.). Stilt Sandpiper.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—South to West Indies and northern S. A.

Very rare transient on the New Jersey coast, and, according to Dr. C. C. Abbott (*Birds of N. J.*), a straggler on the Delaware river at Trenton. The only definite record of its capture is given by Mr. Jonathan Dwight (*B. N. O. C.*, 1879, p. 63), who records ten shot at Squan Beach between July 15 and September 15, 1879, and states that he knows of one other recent capture in New Jersey. Mr.

M. W. Holberton records it as common in autumn 1876 (*Forest and Stream*, III, p. 68).

116. *Tringa canutus* LINN. Knot. Robin Snipe.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—Nearly throughout the Southern Hemisphere.

Formerly a common transient on the New Jersey coast, but now becoming quite rare. Occurs May 15 to June 1 and August 15 to September 15.

117. *Tringa maritima* BRÜNN. Purple Sandpiper.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—Southward to Middle States.

Very rare winter visitant.

Dr. C. C. Abbott records one found dead near the lighthouse at Atlantic City, N. J. (*Birds of N. J.*), and Dr. Warren mentions a specimen in the U. S. National Museum taken many years ago near Philadelphia.

118. *Tringa maculata* VIEILL. Pectoral Sandpiper.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—S. A.

Regular transient on the New Jersey coast, but apparently not so common as formerly. Most plentiful during the fall migration. Passing through in April and again from the middle of August to October 1. Occasional also on the Delaware river and in the interior.

119. *Tringa fuscicollis* VIEILL. White-rumped Sandpiper.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—Through eastern S. A.

Transient on the New Jersey coast, but not very common, associating with the following species and arriving and departing with it.

This species probably occurs inland along the larger rivers in small numbers during the migrations, as Dr. Warren records two taken near Philadelphia and one in Berks county, Pa.

120. *Tringa minutilla* VIEILL. Least Sandpiper.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—Through S. A.

Abundant transient on the New Jersey coast, associating closely with the previous species and with *Ereunetes*, especially the latter; indeed, it seems that scarcely any flock of small "Peeps" is composed exclusively of one species. Occurs during the early part of May and again July 15–September 15.

Found more or less regularly on the lower Delaware river and other large streams inland during the migrations.

121. *Tringa alpina pacifica* (COUES.). Red-backed Sandpiper. Black-breast (Spring). Winter Snipe (Fall).

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—S. Atlantic and Gulf coasts; casually farther north.

Abundant transient on the New Jersey coast. Some remain all winter at Anglesea (*Laurent—O. & O.*, 1892), and probably at other points also. Migrants occur in spring April 17–May 20, and again during September.

Occasional on the Delaware river and other large streams.

122. *Tringa ferruginea* BRÜNN. Curlew Sandpiper.

BREEDING RANGE—Northern parts of Eastern Hemisphere.

Very rare straggler on the coast.

Turnbull states that it is occasionally shot at Egg Harbor, and Dr. C. C. Abbott (*Birds of N. J.*) says that specimens have been taken at Tuckerton and Cape May. We have found no other records of its occurrence.

123. *Ereunetes pusillus* (LINN.). Semipalmated Sandpiper.

BREEDING RANGE—Labrador to N. Alaska.

WINTER DISTRIBUTION—West Indies to S. A.

Abundant transient on the New Jersey coast May 9–June 1 and July 15–September 15. Scott states that they reached Long Beach in 1877 as early as July 7 (*B. N. O. C.*, 1879), and Dr. W. L. Abbott has taken them at Cape May as late as October 2. Occurs

sparingly at least on the Delaware and other large streams during migrations.

124. *Ereunetes occidentalis* LAWR. Western Sandpiper.

BREEDING RANGE—Northwestern N. A.

WINTER DISTRIBUTION—S. W. States to Mexico and S. A.

A straggler from the west occasionally accompanying the preceding during migrations. A specimen in the collection of the Academy of Natural Sciences of Philadelphia was obtained by Dr. W. L. Abbott in Cape May county, N. J., September 14, 1880, and another in the collection of Mr. I. N. DeHaven was taken at Atlantic City, N. J., May 17, 1892.

125. *Calidris arenaria* (LINN.). Sanderling.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—S. Atlantic States to S. A.

Abundant transient on the New Jersey coast, keeping pretty much to the beach, April 18–June 1 and September 14–October 15, some also are said to remain through the winter. Dr. W. L. Abbott secured one specimen in the spring migration as late as June 13. Occasional on the lower Delaware.

126. *Limosa fedoa* (LINN.). Marbled Godwit.

BREEDING RANGE—Iowa and Dakota to Alaska.

WINTER DISTRIBUTION—Guatemala, Mexico and Cuba.

Rather rare transient on the New Jersey coast, where it seems to have been more plentiful formerly. Occurs in May and again from last week of July to September 15. Dr. Warren states that a few have been captured in recent years in Lancaster, Philadelphia and Delaware counties, Pa.

127. *Limosa hæmastica* (LINN.). Hudsonian Godwit.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—S. A.

Rather scarce transient on the coast, arriving late in September, according to Turnbull. One was shot on the Schuylkill below Philadelphia, September, 1878, by Mr. C. D. Wood (*Trotter—B. N. O. C.*, 1879, p. 235), and another from the Delaware river is in the collection of the Philadelphia Academy.

128. *Totanus melanoleucus* (GMEL.). Greater Yellow-legs.

BREEDING RANGE—Northern N. A. southward to Iowa.

WINTER DISTRIBUTION—S. Atlantic States to S. A.

Common transient on the New Jersey coast, occurring April 20–May 16 and again July 15–October 1. Some linger a month later, as Dr. W. L. Abbott took a specimen on Five mile Beach, Cape May county, November 7, 1877. This species also occurs on the larger rivers with more or less regularity, and is not infrequently seen flying overhead at various inland points during the migrations. According to Ord (*Wilson's Ornithology*) it formerly bred on the coast marshes, but we have no definite proof.

129. *Totanus flavipes* (GMEL.). Summer Yellow-legs.

BREEDING RANGE—Northern N. A.

WINTER DISTRIBUTION—S. Atlantic States to S. A.

Common transient on the coast and less frequently on the larger streams inland. Occurs April 30–May 10 and July 15–October 10. Scott found them as early as July 9, 1879, at Long Beach, N. J. (*B. N. O. C.*, 1879).

130. *Totanus solitarius* (WILS.). Solitary Sandpiper.

BREEDING RANGE—Northern Middle States, northward.

WINTER DISTRIBUTION—Southern States and tropical America.

Common transient along fresh water streams and swamps, but apparently rather scarce on the coast. Occurs April 25–May 15 and September 15–October 20. This species probably breeds sparingly in the mountainous portions of Pennsylvania, as Prof. H. J. Roddy found a pair which were apparently nesting in a swamp in Perry county in June, 1884.

131. *Symphemia semipalmata* (GMEL.). Willet.

BREEDING RANGE—Temperate N. A. northward to New England and Nova Scotia.

WINTER DISTRIBUTION—West Indies and S. A.

Not very common, and found mainly during migrations, though a few still occur all summer at Anglesea (*Capt. Taylor*). Formerly this

species was an abundant breeder all along the New Jersey coast* (*Turnbull*, 1869), but by 1879 it had become rare in Summer (*Scott*). Occurs April 20–May 15 and July 17–Sept. 15. *Scott* records a single male at Long Beach as early as April 6 (*B. N. O. C.*, 1879).

The Willet occurs occasionally inland, generally on the larger streams. Dr. Warren has a specimen in his collection taken in Delaware Co., Pa., Aug., 1885, and another taken in Chester Co., Pa., Aug., 1887, and others have been taken on the Delaware, Lehigh and Susquehanna rivers (*Warren's Report*).

132. *Bartramia longicauda* (BECHST.). Bartramian Sandpiper. Field Plover. Grass Plover.

BREEDING RANGE—Virginia to Nova Scotia and Alaska.

WINTER DISTRIBUTION—Southward to Brazil and Peru.

Rather common summer resident in the interior, but somewhat local and irregularly distributed. It occurs also on the coast during migrations.

Arrives April 21–29, and remains until about Sept. 15, becoming most abundant Aug. 1–15.

133. *Tryngites subruficollis* (VIEILL.). Buff-breasted Sandpiper.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—S. A.

Very rare transient on the New Jersey coast.

Turnbull states that it is generally seen late in autumn, but we have no recent record of its capture.

134. *Actitis macularia* (LINN.). Spotted Sandpiper.

BREEDING RANGE—Whole of N. A.

WINTER DISTRIBUTION—West Indies and Mexico to northern S. A.

Abundant summer resident, generally distributed throughout Pennsylvania and New Jersey, breeding on the coast as well as inland.

Arrives April 20–25 and remains until Oct. 1.

* One nest with eggs was found by Mr. C. E. Bellows near the Warner House on Delaware Bay, May 19, 1884 (*Forest and Stream*, XXII., p. 364).

135. *Numenius longirostris* WILS. Long-billed Curlew.

BREEDING RANGE—Temperate N. A., only so far northward as New Jersey on the Atlantic slope.

WINTER DISTRIBUTION—S. Atlantic States to Guatemala and Cuba.

A straggler on the New Jersey coast occurring generally in May and September. Formerly this species was more abundant, and is said to have bred occasionally in Cape May county.

A few stragglers have been observed inland in Pennsylvania.

136. *Numenius hudsonicus* LATH. Hudsonian Curlew.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—S. A.

Common transient along the New Jersey coast, occurring May 1–June 1 and July 15–Sept. 15. Scott records them as early as July 9, 1879, at Long Beach (*B. N. O. C.*, 1879). A specimen, secured at Lancaster, Pa., May 27, 1892, is in the collection of Mr. W. R. Schnader (*Roddy*).

137. *Numenius borealis* (FORST.). Eskimo Curlew.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—S. A.

Rare transient on the coast, appearing in May and again in September, according to Turnbull. We have no recent records of its capture.

Family Charadriidæ—The Plovers.

Seven Plovers occur in Pennsylvania and New Jersey. The Killdeer breeds regularly inland, and the Piping Plover sparingly on the coast. Of the others, the Semi-palmated and Black-bellied Plovers are regular transients, while the Wilson's is a rare straggler and the Golden Plover an erratic transient.

138. *Charadrius squatarola* (LINN.). Black-bellied Plover.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—Southern Hemisphere.

Common transient on the New Jersey coast, occurring April 30–May 22 and latter part of July to September 15. Dr. W. L. Abbott

has taken specimens in Cape May county as late as June 3 in the spring migration and as late as November 7 in fall.

This species is occasionally found inland during the migrations. Dr. Warren records two specimens secured in Chester county, Pa., and others have been taken on the Delaware river.

139. *Charadrius dominicus* MÜLL. Golden Plover.

BREEDING RANGE—Arctic America.

WINTER DISTRIBUTION—S. A.

Very erratic transient, rarely seen in spring, but at irregular intervals occurs in large flocks in the fall. Dr. Warren states that it was very common in Chester county, Pa., in the fall of 1880. We know of no captures during the past few years.

140. *Ægialitis vocifera* (LINN.). Killdeer.

BREEDING RANGE—Temperate N. A.

WINTER DISTRIBUTION—Southern States to northern S. A.

Common summer resident throughout the interior of Pennsylvania and New Jersey south-east of the mountains and on the coast during migrations. Arrives March 20 and departs October 25. Some remain all winter in Chester and Delaware counties, Pa., and in southern New Jersey.

141. *Ægialitis semipalmata* BONAP. Semipalmated Plover.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—West Indies and S. A.

Very common transient on the coast.

Occurs May 10–June 1 and returns July 19–September 15. Stragglers are also found on the lower Delaware and Susquehanna.

142. *Ægialitis meloda* (ORD.). Piping Plover.

BREEDING RANGE—Southern coast of Labrador to Virginia.

WINTER DISTRIBUTION—Atlantic States to the West Indies.

Transient, but not nearly so abundant as the preceding species, occurring April 15–May 15 and in September and early October.

This species formerly bred along the coast in considerable numbers, but is now quite rare in summer, though a few are still said to

breed at Anglesea (*Laurent—O. & O.*, 1892); they are also occasionally found in winter on the southern part of the New Jersey coast.

Stragglers have been taken on the Delaware river and, perhaps, at other points in the interior.

143. *Ægialitis meloda circumcincta* RIDGW. Belted Piping Plover.

BREEDING RANGE—Wisconsin to the Rocky Mts.

A straggler from the west, occurring occasionally with the preceding species during migrations. Dr. J. A. Allen records two typical specimens in the museum of Princeton College, taken at Long Beach, N. J., April, 1877, by Mr. W. E. D. Scott. Two others not quite typical are in the same collection, taken at the same time (*Auk*, 1886, p. 482).

144. *Ægialitis wilsonia* (ORD.). Wilson's Plover.

BREEDING RANGE—Coasts of Virginia and southward.

WINTER DISTRIBUTION—Mexico and S. A.

Rare straggler on the New Jersey coast, where it probably bred occasionally many years ago.

The first specimens of this species ever secured were shot by Alexander Wilson on "Cape Island, N. J., May 13, 1813." We know of no recent captures,* although Mr. Harry G. Parker states that he saw some on Seven-mile Beach in 1886 (*O. & O.*, 1886, p. 138).

Family *Aphrizzidæ*—The Turnstones.

Only one species of this family occurs in our district.

* Some published records of this species undoubtedly refer to *A. semipalmata*, as a great deal of confusion seems to have existed in the minds of gunners, etc., regarding their specific distinction. Wilson's Plover, however, has been taken recently on Long Island.

145. *Arenaria interpres* (LINN.). Turnstone. Calico-back.

BREEDING RANGE—Far northward.

WINTER DISTRIBUTION—Southern Hemisphere.

Very common transient on the New Jersey coast, occurring May 1–June 1 and Aug. 1–Sept. 15. Occasional on the Delaware, generally after storms. Dr. Warren has several in his collection that were taken at Philadelphia and in Delaware county, Pa., and Dr. C. C. Abbott mentions two that were shot at Trenton, N. J. (*Birds of N. J.*).

Family Hæmatopodidæ—The Oyster-catchers.

Only one species is found on the Atlantic Coast.

146. *Hæmatopus palliatus* TEMM. Oyster-catcher.

BREEDING RANGE—Coasts of Southern States.

WINTER DISTRIBUTION—West Indies and S. A.

Very rare straggler on the New Jersey coast, formerly much more common, and bred in Wilson's time at Great Egg Harbor.

Three individuals were seen at Beach Haven in the fall of 1880 by Mr. S. N. Rhoads, and one was shot at Tuckerton in May, 1894, by Mr. Jillson. Another was taken by a gunner on Chester Island in the Delaware river, May 14, 1891.

Family Tetraonidæ—The Grouse, Quail, Etc.

Three species formerly occurred in Pennsylvania and New Jersey, one of which is now extinct in these States.

147. *Colinus virginianus* (LINN.). Bob White. Partridge.

BREEDING RANGE—Eastern U. S., to Kansas, southward to Georgia.

WINTER DISTRIBUTION—Nearly the same.

Resident, though much less common than formerly, especially in the southeastern counties of Pennsylvania.

**148. *Bonasa umbellus* (LINN.). Ruffed Grouse.
Pheasant.**

BREEDING RANGE—Eastern U. S., lowlands of Massachusetts to upper parts of Georgia.

WINTER DISTRIBUTION—The same.

Resident, though now confined almost entirely to the mountain and forest-clad districts of Pennsylvania and New Jersey, and to the pine barrens of the latter State (May's Landing, etc.).

The Ruffed Grouse of the higher mountains are said to differ somewhat in color from those of the lower districts, and may show an approach to the Canadian Ruffed Grouse, *B. umbellus togata* (L.). We have been unable as yet to examine a satisfactory series of specimens.

**[149.] *Tympanuchus cupido* (LINN.). Heath Hen.
Prairie Hen.**

BREEDING RANGE—Martha's Vineyard Island, Massachusetts. (Formerly New Jersey to Virginia, etc.)

WINTER DISTRIBUTION—The same.

Now extinct in Pennsylvania and New Jersey. Up to 1868 and probably later, a few were said to occur on the barren "plains"* which cover portions of Ocean and Burlington counties, N. J., and, according to Turnbull, a few still survived in Monroe and Northampton counties, Pa., in 1869.

**The Family Phasianidæ—The Pheasants and
Turkeys.**

But one species occurs in Pennsylvania and New Jersey.

* These "plains" form one of the most remarkable sections of the Pine Barren region. They comprise an elevated dry tract several miles in extent, situated between Cedar Bridge and Woodmansie. The ground consists of sand and coarse gravel, being in fact an ancient sea beach, and is covered with a low growth of shrubs including quantities of *Arctostaphylos* and *Corema*. The pines occur on all sides, but are dwarfed and prostrate, not reaching an average height of more than a foot and a half. Indeed, from the center of the tract as far as the eye can reach, there are no pines more than three or four feet high, and these are widely scattered.

150. *Meleagris gallopavo* LINN. Wild Turkey.

BREEDING RANGE—Southern Canada to Gulf States.

WINTER DISTRIBUTION—The same.

Resident, but now restricted to the wilder mountainous parts of Pennsylvania, where it is becoming rarer every year. Two specimens in the collection of the Academy of Natural Sciences of Philadelphia were obtained in Perry county in December, 1891, and November, 1892, by Mr. F. M. McKeehan.

Both of these, however, show a considerable dewlap, which is absent or but very slightly developed in specimens from Virginia which we have examined. This may denote an admixture of the domestic bird, though the specimens seem otherwise typical of the true Wild Turkey.

Family Columbidae—The Pigeons.

Only one species is of regular occurrence in Pennsylvania. Of the others which have been recorded, one is nearly exterminated and the other is a rare straggler from the south.

151. *Ectopistes migratorius* (LINN.). Wild Pigeon.

BREEDING RANGE—Formerly at various localities in eastern N. A.

WINTER DISTRIBUTION—Eastern U. S.

Very rare straggler. Formerly (as late as 1873) common in migrations. A few may still breed in western Pennsylvania, but the bird is rapidly approaching extinction. Dr. Warren states, on the authority of Mr. D. J. Linskill, that a few pairs bred in Luzerne county as late as 1889.

The following specimens have been taken during the past few years:

Englewood, N. J., Sept., 1878, F. M. Chapman (2 specimens).

Haddonfield, N. J., March 22, 1879, Dr. W. L. Abbott.

Olney, Philada., Sept., 1885, G. S. Morris.

Morristown, N. J., Oct., 7, 1893, A. B. Frost (*I. N. De Haven*).

Also four in collection of Academy of Natural Sciences of Philadelphia, procured in Philadelphia market, November and December, 1877.

152. *Zenaidura macroura* (LINN.). Dove.

BREEDING RANGE—Whole of temperate N. A. north to Canada.

WINTER DISTRIBUTION—Middle States to Panama.

Common summer resident, occurring also in winter in the southern counties of both Pennsylvania and New Jersey. About the first of August they begin to collect in flocks, which sometimes consist of a hundred or more individuals.

**[153.] *Columbigallina passerina terrestris* CHAPM.
Ground Dove.**

BREEDING RANGE—Atlantic States to northern S. A.

WINTER DISTRIBUTION—The same.

Accidental straggler from the south.

Mr. John Krider shot a specimen near Camden, N. J., in the autumn of 1858 (*Turnbull*), and one was shot in Lancaster county, Pa., in 1844 (*Libhart, Birds of Lanc. Co.*).

Family Cathartidæ—The American Vultures.

But one species of this family occurs.*

154. *Cathartes aura* (LINN.). Turkey Vulture.

BREEDING RANGE—Southern Middle States, southward throughout S. A.

WINTER DISTRIBUTION—About the same.

Common summer resident in Chester, Delaware, Lancaster and York counties, Pa., and throughout southern New Jersey. Breeds most abundantly along the lower Susquehanna, but quite a number of nests have been found in Chester and Delaware counties and in New Jersey (*Stone, Pennell, etc.*).

In Cape May county, N. J., it is of regular occurrence in winter, and it is also seen occasionally at this season as far north as Haddonfield, N. J., and in southern Pennsylvania.

*The Black Vulture (*Catharista atrata*) is included in Dr. Warren's Report on the authority of Prof. H. J. Roddy. Prof. Roddy, however, writes me that he is now of the opinion that the specimen which was supposed to have been taken in Perry county, Pa., was "obtained very much south of Pennsylvania."

Family Falconidæ—The Hawks and Eagles.

Sixteen species of this family occur in Pennsylvania and New Jersey. The Marsh, Sharp-shinned, Cooper's, Red-tailed, Red-shouldered, Broad-winged and Sparrow Hawks and the Bald Eagle are residents, though several of them are much more plentiful in winter. The Sharp-shinned, Cooper's and Sparrow Hawks are the most generally distributed breeders. The Pigeon, Duck and Rough-legged Hawks are regular visitants in winter, while the Fish Hawk is a common summer resident on the coast. The remaining species are irregular stragglers.

155. *Elanoides forficatus* (LINN.). Swallow-tailed Kite.

BREEDING RANGE—Tropical America and northward to Iowa and on the Atlantic coast, casually to Pennsylvania.

WINTER DISTRIBUTION—Tropical America.

Rare straggler from the South. The following specimens have been taken :*

Near Philadelphia, 1857, John Krider (*Turnbull*).

Lancaster Co., Pa., Formerly in Museum at Lancaster (*Libhart, Birds of Lanc. Co.*),

Olney, Philada., spring, 1888, Edw. Van Artsdalen (*Morris*).

156. *Circus hudsonius* (LINN.). Marsh Hawk.

BREEDING RANGE—Whole of N. A.

WINTER DISTRIBUTION—Southward to Panama.

Resident, but most numerous during migrations. It is most abundant on the coast marshes and those bordering the Delaware and other large rivers. A nest was found June 28, 1877, on the marsh at Long Beach, N. J. (*Scott, B. N. O. C.*, 1879), and it doubtless breeds regularly in other similar localities.

* Dr. C. C. Abbott saw a Swallow-tailed Kite July 28, 1893, near Bordentown, N. J. (*Science*, 1883, p. 222), and another was seen by Mr. J. Harris Reed in Cumberland county, N. J., May, 1893. Neither specimen was secured.

The Mississippi Kite given in Dr. Warren's Report, p. 118, is here omitted, as the specimen was *not* secured nor positively identified.

157. *Accipiter velox* (WILS.). Sharp-shinned Hawk.

BREEDING RANGE—Whole of N. A.

WINTER DISTRIBUTION—Southward to Guatemala.

Common resident throughout Pennsylvania and New Jersey.

158. *Accipiter cooperi* (BONAP.). Cooper's Hawk.

BREEDING RANGE—Whole of temperate N. A.

WINTER DISTRIBUTION—About the same.

Common resident, especially abundant during the fall migration. This is the most frequent breeder of the larger Hawks in south-eastern Pennsylvania.

159. *Accipiter atricapillus* (WILS.). American Goshawk.

BREEDING RANGE—Northern N. A. north of U. S., except in the higher mountains.

WINTER DISTRIBUTION—Southward to Middle States.

Rare winter visitant. Dr. Warren has secured five specimens in Chester county, Pa., during the past ten years, and one was shot at Kennett in the same county, January 1, 1872 (*Forest and Stream*, VI., p. 67). In New Jersey one was secured by Dr. W. L. Abbott in Cape May county, January 22, 1879 (*Coll. Acad. Nat. Sci.*), and two others by Mr. W. E. D. Scott at Princeton, N. J., January 1 and 7, 1879 (*B. N. O. C.*, 1879). On the authority of Mr. Otto Behr, the Goshawk is given by Dr. Warren as a breeder in the mountains of Sullivan county, Pa.

160. *Buteo borealis* (GMEL.). Red-tailed Hawk.

BREEDING RANGE—Eastern N. A.

WINTER DISTRIBUTION—The same.

Common resident, but most abundant in winter, at which season large numbers may be seen daily along the Delaware meadows and other similar localities. In summer they seem to retire to the wilder parts of the country or farther north to breed, as comparatively few nests have come to our notice from southeastern Pennsylvania or southern New Jersey.

[161.] *Buteo borealis harlani* (AUD.). **Harlan's Hawk.**

DISTRIBUTION—Kansas, Louisiana, Texas, southward (in winter?) to Central America.

One specimen of this western bird was secured at Watsontown, Northumberland county, Pa., January, 1875, by Dr. W. Van Fleet.

162. *Buteo lineatus* (GMEL.). **Red-shouldered Hawk.**

BREEDING RANGE—Eastern N. A., to Canada.

WINTER DISTRIBUTION—More southerly.

Resident, but most abundant in winter. Seems to be a rarer breeder than the preceding. Dr. W. E. Hughes found one nest near Phoenixville, Pa., some years ago.

163. *Buteo latissimus* (WILS.). **Broad-winged Hawk.**

BREEDING RANGE—Eastern N. A., north to New Brunswick.

WINTER DISTRIBUTION—Southward to northern S. A.

Rather rare resident. Several nests have been found in Chester county by Dr. Warren, Mr. F. L. Burns and Mr. Thos. H. Jackson (*O. & O.*, 1887, 1888), one in Montgomery county by Dr. W. E. Hughes, one in Delaware county by Mr. H. G. Parker (*O. & O.*, 1886), and one at Haddonfield, N. J., by Mr. S. N. Rhoads.

164. *Archibuteo lagopus sancti-johannis* (GMEL.).
American Rough-legged Hawk.

BREEDING RANGE—Chiefly north of U. S.

WINTER DISTRIBUTION—Southward to Middle States.

Winter visitant, almost entirely restricted to the marshes bordering our larger streams. Along the Delaware below Philadelphia it was formerly quite abundant, and is still found in considerable numbers from November till the end of March.

165. *Aquila chrysaetos* (LINN.). **Golden Eagle.**

BREEDING RANGE—Northern parts of Northern Hemisphere.

WINTER DISTRIBUTION—The same.

Irregular straggler in winter. One was shot at Willow Street, Lancaster county, December 27, 1867 (*Libhart—Birds of Lanc. Co.*), another at Oxford, Chester county, Pa., by Mr. Benj. Cope in 1881

or 1882 (*Rhoads*), and also one near Manheim, Lancaster county, November 6, 1891 (*Raub—Auk*, 1892). A specimen in the possession of Mr. Chas. A. Voelker was secured at New Egypt, N. J., 1893.

166. *Haliaeetus leucocephalus* (LINN.). Bald Eagle.

BREEDING RANGE—Whole of N. A.

WINTER DISTRIBUTION—The same.

Resident, though most frequently seen during migrations. Several pairs breed regularly on the cliffs along the lower Susquehanna river, and at various localities in the mountains, and a few pairs probably still breed in the cedar swamps of southern New Jersey, as they are seen regularly along the coast and in the Pine Barrens.

167. *Falco peregrinus anatum* (BONAP.). Duck Hawk.

BREEDING RANGE—Northern N. A., south to the Middle States and farther in the mountains.

WINTER DISTRIBUTION—Southward to Central America.

Winter visitant, but not common, except along the coast.

This species breeds regularly on the cliffs bordering the Susquehanna near Pittston (*Detwiler*), and in similar situations on the Delaware near Nockamixon. Dr. Warren also states that Mr. Geo. Miller found a nest as far south as Codorus Creek on the lower Susquehanna.

168. *Falco columbarius* LINN. Pigeon Hawk.

BREEDING RANGE—Chiefly north of the U. S.

WINTER DISTRIBUTION—Southward to northern S. A.

Rather rare winter visitant, arriving as early as September 14. Most common along the coast.

169. *Falco sparverius* LINN. Sparrow Hawk.

BREEDING RANGE—Temperate N. A.

WINTER DISTRIBUTION—Southward to northern S. A.

Abundant resident, breeding throughout.

170. *Pandion haliaetus carolinensis* (GMEL.).**Osprey. Fish Hawk.**

BREEDING RANGE—Temperate and tropical America, to Hudson Bay.

WINTER DISTRIBUTION—Coasts of Atlantic States, southward.

Summer resident all along the New Jersey coast, being most plentiful in Ocean and Cape May counties. Arrives March 20 and departs by the middle of October, though most have left by the end of September.

In Pennsylvania it is mainly seen during migrations, but breeds along the lower Delaware and Susquehanna rivers, and occasionally on smaller inland streams, one pair having been found breeding near Chadd's Ford, Delaware county, on the Brandywine creek (*Warren's Report*).

Family Strigidæ.—The Barn Owls.

Only one species occurs in North America.

171. *Strix pratincola* BONAP. Barn Owl.

BREEDING RANGE—Southern U. S., not ranging above the Carolinian Fauna.

WINTER DISTRIBUTION—The same.

Resident, but does not occur north of the Carolinian Fauna, except as a straggler. Breeds regularly in suitable places in southern Pennsylvania and New Jersey, being especially common at all seasons on the Delaware meadows below Philadelphia. One was recorded as far north as Englewood, N. J., August 26, 1886, by Mr. F. M. Chapman (*Auk*, 1886, p. 485).

Family Bubonidæ—The Horned Owls, etc.

Nine species of this family occur in Pennsylvania and New Jersey. The Long-eared, Short-eared, Barred, Screech and Great Horned Owls are residents, though all of them are more common in winter. The other species are all visitors from farther north, the Acadian Owl being of the most regular occurrence.

172. *Asio wilsonianus* (LESS.). Long-eared Owl.

BREEDING RANGE—Temperate N. A.

WINTER DISTRIBUTION—The same.

Resident, but apparently not very common. It is most numerous in winter, when it sometimes occurs in colonies of considerable numbers.

Dr. W. E. Hughes has taken a nest with eggs near Valley Forge, Pa., and Mr. Thos. H. Jackson found another in Chester county, April 15, 1870 (*O. & O.*, 1886).

173. *Asio accipitrinus* (PALL.). Short-eared Owl.

BREEDING RANGE—Nearly cosmopolitan.

WINTER DISTRIBUTION—The same.

Resident in suitable places, though much more common in winter, when it sometimes occurs in large colonies. Mr. W. E. D. Scott records one of these occurrences in the winter of 1878-9, when some 200 of these birds occupied a field covered with dry grass near Harlingen, N. J., from November to January. Mr. Josiah Hoopes reports similar colonies in his nurseries at West Chester, Pa., about 1866, and again in the winter of 1890-1.

A nest of this species was found by Mr. W. E. D. Scott on the marshes at Long Beach, N. J., June 28, 1878 (*B. N. O. C.*, 1879).

174. *Syrnium nebulosum* (FORST.). Barred Owl.

BREEDING RANGE—Eastern N. A., southern Canada to Georgia.

WINTER DISTRIBUTION—About the same.

Rare winter visitant in the vicinity of Philadelphia, though more common in the wilder parts of the country. It is said to breed in the mountain forests and perhaps also in the New Jersey Pine Barrens.

175. *Scotiaptex cinerea* (GMEL.). Great Gray Owl.

BREEDING RANGE—Extreme northern parts of N. A.

WINTER DISTRIBUTION—Southward to northern U. S.

Very rare winter visitant. Dr. C. C. Abbott states that one was taken in Sussex county, N. J., December, 1859 (*Birds of N. J.*), and Dr. Warren records one taken in Chester county, Pa., in mid-winter by Mr. H. B. Graves, and one found dead in the mountains of Lackawanna county, Pa., by Mr. J. F. Everhart.

176. *Nyctala acadica* (GMEL.). Saw-whet Owl.

BREEDING RANGE—Northern U. S. and British America.

WINTER DISTRIBUTION—Southward to Middle States.

Rare winter visitant, though some probably occur every year. The following recent captures have come under our notice, and others have been reported by taxidermists :

Germantown, Pa., Feb. 21, 1887, W. Stone.

Haverford, Pa., Nov. 20, 1892, W. L. Baily.

Philadelphia, Pa., Nov. 5, 1892, M. L. C. Wilde.

Chester Co., Pa., Aug. 30, 1879, Dr. B. H. Warren.

" " Nov. 10, 1883, " " (2).

" " Sept. 20, 1884, " "

Mr. W. E. D. Scott also records a large colony in a cedar grove near Princeton, N. J., in winter, 1878-9 (*B. N. O. C.*, 1879).

This species seems to breed regularly in the mountainous parts of Pennsylvania, as a nest taken at Nazareth, Pa., April 25, 1867, by Richard Christ, is carefully described in Samuel's "Our Northern and Eastern Birds," and Dr. Warren records it as a regular breeder at Lopez, Sullivan county, Pa., on the authority of Mr. Otto Behr. Dr. J. W. Detwiler has also found it at all seasons near Bethlehem, though he has never discovered the nest, and Mr. W. L. Baily secured a specimen in the first plumage at Rasselas, Elk Co., Pa., June 30, 1894.

177. *Megascops asio* (LINN.). Screech Owl.

BREEDING RANGE—Eastern N. A., British Provinces to upper S. Atlantic and Gulf States.

WINTER DISTRIBUTION—The same.

Abundant resident, breeding throughout.

The red phase of plumage seems to be the more common in the vicinity of Philadelphia.

178. *Bubo virginianus* (GMEL.). Great Horned Owl.

BREEDING RANGE—Eastern N. A.

WINTER DISTRIBUTION—The same.

Resident. Rather common in the wilder parts of the country, but rare in the settled districts.

179. *Nyctea nyctea* (LINN.). Snowy Owl.

BREEDING RANGE—Extreme northern parts of N. A.

WINTER DISTRIBUTION—Southward, sometimes to middle of U. S.

Winter visitant, most frequent along the coast. Though generally rare, this species occurs in considerable numbers during some winters, 1876–1877 and 1890–1891 being notable examples.

180. *Surnia ulula caparoch* (MÜLL.). American Hawk Owl.

BREEDING RANGE—Northern N. A.

WINTER DISTRIBUTION—Southward to northern border of U. S.

Very rare winter visitant. Turnbull records one shot at Haddington, Phila., in 1866, and Dr. C. C. Abbott mentions one secured in Mercer county, N. J., in 1858, and another in Middlesex county, N. J., in 1861 (*Birds of N. J.*). Dr. Warren states that Mr. Joseph Krider secured one in Pennsylvania. We know of no other records.

Family Psittacidæ.—The Parrots.

One species formerly occurred as a straggler in Pennsylvania.

[181.] *Conurus carolinensis* (LINN.). Carolina Paroquet.

DISTRIBUTION—Florida and Gulf States; of local occurrence only, and rapidly approaching extinction.

Formerly occurred as a straggler within the boundaries of Pennsylvania. A flock was seen many years ago near Willow Street, Lancaster county, Pa., and one specimen was secured and deposited in the museum at Lancaster (*Libhart, Birds of Lanc. Co.*). What is presumed to be the same specimen is still in the collection, but is unfortunately without data (*H. J. Roddy, 1894*).

Family Cuculidæ.—The Cuckoos.

Only two species of Cuckoos occur regularly in Pennsylvania and New Jersey.

[182.] *Crotophaga ani* LINN. Ani.

DISTRIBUTION—West Indies and eastern S. A.

A purely accidental straggler. One specimen in the collection of the Academy of Natural Sciences of Philadelphia was secured on "Peter's Island, in the Delaware river opposite Kensington,"* Philadelphia, by John Krider, some time previous to 1869.

183. *Coccyzus americanus* (LINN.). Yellow-billed Cuckoo.

BREEDING RANGE—Northward to Canada and westward to the Plains.

WINTER DISTRIBUTION—West Indies, eastern Mexico and Costa Rica.

Common summer resident, generally distributed and breeding regularly. Towards the mountains this species seems to become rarer while the next is more abundant.

184. *Coccyzus erythrophthalmus* (WILS.). Black-billed Cuckoo.

BREEDING RANGE—Northward to Labrador and Manitoba and westward to the Rocky Mts.

WINTER DISTRIBUTION—West Indies, Mexico, to northern S. A.

Summer resident, but in the vicinity of Philadelphia seems less common than the preceding, and is a much rarer breeder. Along the Alleghanies and Blue Ridge, however, it is the more abundant species.

Family Alcedinidæ—The Kingfishers.

Represented in eastern North America by but one species.

185. *Ceryle alcyon* (LINN.). Belted Kingfisher.

BREEDING RANGE—Throughout N. A.

WINTER DISTRIBUTION—Middle States (casually), southward to Panama.

Common summer resident, generally distributed along rivers and creeks. Occasionally individuals occur near Philadelphia during winter.

*This is the wording of the original label; PETTY's island is evidently intended.

Family Picidæ—The Woodpeckers.

Of the eight species of Woodpeckers found in Pennsylvania and New Jersey, three are generally distributed; the Downy Woodpecker and Flicker being abundant and the Hairy Woodpecker less common. The Red-headed Woodpecker is irregularly distributed, being a common breeder in some districts and very rare in others. The Yellow-bellied Sapsucker is a common migrant, breeding along the mountains. Of the remaining species, the Pileated Woodpecker is almost entirely restricted to the mountain forests, while the Red-bellied and Red-cockaded species are mere stragglers in eastern Pennsylvania and New Jersey.*

186. *Dryobates villosus* (LINN.). Hairy Woodpecker.

BREEDING RANGE—Eastern U. S. except the S. Atlantic and Gulf States.†
WINTER DISTRIBUTION—About the same.

Resident, most abundant in the mountains and in the wilder sections of the country; occurring in the thickly settled districts in winter.

Hairy Woodpeckers from the Pennsylvania mountains seem to have decidedly longer bills than the lowland birds, this being perhaps an approach towards the northern variety, *D. villosus leucomelas*.

187. *Dryobates pubescens* (LINN.). Downy Woodpecker.

BREEDING RANGE—Throughout eastern N. A.
WINTER DISTRIBUTION—About the same.

Abundant resident and generally distributed, though to a certain extent replaced by *D. villosus* in the sparsely settled country.

[188.] *Dryobates borealis* (VIEILL.). Red-cockaded Woodpecker.

BREEDING RANGE—Southern States, eastern Texas to N. Carolina, and occasionally farther north.
WINTER DISTRIBUTION—Same.

A very rare straggler from the south. Mr. T. G. Gentry records the capture of a specimen in Delaware county, Pa. (*Life Histories of*

* Audubon states (*Orn. Biog.*, II., p. 198) that he saw a few Three-toed Woodpeckers, *Picooides arcticus*, in the Great Pine Forest of Pennsylvania, but no specimens seem to have been secured, and the record has never been verified.

† It is there replaced by the Hairy Woodpecker, *D. villosus auduboni*.

Birds), and Mr. G. N. Lawrence* mentions one in his collection, taken near Hoboken, N. J. There is also a specimen in the collection of the Philadelphia Academy, shot near Philadelphia, in 1861, by Mr. Wm. Wood.

189. *Sphyrapicus varius* (LINN.). Yellow-bellied Sapsucker.

BREEDING RANGE—Northern U. S. northward, and southward through the Alleghanies.

WINTER DISTRIBUTION—Potomac valley south to West Indies and Mexico. Occasionally farther north.

Common transient visitant and occasional winter resident. Occurs in spring, March 15–April 12, and once recorded as late as May 10. (1884.—*W. L. Baily*.) In fall it occurs September 10–October 20.

Along the Alleghanies and probably also in northern New Jersey, the Yellow-bellied Sapsucker is a summer resident and has already been recorded as breeding in Cumberland and Sullivan counties, Pa. (*Warren's Report*), and at Harvey's Lake, Luzerne county (*Stone, Proc. A. N. S. Phila.*, 1891), while Mr. Dwight found a few on North Mountain (*Auk*, 1892).

190. *Ceophlæus pileatus* (LINN.). Pileated Woodpecker.

BREEDING RANGE—Forest regions throughout N. A.

WINTER DISTRIBUTION—Same.

Very rare straggler in south-eastern Pennsylvania and New Jersey. The only specimens that have come under our notice secured southeast of the mountain forests during the past fifteen years, are as follows:

Cape May Co., N. J., Nov. 7, 1878, W. L. Abbott, M. D.†

Cape May Co., N. J., Dec. 31, 1879, W. L. Abbott, M. D.†

Englewood, N. J., Sept., 1885, Jacob Ullrich (*Chapman—Auk*, 1888).

A few may possibly still breed in the dense swamps of southern New Jersey.

In the vicinity of Harvey's Lake, Luzerne county, Pa., the Pileated Woodpecker was rather common during June, 1891, and it is probably still plentiful wherever the forests remain.

* *Ann. Lyc. Nat. Hist. N. Y.*, 1867, p. 291.

† Nos. 26,675 and 26,676, Coll. Acad. Nat. Sci., Philadelphia. The record of this species in Delaware county, Pa., *Auk*, 1891, p. 245, was an error.

191. *Melanerpes erythrocephalus* (LINN.). Red-headed Woodpecker.

BREEDING RANGE—Eastern U. S. to the Rocky Mts., but rare east of the Hudson and Delaware rivers.

WINTER DISTRIBUTION—Irregularly throughout the breeding range, but mainly in the Southern States.

Summer resident, but of irregular distribution. Most common in Pennsylvania along the valleys of the Susquehanna, Brandywine and upper Schuylkill. Rare about Philadelphia, and very rare in New Jersey (at least south of the mountainous portion). Arrives April 10–May 9 and departs October 7–23. One specimen was secured by S. N. Rhoads at Haddonfield, N. J., December 2, 1880, and one or two others have been reported in winter.

192. *Melanerpes carolinus* (LINN.). Red-bellied Woodpecker.

BREEDING RANGE—Southern States, rare north of Chesapeake Bay (much farther north west of the Alleghanies).

WINTER DISTRIBUTION—About the same.

Rare and irregular straggler, occurring mostly in winter. All the captures that have come under our notice have been in Chester and Delaware counties, Pa.* Dr. Warren records five specimens secured by him in this part of the State, and there are several in the collection of the Academy of Natural Sciences from the same vicinity. Two specimens were also taken at Kimbleville, Chester county, by Mr. S. N. Rhoads, January 1, 1880, December 8, 1881, and two in northern New Jersey, *i. e.*, Keyport, November 23, 1887 (*Foster—Forest & Stream*, XXIX., p. 363), and Newton, November 16, 1889 (*Lewis—Auk*, 1890). We know of no record of the breeding of this species in eastern Pennsylvania or New Jersey.

193. *Colaptes auratus* (LINN.). Flicker.

BREEDING RANGE—Eastern N. A., westward to the Plains.

WINTER DISTRIBUTION—Mainly south of the Middle States.

Abundant summer resident March 25–October 25; a few also occur every winter in the vicinity of Philadelphia and in southern New Jersey.

* In southwestern Pennsylvania this species is a common breeder. Mr. J. G. Dillin also secured a specimen in Bedford county, November 24, 1893 (*Coll. Witmer Stone*).

194. *Colaptes auratus* × *cafer*. Hybrid Flicker.

Though most of the notorious hybrids between the eastern Yellow-shafted and western Red-shafted Flickers are confined to the region west of the Mississippi river, a few are to be found in the east, and four specimens at least have been taken in eastern Pennsylvania.

On October 1, 1889, Mr. I. N. DeHaven shot two Flickers near Conshohocken, Pa., which had the wings and tail bright reddish orange; unfortunately only a few of the feathers of these specimens were preserved. Another specimen, which is in Mr. DeHaven's collection, secured May 1, 1892, at Peach Bottom, Lancaster county, Pa., has a few red feathers in the moustachial stripe, and a similar specimen was shot near Philadelphia, April 13, 1886, by Mr. Herbert Brown (*No. 146, Coll. W. Stone*).

Three or four other specimens with a few red moustachial feathers were shot by Mr. T. M. Trippe at Orange, N. J. (*Amer. Nat.*, 1873, p. 498).

Family Caprimulgidæ.—The Goatsuckers.

Only two species occur in the district under consideration.

195. *Antrostomus vociferus* (WILS.). Whip-poor-will.

BREEDING RANGE—Virginia to Nova Scotia, westward to the Plains.

WINTER DISTRIBUTION—Gulf States to Mexico and Guatemala.

Tolerably common transient in the vicinity of Philadelphia, breeding along the mountains and in the wilder secluded parts of southern New Jersey and Pennsylvania, April 22–September 30.

196. *Chordeiles virginianus* (GMEL.). Night Hawk.

BREEDING RANGE—Eastern N. A., to the Plains.

WINTER DISTRIBUTION—West Indies and Mexico to S. A.

Summer resident, generally distributed through the open country. In August the Night Hawks collect in large flocks before passing southward. May 4–October 10. The most noted breeding ground of this species in the vicinity of Philadelphia is on the barren serpentine ridges of Chester county.

Family Micropodidæ—The Swifts.

Only one species occurs.

197. *Chaetura pelagica* (LINN.). Chimney Swift.

BREEDING RANGE—Virginia to Canada, westward to the Plains.

WINTER DISTRIBUTION—South of the U. S.

Abundant summer resident everywhere. April 15–October 10.

Family Trochilidæ—The Hummingbirds.

Only one species occurs in eastern North America.

198. *Trochilus colubris* LINN. Ruby-throated Hummingbird.

BREEDING RANGE—Eastern U. S., northward to Canada.

WINTER DISTRIBUTION—Cuba, eastern Mexico and Central America.

Common summer resident, much more abundant in some localities than others. May 12–September 25.

Family Tyrannidæ.—The Tyrant Flycatchers.

Of the Flycatchers, nine species occur in eastern Pennsylvania and New Jersey. The Pewee, Wood Pewee, Kingbird, Crested and Acadian Flycatchers are common breeders. The last is restricted to the southern counties, and is replaced farther north by the Least Flycatcher, which is a transient in the vicinity of Philadelphia. The Yellow-bellied Flycatcher is a migrant species rarer than any of the preceding, while the Traill's and Olive-sided Flycatchers are of still less frequent occurrence.*

* Three western and southern species, the Fork-tailed, Scissor-tailed and Arkansas Flycatchers, have also occurred as mere accidental stragglers within our district. See below.

[199.] *Milvulus tyrannus* (LINN.). **Fork-tailed Fly-catcher.**

BREEDING RANGE—Mexico to S. A.

One specimen was secured by Audubon, near Camden, New Jersey, in 1832, and another was taken near Bridgeton, in the same State, in December, many years ago (*Bonaparte, Amer. Ornith.*). The occurrence of this bird in the United States is purely accidental.

[200.] *Milvulus forficatus* (GMEL.). **Scissor-tailed Fly-catcher.**

BREEDING RANGE—Mexico and southwestern U. S.

An accidental straggler. One specimen was secured by Dr. C. C. Abbott, April 15, 1872, near Trenton, New Jersey. (*Birds of N. J.*)

201. *Tyrannus tyrannus* (LINN.). Kingbird.

BREEDING RANGE—Eastern N. A., westward to Rocky Mts.

WINTER DISTRIBUTION—West Indies, Mexico and northern S. A.

Very common summer resident, generally distributed. May 6–September 1. Found in considerable flocks in southern New Jersey in August.

[202.] *Tyrannus verticalis* SAY. **Arkansas Kingbird.**

BREEDING RANGE—Western N. A. Eastward through the Plains.

One specimen secured near Moorestown, Camden county, New Jersey, many years ago; was formerly in the museum of the Academy of Natural Sciences of Philadelphia. (*Turnbull.*)

203. *Myiarchus crinitus* (LINN.). Crested Flycatcher.

BREEDING RANGE—Eastern U. S., northward to Canada.

WINTER DISTRIBUTION—Eastern Mexico to Costa Rica.

Common summer resident throughout. Occurs May 1–September 1, and occasionally as late as September 20.

204. *Sayornis phæbe* (LATH.). Pewee. Phœbe.

BREEDING RANGE—Eastern N. A., north of the Gulf States.

WINTER DISTRIBUTION—Southern States to Cuba and eastern Mexico.

Abundant summer resident, March 20–October 25. Occasional specimens have been seen during winter—January 1, 1884, Lancas

ter county, Pa. (*Stone*), January 22, 1883, Chester county, Pa. (*Warren*).

205. *Contopus borealis* (SWAINS.) Olive-sided Flycatcher.

BREEDING RANGE—Canadian Zone northward (southward in the mountains).

WINTER DISTRIBUTION—Mexico and northern S. A.

Very rare migrant. One specimen was taken by Prof. Baird at Carlisle many years ago (*Birds of Carlisle*), and another by Mr. C. D. Wood at Coatesville, Pa., about 1875 (*Trotter—B. N. O. C.*, 1879). Dr. Warren states that several have been taken at rare intervals in the southeastern portion of Pennsylvania during the past ten or fifteen years. The species has not been observed in the Delaware Valley by any members of the Club.

206. *Contopus virens* (LINN.) Wood Pewee.

BREEDING RANGE—Eastern U. S., northward to Canada.

WINTER DISTRIBUTION—Eastern Mexico and Guatemala.

Abundant summer resident. May 6–September 20.

207. *Empidonax flaviventris* BAIRD. Yellow-bellied Flycatcher.

BREEDING RANGE—Northern border of U. S., northward; westward to Rocky Mts.

WINTER DISTRIBUTION—Eastern Mexico to Panama.

Rather rare migrant in southeastern Pennsylvania and New Jersey, occurring in spring, May 17–21, and in fall, September 4–25.

Along the higher portions of the Alleghanies it is probably a regular breeder, as Mr. Dwight found it on North Mountain in summer (*Auk*, 1892), and Mr. Koch reports it as breeding in Lycoming county, Pa.

208. *Empidonax acadicus* (GMEL.) Acadian Flycatcher.

BREEDING RANGE—Eastern U. S., northward to the upper limit of the Carolinian Zone.

WINTER DISTRIBUTION—Eastern Mexico to Ecuador.

Common summer resident throughout southeastern Pennsylvania

and in portions of southern New Jersey, ranging northward only to the upper border of the Carolinian Fauna. Most common along the valleys of the lower Susquehanna, Schuylkill, Brandywine and their tributaries, generally breeding in the immediate vicinity of water. Occurs May 5–September 15.

209. *Empidonax pusillus trailii* (AUD.). Traill's Flycatcher.

BREEDING RANGE—Northern border of eastern U. S., northward.

WINTER DISTRIBUTION—Mexico to northern S. A.

A rare transient visitant. Though this species is included in several lists, we can find no actual records of its capture in eastern Pennsylvania or southern New Jersey.*

At Lake Hopatcong, N. J., Mr. S. N. Rhoads saw this species in the latter part of May, and it is possible that it breeds there as well as at certain points in the higher Alleghanies.*

210. *Empidonax minimus* BAIRD. Least Flycatcher.

BREEDING RANGE—Eastern N. A., from Alleghanian Zone northward.

WINTER DISTRIBUTION—Mexico to Panama.

A regular, though not abundant, transient in the vicinity of Philadelphia, May 1–15 and September 6–15. Single nests have been taken in Delaware county, Pa. (June 1, 1881. *S. N. Rhoads, B. N. O. C.*, 1882), and at Trenton, N. J. (June 1891. *Jos. W. Tatem*), and pairs have been once or twice seen in the vicinity of Haddonfield, N. J., in summer, but the species is a rare breeder in this latitude.

Along the Pennsylvanian Alleghanies and at Lake Hopatcong, N. J., it is a common breeder.

Family Alaudidæ.—The Larks.

Two races of the single American species of Lark occur in Pennsylvania and New Jersey, both of which are winter residents in those portions of the states under consideration.

*The specimen referred to in *Abstract Proc., D. V. O. C.*, 1890 and 1891, p. 2, proved to be *E. minimus*.

211. *Otocoris alpestris* (LINN.). Horned Lark.

BREEDING RANGE—Labrador, Hudson Bay and northern Europe.

WINTER DISTRIBUTION—Southward to the Carolinas and Illinois.

Regular winter resident along the New Jersey coast and Delaware Bay in immense flocks; less abundant in the interior and irregular in its occurrence. In the vicinity of Philadelphia it is most frequently seen along the Delaware marshes, though it is by no means regular.

212. *Otocoris alpestris praticola* HENSH. Prairie Horned Lark.

BREEDING RANGE—Upper Mississippi Valley and western New York and Pennsylvania (casually eastward from northern Pennsylvania to New England).

WINTER DISTRIBUTION—Southward to Virginia and Texas.

Casual winter visitant in the vicinity of Philadelphia. Two specimens are in the collection of the Academy of Natural Sciences, which were taken in Tinicum township, Delaware county, Pa., by Mr. S. M. Brice, February 19 and 22, 1879.

In western Pennsylvania this species breeds frequently, and it also occurs sparingly in the northeastern portion of the state during the breeding season. (Athens, Bradford county, *Dwight* and *Parke*—*Auk*, 1892. Williamsport, *Koch*).

Family Corvidæ.—The Crows.

Five species of the Crow Family occur in the region covered by the present list. Of these the Common Crow and Blue Jay are everywhere resident and are the only abundant species. The Fish Crow is a summer resident on the coast, while the Raven is rare, being mainly restricted to the mountains. The Canada Jay is a very rare straggler.

213. *Cyanocitta cristata* (LINN.). Blue Jay.

BREEDING RANGE—Eastern N. A., north of Florida.*

WINTER DISTRIBUTION—About the same.

* Replaced there by the Florida Blue Jay, *C. cristata florincola*.

Resident. Collects in flocks from August to October, the majority of which go further south to pass the winter.

[214.] *Perisoreus canadensis* (LINN.). **Canada Jay.**

BREEDING RANGE—Northern New England to Hudson Bay.

WINTER DISTRIBUTION—Southward to northern New York.

Very rare straggler in winter. Dr. A. C. Treichler secured one, February, 1889, in Lancaster county, Pa.

215. *Corvus corax principalis* RIDGW.* **Raven.**

BREEDING RANGE—Northern and eastern N. A.

WINTER DISTRIBUTION—Same.

Resident along the Alleghanies and in the north central part of Pennsylvania, occasionally straggling eastward during winter.† A few also breed in the dense cedar swamps of southern New Jersey. Mr. Geo. B. Benners secured a pair of young from a nest near Tuckerton some years since, and Mr. Jillson informs us that a pair still breed there. Messrs. S. N. Rhoads and W. Stone also saw a pair at May's Landing, N. J., February, 1893, which were said to breed in a neighboring cedar swamp. Solitary ravens are not infrequently seen along the sea coast.

216. *Corvus americanus* AUD. **American Crow.**

BREEDING RANGE—Eastern N. A., except Florida‡ and the Arctic regions.

WINTER DISTRIBUTION—Mainly south of New England.

Abundant resident, collecting in immense flocks during the winter. These flocks have definite roosting places to which they resort every night, and the same roosts are used winter after winter.

The birds fly in long lines, and following the same course every

* Ravens from Centre county have been pronounced by Mr. Ridgway to be *C. c. principalis* (*Forest and Stream*, XXXVII., p. 182); those from New Jersey are intermediate between true *C. c. principalis* and *C. c. sinuatus*, the Western Raven, though they are perhaps nearer to the former. *Corvus corax* is the European race.—See *Auk*, 1894, p. 137-138.

† The record of this species in Delaware county (*Auk*, 1891, p. 245) was an unfortunate error. The specimen came from Fulton county, Pa., as was afterwards ascertained.

‡ There replaced by the Florida Crow *C. americanus floridanus*.

day, the majority of them resorting to the cultivated districts of Pennsylvania to feed and returning to the New Jersey pines at night. The following roosts have been occupied within the last few years, and there are doubtless others:*

Hainesport, Burlington Co., N. J.,	extent of roosting area	20-30	acres.
Merchantville, Camden Co., N. J.,	" "	15-20	" "
Reedy Island, Delaware River,	" "	50	" "
Davis Grove, Montgomery Co., Pa.,	" "	20	" "
Coatesville, Chester Co., Pa.,	" "	Several	" "

217. *Corvus ossifragus* WILS. Fish Crow.

BREEDING RANGE—Atlantic and Gulf coasts to Long Island.

WINTER DISTRIBUTION—About the same.

Breeds regularly along the New Jersey coast, and seems to be partially resident, as two specimens were taken by Mr. W. E. D. Scott at West Creek, Ocean county, N. J., January 21 and 22, 1879, and others were seen at the same time (*B. N. O. C.*, 1879). It is found along the Delaware river, at least as far up as Philadelphia, and may breed sparingly in Delaware county, Pa. It is also reported to ascend the Susquehanna as far as the Pennsylvania line.

Family Icteridæ—The Orioles.

Ten species of *Icteridæ* are included in the avifauna of eastern Pennsylvania and New Jersey. Six of these breed generally throughout these States: the Grackle, Red-winged Blackbird, Meadowlark, Cowbird, Orchard and Baltimore Orioles, the first three being the most abundant. Three species are transient: the Bobolink, which occurs mostly along the large river and coast marshes, and the Bronzed Grackle and Rusty Blackbird, neither of which is very common. The Yellow-headed Blackbird is an accidental straggler. The Meadowlark is resident in the southern parts of Pennsylvania and New Jersey, and the Rusty Blackbird, Red-winged Blackbird, Cowbird and Purple Grackle occur irregularly during winter.

* See Rhoads' "Crow Roosts and Roosting Crows," *Amer. Nat.*, 1886, pp. 691 and 777. An important treatise on the subject.

218. *Dolichonyx oryzivorus* (LINN.). Bobolink. Reed-bird.

BREEDING RANGE—Northern portion of eastern U. S. and southern Canada (mainly north of Pennsylvania).

WINTER DISTRIBUTION—West Indies and S. A.

Regular migrant, occurring in large flocks, May 1–15 and August 25–September 20, mainly along the large river marshes, and very abundant in fall. Occurs on the coast in fall, but is rare during the spring migration.

The Bobolink is a regular breeder in the northern parts of Pennsylvania and New Jersey, but seems to be irregularly distributed. It has been reported to breed in Bradford and Susquehanna counties (*Warren's Report*), and formerly at Englewood and Passaic, N. J. (*Chapman*).

In 1885 a number of Bobolinks were seen during the breeding season by Mr. S. N. Rhoads at Croydon Station, Bucks county, Pa., and no doubt bred there, though we have no absolute proof.*

219. *Molothrus ater* (BODD.). Cowbird.

BREEDING RANGE—U. S. and southern Canada.

WINTER DISTRIBUTION—Southern States and Mexico.

Common throughout from April to October in small flocks.

At Cape May, N. J., the Cowbird has been found in January associating with the flocks of Red-winged Blackbirds (*Stone and Rhoads*), and it probably winters in other suitable localities in the southern part of the State.

[220.] *Xanthocephalus xanthocephalus* (BONAP.). Yellow-headed Blackbird.

BREEDING RANGE—Marshes of western U. S.

An accidental straggler from the west.

A young male was shot on the marshes below Philadelphia, August, 1851, by Mr. John Krider, and is now in the collection of the Academy of Natural Sciences (No. 3745). Another specimen in the same collection was secured by a gunner about 1890 at Tuckerton, N. J., and was mounted by Mr. Gross, a taxidermist of

*The Bobolink has been said to have bred in Chester county, Pa., and along the Maurice river, N. J., but we have been unable to verify these reports.

Camden. Mr. I. N. DeHaven also shot one near Camden in September, 1866.

221. *Agelaius phœniceus* (LINN.). Red-winged Black-bird.

BREEDING RANGE—Nearly throughout temperate N. A.

WINTER DISTRIBUTION.—Mostly south of the Middle States.

Abundant summer resident, arriving in the vicinity of Philadelphia on the first spring-like day, sometimes as early as February 6. They collect in flocks on the river marshes during the latter part of July and generally depart by November 1, though occasional flocks are seen on the Delaware marshes and in southern New Jersey during the winter.

222. *Sturnella magna* (LINN.). Meadowlark.

BREEDING RANGE—Eastern N. A., northward to Canada.

WINTER DISTRIBUTION—Middle States, mainly along the coast and large river valleys; southward.

Common resident, in winter mainly restricted to the marshes of the Delaware river and the New Jersey coast, where they collect in large flocks, spreading back into the uplands about the first of March.

223. *Icterus spurius* (LINN.). Orchard Oriole.

BREEDING RANGE—Eastern U. S.

WINTER DISTRIBUTION—Mexico to Panama.

Common summer resident, arriving in the vicinity of Philadelphia about May 1, and departing the latter part of August. For some weeks before their departure, both this and the following species collect in small flocks, frequenting upland swamps and woodland.

224. *Icterus galbula* (LINN.). Baltimore Oriole.

BREEDING RANGE—Northward to New England and Ontario, westward to the Plains.

WINTER DISTRIBUTION—Mexico to Panama.

Common summer resident, arriving about May 1 and departing late in August.

This species seems to be more abundant in the northern portions of Pennsylvania and New Jersey. Mr. Rhoads found them especially numerous about Lake Hopatcong, N. J.

225. *Scolecophagus carolinus* (MÜLL.). Rusty Blackbird.

BREEDING RANGE—Northern boundary of the eastern U. S., northward.

WINTER DISTRIBUTION—Mostly south of the Middle States.

Transient, occurring mainly along the river marshes from March 1 to April 15, singly or in small flocks. In fall the Rusty Blackbirds pass through early in October. A few occasionally winter on the Delaware meadows, Tinicum township, Delaware county, Pa., associating with the large flocks of Sparrows (*Stone*). A small flock was also recorded by Mr. Chapman at Englewood, N. J., December 24, 1884 (*Auk*, 1888).

226. *Quiscalus quiscula* (LINN.). Purple Grackle.

BREEDING RANGE—Atlantic slope of U. S., from southern New England southward.

WINTER DISTRIBUTION—Mainly south of the Middle States.

Abundant summer resident, breeding in communities. The Grackles arrive about February 20, and after the young are fledged, they collect in immense flocks and repair every night to their roosting places, which they frequent regularly until their departure for the south in November. A very large roost, which has been occupied for a number of years, is situated on a wooded island in the Susquehanna river near Peachbottom, Lancaster county, Pa. (*De Haven*).

A few Grackles occur during winter in the vicinity of Philadelphia, but seem to be only straggling visitors. At Cape May, N. J., they occur in large flocks during winter (*Stone & Rhoads*).

227. *Quiscalus quiscula aeneus* (RIDGW.). Bronzed Grackle.

BREEDING RANGE—Central N. A., from the Rocky Mts. to the Alleghanies and the Atlantic coast, from New England to Hudson Bay.

WINTER DISTRIBUTION—South of the Middle States and Ohio Valley.

Not common, occurring mainly in migrations, though some of the breeding Grackles in the central counties of Pennsylvania are practically referable to this race.

The relationship of the several described races of Grackles is somewhat involved, and the great variety of coloration of birds from the Middle States makes their satisfactory identification a matter of

considerable difficulty. Mr. F. M. Chapman* tells us that in a series of fifty-one breeding males taken at West Chester, Chester county, Pa., by Dr. B. H. Warren and Mr. G. W. Roberts, there were two specimens almost typical of *Quiscalus quiscula aglæus* (the form inhabiting Florida and other southern states), and one closely approaching *Q. quiscula æneus*, while the rest showed all stages of intermediate coloration.

The most probable explanation of the question is that advanced by Mr. Chapman, *i. e.*, that there were originally two species, the western and northern *Q. æneus* and the southeastern *Q. aglæus*, and that the former has spread into the territory of the latter, mixing with it until now the typical *Q. aglæus* is found only in the Gulf States and South Atlantic seaboard (north to Virginia?). To the north and westward towards the mountains, intermediate forms† occur approaching nearer and nearer to *Q. æneus*, until we find typical representatives of this form just beyond the Alleghanies and in New England.

[228]. *Quiscalus major* (VIEILL.). Boat-tailed Grackle.

BREEDING RANGE—Southern States northward to Cape Charles, Va.

WINTER DISTRIBUTION—Southern U. S.

Very rare straggler from the south.

Two birds of this species made their appearance at Anglesea, N. J., in company with the Purple Grackles in the Spring of 1891, one of which was shot by Mr. Samuel Ludlam (*Laurent, O. & O.*, 1892). We know of no other records.

Family Fringillidæ—The Finches.

Thirty-five species and sub-species of the Finch Family occur in eastern Pennsylvania and New Jersey. Of these, fourteen breed ‡ in the southern portions of these states, the Goldfinch, Vesper

* Bull. Amer. Mus. Nat. Hist., Vol. IV., p. 1.

† The original description of the Purple Grackle *Q. quiscula* was taken from one of these intermediate specimens, but if only two races are recognized the name *quiscula* would of course hold for the southeastern bird as it antedates *aglæus*.

‡ The Song Sparrow, Goldfinch, Vesper Sparrow and Field Sparrow, occur also in winter.

Sparrow, Chipping Sparrow, Field Sparrow, Song Sparrow, Towhee, and Indigo-bird, being abundant and generally distributed, while the Grasshopper Sparrow, Swamp Sparrow, Henslow's Bunting, Cardinal and Rose-breasted Grosbeak are less common breeders and are irregularly distributed. The Seaside and Sharp-tailed Sparrows are restricted entirely to the maritime marshes, but are there abundant summer residents.

Thirteen species occur as winter visitants, the Snowbird and Tree Sparrow being everywhere abundant, while the Purple Finch, White throated Sparrow, Savanna Sparrow and Fox Sparrow are mainly transient, wintering regularly only in the southern counties. The Pine Grosbeak, Crossbill, White-winged Crossbill, Redpoll, Pine Finch, and Snow Bunting, occur as more or less irregular visitors in winter only, while the Ipswich Sparrow is a winter visitant along the seacoast. Three other species occur only during the migrations, i. e., the White-crowned Sparrow, Acadian and Nelson's Sharp-tailed Finches, the last two being strictly maritime. The remaining species are merely stragglers—Evening Grosbeak, Blue Grosbeak, Lincoln's Finch, Lapland Longspur, Dickcissel, and Lark Sparrow.

[229]. *Coccothraustes vespertina* (COOP.). **Evening Grosbeak.**

DISTRIBUTION—Western N. A., eastward to Lake Superior, and casually farther.

Accidental straggler in winter. A small flock was observed by Mr. W. O. Raymond at Summit, N. J., March 6, 1890 (*O. & O.*, 1890, p. 46).

This species is very erratic in its winter wanderings, and in the season of 1889–90 appeared in abundance very far east of its usual range. Dr. Warren observed it in Pennsylvania as far east as Columbia and Lackawanna counties. At Montoursville, Lycoming county, Mr. F. F. Castlebury noted it as late as May 1, 1890 (*Forest and Stream*, May 8, 1890).

230. *Pinicola enucleator* (LINN.). **Pine Grosbeak.**

BREEDING RANGE—Northern New England and Labrador to Alaska.

WINTER DISTRIBUTION—Southward to the northern U. S.

A rare and irregular visitant in the depth of winter. A flock was

seen at Wynnewood, Montgomery county, Pa., by Mr. Wm. L. Baily, January 15, 1882, and several specimens secured.

In the northern part of Pennsylvania, and probably all along the Alleghanias, the Pine Grosbeak is a more abundant winter bird.

231. *Carpodacus purpureus* (Gmel.). Purple Finch.

BREEDING RANGE—New England and Alleghanias; northward.

WINTER DISTRIBUTION—Middle and Southern States.

Occurs in flocks throughout the winter, arriving in the vicinity of Philadelphia about September 25 and remaining until May 1. It appears to be most abundant along the large river valleys and may be heard singing all winter.

The Purple Finch doubtless breeds sparingly all along the Pennsylvania Alleghanias, having been reported as summering at North Mt. (*Dwight—Auk*, 1892), Williamsport (*Koch*), Susquehanna and Clearfield counties (*Warren's Report*), and Pocono Mt. (*Shryock and Stone*). In northern New Jersey Mr. Chapman reports it as breeding sparingly at Englewood (*Auk*, 1889), and Mr. Henry Hales has also observed it, in summer, in the northern part of the State.

232. *Loxia curvirostra minor* (Brehm). American Crossbill.

BREEDING RANGE—Northern N. A. and southward in the mountains to northern Georgia (sporadically in Maryland and Virginia, near the coast).

WINTER DISTRIBUTION—Migrates irregularly through eastern N. A.

Irregular winter visitant in southeastern Pennsylvania and New Jersey, occurring in flocks from November to February. In the vicinity of Philadelphia it is of erratic occurrence and is never very common. The only captures, later than February, that have come under our notice were two specimens secured from a small flock at Germantown, Pa., May 14, 1888, by Mr. Herbert Brown.

The American Crossbill occurs more abundantly along the Alleghanias and has been reported, in summer, from Sullivan, Luzerne, Clinton, Clearfield, Cameron and Lycoming counties (*Warren's Report*), and on the Pocono Mt., at Tobyhanna, Pa. (*S. Brown*).

233. *Loxia leucoptera* GMEL. White-winged Crossbill.

BREEDING RANGE—Northern New England, northward.

WINTER DISTRIBUTION—Southward to about the 40th parallel.

A rare winter visitant in southeastern Pennsylvania. Several specimens were secured in 1879 and 1880 at Germantown (*Stone*). One was observed February 2, 1884, at Wynnewood, Pa. (*W. L. Baily*).

In the northern mountainous portions of the State it is probably of more frequent occurrence in winter.

234. *Acanthis linaria* (LINN.). Redpoll.

BREEDING RANGE—Northern British America.

WINTER DISTRIBUTION—Southward to about the 40th parallel.

An irregular winter visitant, generally occurring in large flocks during very severe weather. They were exceptionally abundant during the "blizzard" of March, 1888 (*Stone and Rhoads*), and during the winter of 1878-9 (*Warren's Report*).

In the northern counties the Redpolls are of more regular occurrence.

235. *Spinus tristis* (LINN.). Goldfinch.

BREEDING RANGE—Whole of temperate N. A.

WINTER DISTRIBUTION—Greater portion of U. S.

Resident, occurring in immense flocks in spring and fall, and less abundant though common throughout the winter. Breeds regularly.

236. *Spinus pinus* (WILS.). Pine Finch.

BREEDING RANGE—Northern border of U. S., northward, southward in the mountains.

WINTER DISTRIBUTION—Southward to the Gulf States and Mexico.

A rather irregular winter visitant, October 15 to March 15, often occurs in large flocks, and at other times in pairs or associated with the Goldfinches. Much more abundant some years than others.

Two specimens were secured at Cape May, N. J., January 25, 1892 (*Rhoads and Stone*), and it probably winters throughout the Pine Barren region.

In Lycoming county, Pa., the Pine Finch is said to breed (*Koch*), and it may prove to be a regular summer resident at other points in the Pennsylvania Alleghanies.

237. *Plectrophenax nivalis* (LINN.). Snowflake. Snow Bunting.

BREEDING RANGE—Polar regions.

WINTER DISTRIBUTION—Southward to the northern U. S.

Rare and irregular visitant in severe winters, generally in small flocks. In the vicinity of Philadelphia it has occurred most frequently along the Delaware meadows between the city and Chester. A number of specimens were obtained there, February 22 to 27, 1879, by Dr. W. L. Abbott.

[238.] *Calcarius lapponicus* (LINN.). Lapland Longspur.

BREEDING RANGE—Polar regions.

WINTER DISTRIBUTION—Southward to northern border of U. S.

Very rare straggler from the north. One specimen was shot from a flock of Snow Buntings at League Island, Philadelphia, in winter about 1864 by Mr. C. D. Wood (*Trotter—B. N. O. C.*, 1879). We have found no other definite records of its capture.

239. *Poocætes gramineus* (GMEL.). Vesper Sparrow. Grass Finch. Bay-winged Bunting.

BREEDING RANGE—Virginia to Nova Scotia and Ontario; east of the Plains.

WINTER DISTRIBUTION—Southern New Jersey, southward.

Abundant summer resident, April 12 to November 1.

A number of specimens were observed in winter at Cape May, N. J. (*Stone and Rhoads*), and they have also been taken at this season in Cumberland county, N. J. (*Dr. W. L. Abbott*), Princeton, N. J. (*W. E. D. Scott—B. N. O. C.*, 1879), and at Westtown, Chester county, Pa. (*S. N. Rhoads*).

240. *Ammodramus princeps* (MAYN.). Ipswich Sparrow.

BREEDING RANGE—Nova Scotia.

WINTER DISTRIBUTION—Southward to coast of Virginia.

Winter resident along the sandhills of the New Jersey coast, not abundant, though probably regular. The following specimens have been taken :

Cape May Co., N. J., Dec., 30, 1879, Dr. W. L. Abbott.

- Squan Beach, N. J., Nov. 16, 1880, Gerard R. Hardenberg (*Scott*).
 Atlantic City, N. J., March 15, 1888, S. N. Rhoads.
 Anglesea, N. J., April 3, 1889, John Sterner (*Coll. P. Laurent.*).
 Cape May, N. J., Jan. 28, 1892, W. Stone (2 specimens).
 Atlantic City, N. J., March, 1892, J. F. Brown.
 Cape May, N. J., Jan. 2, 1893, W. Stone (2 specimens).

241. *Ammodramus sandwichensis savanna*
Savanna Sparrow. (WILS.).

BREEDING RANGE—Northern Middle States to Labrador and Hudson Bay.

WINTER DISTRIBUTION—Southern New Jersey, throughout the S. Atlantic and Gulf States.

Common transient visitant especially along the coast and rivers. Occurs most abundantly in the vicinity of Philadelphia, March 20 to May 15, and September 1 to October 20; stragglers, however, are found during February and early in March.

At Cape May and probably all along the coast of southern New Jersey, the Savanna Sparrow is an abundant winter resident.

In the northern counties of Pennsylvania and New Jersey, as well as along the Alleghanies, this species probably breeds regularly; it has been reported in summer at Cresson (*Dwight—Auk*, 1892), in Clinton county (*Warren's Report*), Bedford Springs (*Rhoads*), and at East Bethlehem (*Detwiler*).

One specimen was secured by Mr. F. D. Stone, Jr., at Cape May, N. J., July 6, 1891, but it was probably a belated straggler, as no other birds were found and this one did not seem to have been breeding.

242. *Ammodramus savannarum passerinus*
Grasshopper Sparrow. (WILS.).

BREEDING RANGE—Eastern U. S. from the Gulf States to southern Canada.

WINTER DISTRIBUTION—Mainly in the West Indies and Mexico.

Summer resident; common in dry uplands, but somewhat locally or irregularly distributed during the breeding season. Arrives in the vicinity of Philadelphia, May 1, and departs about October 20.

243. *Ammodramus henslowi* (AUD.). Henslow's Sparrow.

BREEDING RANGE—Eastern U. S., northward through the Carolinian Fauna.

WINTER DISTRIBUTION—Gulf States and southward (?).

Rare summer resident; apparently very local. Several pairs have been observed at Pt. Pleasant, N. J., during the breeding season and in the migrations (*Stone* and *S. Brown*), and one specimen secured is in the collection of Mr. Witmer Stone (No. 253, August 16, 1886). Mr. Harry G. Parker also records a nest and eggs taken on Seven-mile Beach, N. J., May 27, 1885 (*O. & O.*, 1886).

Dr. J. W. Detwiler took several nests of this species at East Bethlehem, Pa., in 1883 and 1884, and has secured specimens several times. Prof. Roddy also took a nest in Perry county, Pa.

244. *Ammodramus caudacutus* (GMEL.). Sharp-tailed Sparrow.

BREEDING RANGE—Atlantic coast marshes, Maine to North Carolina.

WINTER DISTRIBUTION—Coasts of S. Atlantic States.

Abundant summer resident on the salt marshes along the New Jersey coast and for some distance up the shores of Delaware Bay.

Dr. Chas. C. Abbott (*Birds of N. J.*), records one shot at Trenton during migration, and a specimen in the National Museum collection was secured at Philadelphia. Mr. I. N. DeHaven finds a few "Sharp-tails" nearly every winter on the Atlantic City meadows, but they are by no means common at this season.

**245. *Ammodramus caudacutus subvirgatus*
Acadian Sharp-tailed Sparrow. DWIGHT.**

BREEDING RANGE—Coasts of S. New Brunswick and Prince Edward's Isl.

WINTER DISTRIBUTION—Atlantic coast.

Regular transient visitor on the New Jersey coast marshes, though much less abundant than the preceding. A number of specimens were secured at Atlantic City, October 2, 1892, by Messrs. I. N. DeHaven and W. Stone, at which date the migration of the Marsh Finches seemed at its height.

**246. *Ammodramus caudacutus nelsoni* ALLEN.
Nelson's Sharp-tailed Sparrow.**

BREEDING RANGE—Fresh water marshes of interior U. S. (chiefly in the Mississippi Valley).

WINTER DISTRIBUTION—Gulf and S. Atlantic States, migrating sparingly along the Atlantic coast.

Rare transient on the New Jersey coast, though probably of regular occurrence.

Nelson's Finch is the least common of the three races of Sharp-tailed Sparrows on our coast, and will probably be found to be more abundant in fall than in spring. Specimens have been secured May 9 and October 2, 1892, by Mr. I. N. DeHaven.

A large series of Sharp-tailed Sparrows, taken during the migrations, will undoubtedly show all grades of intermediates between the three races. (See also *Auk*, 1893, p. 85.)

247. *Ammodramus maritimus* (WILS.). Seaside Sparrow.

BREEDING RANGE—Massachusetts, southward along the Atlantic coast.

WINTER DISTRIBUTION—N. Carolina, southward.

Abundant summer resident on the New Jersey coast marshes and on the shores of Delaware Bay. Arrives at Atlantic City about April 20 and departs October 15.

In Cape May county Mr. W. L. Baily secured several specimens. February 22, 1892, which would indicate that a few of these birds winter there occasionally. No others, however, have been taken at this season.

[248.] *Chondestes grammacus* (SAY). Lark Sparrow.

BREEDING RANGE—Mississippi Valley to the Plains, northward to Michigan.

Accidental straggler. One specimen was secured at Schraalburg, N. J., November 26, 1885, by Mr. F. M. Chapman (*Auk*, 1886, p. 136).

In southwestern Pennsylvania this species may occur regularly in small numbers. Mr. S. N. Rhoads observed a single individual in Fayette county, in June, 1894.

249. *Zonotrichia leucophrys* (FORST.). White-crowned Sparrow.

BREEDING RANGE—Labrador, north of the Great Lakes; northward.

WINTER DISTRIBUTION—Southern U. S. and Mexico.

A rare spring and fall migrant, seldom more than one seen at a time. The following captures have come under the notice of the Club:

Wynnewood, Montgomery county, Pa., May 9, 1882, Wm. L. Baily.

Wynnewood, Montgomery county, Pa., May 4, 1891, Wm. L. Baily.

Collingdale, Delaware county, Pa., October, 1891, C. A. Voelker.

Wynnewood, Montgomery county, Pa., May 9, 1892, Wm. L. Baily.

Delaware county, Pa., May 8, 1892, R. Kester.

Conshohocken, Montgomery county, Pa., May 13, 1892, S. Wright.

Moorestown, N. J., October 17, 1892, I. N. DeHaven.

Tinicum, Delaware county, Pa., May 2, 1893, C. E. Ridenour.

This species has been said to winter sparingly in southern Pennsylvania, but while this is quite likely, we have been unable as yet to verify the report.

250. *Zonotrichia albicollis* (GMEL.). White-throated Sparrow.

BREEDING RANGE—Northern Alleghanies and northern border of U. S., northward.

WINTER DISTRIBUTION—Eastern U. S., from about the upper border of the Carolinian Fauna southward.

Common winter resident, and very abundant during migrations. In the vicinity of Philadelphia it occurs in small flocks, generally in swampy thickets, arriving about September 20 and remaining as late as May 15. Sings throughout the winter.

Through the upland country and in the mountains, the White-throated Sparrow is mainly a transient. Mr. Stewardson Brown, however, heard the unmistakable note of this species on July 4, 1893, near Tobyhanna, Monroe county, Pa. (Pocono Mt.), which would indicate that a few probably remain there to breed.

251. *Spizella monticola* (GMEL.). Tree Sparrow.

BREEDING RANGE—Labrador and Hudson Bay region.

WINTER DISTRIBUTION—Throughout eastern U. S.

Abundant winter resident, arriving about October 15 and departing April 15, associating in large flocks.

252. *Spizella socialis* (WILS.). Chipping Sparrow.

BREEDING RANGE—Eastern N. A., northward to Great Slave Lake.

WINTER DISTRIBUTION—Southern States.

Abundant summer resident, arriving in the vicinity of Philadelphia March 30 and departing about October 20. Along the New Jersey coast it occurs as late as November (Seaville, Cape May Co. — *W. L. Baily*), and a few may perhaps winter occasionally.

253. *Spizella pusilla* (WILS.). Field Sparrow.

BREEDING RANGE—Eastern U. S. and southern Canada.

WINTER DISTRIBUTION—Mainly south of the Middle States.

An abundant summer resident. In the vicinity of Philadelphia, a few winter every year, but the bulk go a little farther south, leaving about the end of October and returning March 18.

In southern New Jersey they winter in great numbers.

254. *Junco hyemalis* (LINN.) Snowbird.*

BREEDING RANGE—Maine to Alaska and southward in the Alleghanies to Pennsylvania.

WINTER DISTRIBUTION—Throughout eastern U. S.

Abundant winter resident from about October 1 to April 15, occasional stragglers lingering until the first week of May.

The Junco is a regular breeder along the main ridge of the Alleghany Mountains, and has been found in summer in Sullivan, Wyoming and Luzerne counties (*Warren's Report, Dwight, Stone, etc.*).

Mr. Dwight states that some of the specimens of Junco from the Pennsylvania mountains are indistinguishable from *Junco h. carolinensis* of the North Carolina mountains, while others differ little from true *J. hyemalis*. The position of the Pennsylvania mountains would lead us to expect the Snowbirds to be more or less intermediate between the two races.

* An interesting hybrid between this species and the White-throated Sparrow was taken at Haverford, Montgomery county, Pa., December 12, 1882, by Mr. W. L. Baily, and is now in the collection of the Academy of Natural Sciences of Philadelphia (*B. N. O. C.*, VIII., p. 18, and *Auk.*, 1893, p. 213).

255. *Melospiza fasciata* (GMEL.). Song Sparrow.

BREEDING RANGE—Eastern N. A., from Southern States through British America.

WINTER DISTRIBUTION—Eastern U. S.

Abundant resident, though less generally distributed during the winter, at which season it is mainly confined to the swamps. Especially abundant in winter along the Delaware meadows.

256. *Melospiza lincolni* (AUD.). Lincoln's Sparrow.

BREEDING RANGE—Northern boundary of U. S. northward, and southward in the high mountains.

WINTER DISTRIBUTION—Mexico.

Rare and irregular during the migrations. The only specimens that have come under our notice from the vicinity of Philadelphia are as follows :

Chestnut Hill, Philada., May 12, 1877, W. L. Abbott, M. D. (*Coll. Acad. Nat. Sci.*).

Chestnut Hill, Philada., Oct. 8, 1880, W. L. Abbott, M. D. (*Coll. Acad. Nat. Sci.*).

Haverford, Pa., May 14, 1884, W. Haines (*Baily*).

Four specimens are mentioned by Dr. Warren as taken by him in eastern Pennsylvania, two early in May, one late in September, and one early in October.

257. *Melospiza georgiana* (LATH.). Swamp Sparrow.

BREEDING RANGE—Eastern U. S., Middle States to Newfoundland and Labrador.

WINTER DISTRIBUTION—Southern border of Middle States southward to the Gulf coast.

Resident; though much more abundant during the migrations than at other times. The Swamp Sparrow breeds on the marshes in Tinicum township, Delaware county, Pa., and in other similar situations, but seems to be rather locally distributed during the breeding season in southern Pennsylvania.

A few individuals winter regularly on the Delaware marshes below Philadelphia and in southern New Jersey, especially on the coast marshes they are common winter residents.

Farther north in Pennsylvania and New Jersey this species is probably a more plentiful breeder.

258. *Passerella iliaca* (MERR.). Fox Sparrow.

BREEDING RANGE—Gulf of St. Lawrence to Labrador and Alaska.

WINTER DISTRIBUTION—Southern States to lower border of Middle States.

Common spring and fall migrant, March 10 to April 10, and October 15–December 1. Occasionally a few individuals winter in the marshes of southeastern Pennsylvania, and in southern New Jersey they appear to be more frequent winter residents. Mr. W. E. D. Scott also records one taken at Princeton, N. J., January 14, 1879 (*B. N. O. C.*, 1879).

**259. *Pipilo erythrophthalmus* (LINN.). Chewink.
Towhee.**

BREEDING RANGE—More elevated parts of Southern States to British America.

WINTER DISTRIBUTION—Southern States mainly south of the Carolinian Fauna.

Common summer resident, arriving about April 18, and departing October 20, or occasionally as late as the middle of November.* The Chewink seems to be scarce in the river valleys, and more abundant in the dry uplands and Pine Barrens.

260. *Cardinalis cardinalis* (LINN.). Cardinal.

BREEDING RANGE—Eastern U. S. south of the upper border of the Carolinian Fauna.

WINTER DISTRIBUTION—The same.

Tolerably common resident in southeastern Pennsylvania and New Jersey, and locally abundant. In Pennsylvania it is confined mainly to the river valleys in the southern counties, being especially plentiful along the lower Susquehanna. It is not found beyond the first ridges of mountains, except as a rare straggler. In southern New Jersey the Cardinal is more abundant, and winters in considerable numbers on the tide-water creeks which flow into the Delaware river near Philadelphia.

*Turnbull and Warren state that it occasionally winters. Dr. C. C. Abbott also states that a few winter in sheltered locations near Trenton, N. J.

261. *Habia ludoviciana* (LINN.). Rose-breasted Grosbeak.

BREEDING RANGE—Northern U. S. and Canada, southward along the mountains.

WINTER DISTRIBUTION—Cuba, Mexico, Central America and S. A.

Spring and fall migrant, never very common, and some years rare; generally more abundant in fall. In the vicinity of Philadelphia it occurs May 5–12, and again September 5–October 5.

The Rose-breast does not breed except as a straggler below the Alleghanian zone, but is a summer resident in the northern portions of Pennsylvania and New Jersey (Englewood, N. J., *Chapman*, Morristown, N. J., *DeHaven*, and numerous localities in Penna.). The most southern locality in those states where it has been found breeding recently, is in central Bucks county, Pa., where Mr. I. S. Reiff has taken several nests. Mr. Harry G. Parker once took a nest in Delaware county (*O. & O.*, 1886), and Dr. Warren records one found in Chester county by Mr. Titus Bennett in 1875 (*Forest and Stream*, XIV).

262. *Guiraca caerulea* (LINN.). Blue Grosbeak.

BREEDING RANGE—Southeastern U. S. northward to Virginia, and occasionally farther.

WINTER DISTRIBUTION—Southern Mexico, Central Mexico, and Cuba.

Very rare straggler from the south.

It has been reported to have bred formerly in Cumberland county, Pa. (*Baird, Birds of Carlisle*), and Lancaster county (*Libhart, Birds of Lanc. Co.*), but we can find no evidence of its breeding there recently.*

The following are the only recorded captures in Pennsylvania or New Jersey that have come under our notice:

Darby Creek, Del. Co., Pa., 1866, C. J. Wood (*Trotter, B. N. O. C.*, 1879).

Near Philada., Fall, 1879. W. L. Collins (*Swarthmore College Coll.*).

Marietta, Lancaster Co., Pa., Summer, 1884, W. H. Buller (*Warren's Report*).

* Dr. J. F. Kocher saw what he took to be a pair of these birds in Lehigh county, in the latter part of May, and later found a nest with four cold eggs in the same vicinity which he attributed to the pair. The birds were not to be seen when the nest was found; unfortunately neither nest or eggs were preserved. This is the evidence upon which Dr. Warren gives this species as a breeder in Lehigh county.

263. *Passerina cyanea* (LINN.). Indigo-bird.

BREEDING RANGE—Eastern U. S. to southern Canada.

WINTER DISTRIBUTION—S. A.

Common summer resident, arriving at Philadelphia about May 10 and departing October 1.

264. *Spiza americana* (GMEL.)* Dickcissel. Black-throated Bunting.

BREEDING RANGE—Central U. S. (scarce or local east of the Alleghanies).

WINTER DISTRIBUTION—Central and western S. A.

Very rare straggler.

Twenty years ago this was a common species in certain parts of New Jersey and eastern Pennsylvania, though always of local distribution. It formerly bred near Frankford, Pa., where specimens were secured by W. L. Collins as late as 1879.

The only recent captures that we have noted are :

Maurice River, N. Y., Sept. 18, 1890, W. L. Baily.

Chestnut Hill, Philada., June 7, 1879, W. L. Abbott (*Coll. Acad. Nat. Sci.*).

Family Tanagridæ—The Tanagers.

Only two species occur in the eastern United States.

265. *Piranga erythromelas* VIEILL. Scarlet Tanager.

BREEDING RANGE—Eastern U. S. and southern Canada, mainly north of the Carolinian Fauna.

WINTER DISTRIBUTION—West Indies and Mexico to S. A.

Common transient in the vicinity of Philadelphia, but not very plentiful and rather local during the breeding season. It is a much more common breeder along the Susquehanna hills in York county, Pa., and on the Mine Ridge, Lancaster county; becoming still more

* The type specimen of Townsend's Bunting, *Spiza townsendi* Aud., was secured near New Garden, Chester county, Pa., May 11, 1833. No other specimen has ever been discovered which lends weight to the theory that this bird is a very peculiar variation of *S. americana* or a hybrid between that and some other species. The original specimen is still preserved in the Smithsonian Institution, Washington, D. C.

abundant towards the Alleghanies, where it is one of the characteristic species of the mountain forests. In the vicinity of Philadelphia the migrants pass through May 5–18 and September 10–October 10.

266. *Piranga rubra* (LINN.). Summer Tanager.

BREEDING RANGE—Virginia, southward to Florida, etc., and casually farther north.

WINTER DISTRIBUTION—Mexico, Central America and northern S. A.

Very rare straggler from the south.

A female was secured at Mt. Airy, Philadelphia, October 23, 1890, by Mr. Philip Laurent, which is the only recent record for this vicinity with which we are acquainted. Several specimens were taken in southern Pennsylvania some twenty years ago, and prior to 1860 this species is said to have been of regular occurrence in some parts of southern New Jersey.

Family Hirundinidæ—The Swallows.

Six species of Swallows occur in eastern Pennsylvania and New Jersey. The Barn Swallow is the most abundant, and is everywhere distributed. The Rough-winged and Bank Swallows are common breeders, the former being mainly restricted to the country lying within the Carolinian Fauna. The White-bellied Swallow occurs abundantly in migrations, and is a common breeder along the New Jersey coast. The remaining species, the Cliff Swallow and Purple Martin are local in their distribution.

267. *Progne subis* (LINN.). Purple Martin.

BREEDING RANGE—Temperate N. A.

WINTER DISTRIBUTION—Mexico.

Common summer resident in southern New Jersey, but rather rare and local in Pennsylvania. Arrives April 1–10 and departs September 1. During migrations it occurs in large flocks along the coast.

268. *Petrochelidon lunifrons* (SAY). Cliff Swallow.*

BREEDING RANGE—Whole of N. A.

WINTER DISTRIBUTION—Mexico and Central America.

Regular migrant, but not very abundant, occurring mostly along the coast and river valleys. During the breeding season it is rare or local in southeastern Pennsylvania, but is more abundant in southern New Jersey—Cape May and Cumberland counties (*Reed and Wilde*). Arrives in the vicinity of Philadelphia about May 1 and departs September 1.

269. *Chelidon erythrogaster* (BODD.). Barn Swallow.

BREEDING RANGE—Whole of N. A.

WINTER DISTRIBUTION—Through Mexico and West Indies to S. A.

Abundant summer resident, universally distributed. Arrives April 19 and departs September 1.

**270. *Tachycineta bicolor* (VIEILL.). Tree Swallow.
White-bellied Swallow.**

BREEDING RANGE—N. A., mainly north of the southern border of the Middle States.

WINTER DISTRIBUTION—S. Florida and West Indies to Central America.

Common transient visitant in the vicinity of Philadelphia, occurring April 20–May 15 and August 15–September 1. A few breed in eastern Pennsylvania and they are common summer residents along the whole New Jersey seaboard and throughout the Pine Barrens wherever there are ponds or rivers. During the fall migration they collect in immense flocks along the coast, and linger sometimes as late as November (Squan Beach, Nov. 16, 1880—*Scott, B. N. O. C. 1881*). Mr. Chapman also records a large flock at Englewood, N. J., December 31, 1882 (*Auk*, 1889, p. 303).

271. *Clivicola riparia* (LINN.). Bank Swallow.

BREEDING RANGE—Throughout N. A.

WINTER DISTRIBUTION—West Indies and through Central America to Brazil.

Rather common transient, April 8–20 and August 15–September

* A curious hybrid between the Cliff and Barn Swallow was secured by Mr. C. D. Wood at Linwood, Delaware county, Pa., May, 1878, and is now in the collection of Bryn Mawr College (See *Trotter—B. N. O. C.*, 1878, p. 135).

1. In northern Pennsylvania and New Jersey the Bank Swallow is a summer resident, but so far as we can ascertain it does not seem to breed in those parts of the states included in the Carolinian Fauna.*

272. *Stelgidopteryx serripennis* (AUD.). Rough-winged Swallow.

BREEDING RANGE—N. A., mainly south of the northern border of the Carolinian Fauna.

WINTER DISTRIBUTION—Through Mexico to Guatemala.

Common summer resident in suitable localities throughout southeastern Pennsylvania and southern New Jersey, from April 25 to September 1. It does not, however, extend its range much farther north than the Carolinian Fauna.

Family Ampelidæ—The Waxwings.

Only two species occur in eastern North America.

[273.] ***Ampelis garrulus* LINN. Bohemian Waxwing.**

BREEDING RANGE—High northern regions.

WINTER DISTRIBUTION—Southward to the northern border of U. S.

Extremely rare winter visitant.

One specimen shot in Pennsylvania is in the collection of the Academy of Natural Sciences, and Dr. C. C. Abbott (*Birds of N. J.*) reports two shot in Cape May county and Morris county, N. J. Dr. Warren also records one in his possession taken in Elk county, Pa.

* We have been frequently informed that the Bank Swallow occurred as a regular breeder in southern Pennsylvania, but in every case investigation proved that the bird was the Rough-winged Swallow. The general confusion of the two species is, no doubt, accountable for the prevalent idea that the Bank Swallow is the common breeder in this section. That it does breed occasionally is quite probable, but as yet we have no positive evidence.

**274. *Ampelis cedrorum* (VIEILL.) Cedar Waxwing.
Cedarbird.**

BREEDING RANGE—Temperate N. A.

WINTER DISTRIBUTION—About the same, spreading southward to Guatemala.

Common resident, but of erratic occurrence. Flocks are frequently but not regularly seen during winter and early spring, and during June they occur in immense numbers, becoming scarcer later in the summer. They are not common breeders in the vicinity of Philadelphia.

Family Laniidæ—The Shrikes.

Only two species occur on the Atlantic slope.

275. *Lanius borealis* VIEILL. Northern Shrike.

BREEDING RANGE—Northern border of U. S., northward.

WINTER DISTRIBUTION—Southward to the Potomac Valley.

Rather rare winter visitant, occurring more plentifully in very cold seasons. Specimens have been captured from December 2 to February 5. In the northern portions of Pennsylvania this species is said to be a more abundant winter visitant.

276. *Lanius ludovicianus* LINN Loggerhead Shrike.

BREEDING RANGE—Southern U. S., north regularly to Virginia and casually (?) farther.

WINTER DISTRIBUTION—About the same.

Summer resident at Cape May, N. J., where a few have been observed through the summers of 1890 and 1891 (*Stone*). Farther north it is a rare straggler, though in 1878-9 Mr. Scott found quite a number at Princeton, New Brunswick and Barnegat from August to January, the following specimens having been secured recently :

Haddonfield, N. J., Oct. 20, 1884, S. N. Rhoads.

Collingdale, Delaware Co., Pa., Nov., 1892, C. A. Voelker.

Fish House, Delaware River, near Phila., 1893, Gross (*Coll. Acad. Nat. Sci.*).

Family Vireonidæ—The Vireos.

Six species of Vireos occur in Pennsylvania and New Jersey. Of these the Red-eyed, White-eyed, Warbling and Yellow-throated breed, the last two being rarer and more local, while the Solitary and Philadelphia Vireos are migrants, the latter very rare.

277. *Vireo olivaceus* (LINN.). Red-eyed Vireo.

BREEDING RANGE—Eastern N. A. to Hudson Bay.

WINTER DISTRIBUTION—Through Mexico and Central America to northern S. A.

Abundant summer resident, April 30–October 10. One of the most generally distributed of our woodland birds, and a persistent songster.

278. *Vireo philadelphicus* (CASS.). Philadelphia Vireo.

BREEDING RANGE—Chiefly north of the U. S., except in northern New England and New York.

WINTER DISTRIBUTION—Central America.

A very rare migrant. Besides the type specimen which was secured by Mr. Cassin near Philadelphia, September, 1842, the following specimens have been taken in this vicinity :

Princeton, N. J., Sept. 21, 1876, W. E. D. Scott (*B. N. O. C.*, 1881).

“ “ “ 28, 1876, “ “

Frankford, Phila., Pa., Sept., 1878, W. L. Collins (*B. N. O. C.*, 1879).

“ “ “ 19, 1879, Dr. Spencer Trotter (*B. N. O. C.*, 1879).

Chestnut Hill, Phila., Pa., Sept. 11, 1880, Dr. W. L. Abbott.

Anglesea, N. J., Sept. 21, 1889, H. Wenzel (Coll. P. Laurent).

West Chester, Pa., Sept. 30, 1891, Josiah Hoopes.

“ “ Oct. 6, “ “ “

Germantown, Phila., Pa., Sept. 23, 1893, H. Brown (*Coll. W. Stone*).

279. *Vireo gilvus* (VIEILL.). Warbling Vireo.

BREEDING RANGE—Eastern N. A. to Hudson Bay.

WINTER DISTRIBUTION—Eastern Mexico.

Summer resident, May 5–October 10, but not very abundant or uniformly distributed. Most common along the larger river valleys.

280. *Vireo flavifrons* VIEILL. Yellow-throated Vireo.

BREEDING RANGE—Mostly north of the Middle States.

WINTER DISTRIBUTION—Mexico and Central America.

Tolerably common transient but rare summer resident, occurring May 2–September 15.

In the northern parts of Pennsylvania it is probably a more abundant breeder.

**281. *Vireo solitarius* (WILS.). Blue-headed Vireo.
Solitary Vireo.**

BREEDING RANGE—Chiefly north of U. S., except along the higher mountains.

WINTER DISTRIBUTION—Through eastern Mexico to Guatemala.

Regular transient in southeastern Pennsylvania and southern New Jersey, occurring April 20–May 5 and September 20–October 15.

On North Mountain and Wopsonnock Mountain it has been found abundantly in summer by Mr. Dwight (*Auk*, 1892), and it doubtless breeds at other points along the Pennsylvania mountains.

282. *Vireo noveboracensis* (GMEL.). White-eyed Vireo.

BREEDING RANGE—Eastern U. S.

WINTER DISTRIBUTION—Through eastern Mexico to Guatemala.

Summer resident; found most abundantly in the Pine Barren swamps of New Jersey, where it is one of the most characteristic birds. In Pennsylvania it is less common and is found during summer in suitable swampy localities. Arrives May 5 and departs October 1.

Family Mniotiltidæ—The Warblers.

Thirty-nine species of Warblers have been taken in Pennsylvania and New Jersey. Of these, fourteen breed in the southern portions of these States; the Maryland Yellow-throat, Oven-bird, Yellow Warbler and Chat are the most abundant, though the Chat does not occur beyond the northern border of the Carolinian Fauna. The Kentucky, Worm-eating, Blue-winged and Hooded Warblers and

the Louisiana Water-Thrush are also limited by the Carolinian Fauna, and are not so common or generally distributed as the species of the first list, though they are plentiful in certain localities. The Prairie, Pine and Parula Warblers summer in considerable numbers, but are almost entirely restricted to the Pine Barren region of New Jersey during the breeding season. The Redstart and Black and White Warbler also breed in small numbers in the southern counties, but become much more abundant northward and towards the mountains.

Of the transients, the Black-throated Blue, Myrtle, Magnolia, Chestnut-sided, Black-poll, Black-throated Green, Yellow Palm and Canadian Warblers and the Water-Thrush are the most abundant species, and together with the Redstart, Parula and Black and White Warbler (which are partially summer residents) form the bulk of the "Warbler waves" of the migrations. The Nashville, Bay-breasted, Blackburnian, Connecticut and Wilson's Warblers occur regularly, but are not so common, while the Golden-winged, Tennessee, Cape May, Cerulean and Mourning Warblers are decidedly rare. The remaining species can only be regarded as stragglers, *i. e.*, Prothonotary, Orange-crowned, Townsend's, Audubon's, and Yellow-throated Warblers and Grinnell's Water-Thrush.

283. *Mniotilta varia* (LINN.). Black and White Warbler.

BREEDING RANGE—Eastern N. A., Potomac Valley to Hudson Bay, and southward along the Alleghanies.

WINTER DISTRIBUTION—Gulf States to West Indies and northern S. A.

Abundant migrant in the vicinity of Philadelphia, but rather rare as a summer resident. A few pairs, however, breed regularly in certain localities, and nests have been taken at Haddonfield, N. J. (*Rhoads*), and in Chester county, Pa. (*Jackson*). In the New Jersey Pine Barrens it seems to be a more common summer resident, and towards the Alleghanies it steadily becomes a more abundant breeder.

Occurs at Philadelphia, April 25–May 15 and August 10–October 5.

284. *Protonotaria citrea* (BODD.). Prothonotary Warbler.

BREEDING RANGE—Lower Mississippi Valley and Gulf States; rare north of Georgia on the Atlantic Slope.

WINTER DISTRIBUTION—Cuba, Central America and northern S. A.

A very rare straggler from the South. The following are all the captures in southern Pennsylvania with which we are familiar, and we know of no record for New Jersey.*

West bank of Schuylkill River, near Phila., about 1876, John McIlvaine (Trotter—*B. N. O. C.*, 1879).

Chester Co., Pa., midsummer, Dr. B. H. Warren.

“ “ May, “ “

Lancaster Co., summer, Lancaster Museum (*Warren's Report*).

Gray's Ferry, Phila., May, 1879, Spencer Trotter (*B. N. O. C.*, 1880).

Montgomery Co., Pa., May 15, 1887, H. F. Moore (*Auk*, 1888).

285. *Helmitherus vermivorus* (GMEL.). Worm-eating Warbler.

BREEDING RANGE—Eastern U. S., not ranging north of the Carolinian Fauna.

WINTER DISTRIBUTION—Cuba, southern Mexico and Panama.

Summer resident throughout southeastern Pennsylvania within the limits of the Carolinian Fauna, and in southern New Jersey (except Pine Barrens?). In certain localities it is quite abundant, especially in portions of Chester county, Pa. (*Jackson and Ladd—O. & O.*, 1887), and the lower Susquehanna Valley.

Arrives May 7 and departs by September 1.

286. *Helminthophila pinus* (LINN.). Blue-winged Warbler.

BREEDING RANGE—Eastern U. S., not ranging north of the Carolinian Fauna.

WINTER DISTRIBUTION—Eastern Mexico and Guatemala.

Summer resident within the Carolinian Fauna and quite common in many localities, corresponding in distribution with the preceding. Neither of these species have been found breeding in the Pine

* Mr. S. N. Rhoads saw one individual of this species at Haddonfield, N. J., some years ago, under circumstances which left no doubt as to its identity, but unfortunately it was not secured.

Barrens of New Jersey, so far as we are aware. Arrives April 25—May 5; departs September 1.

**287. *Helminthophila leucobronchialis* (BREWST.)
Brewster's Warbler.**

288. *Helminthophila lawrencei* (HERRICK) Lawrence's Warbler.

These two interesting birds, which were at first considered valid species, are now generally conceded to be the results of crossing between the Blue-winged and Golden-winged Warblers, as the male of *H. pinus* has actually been found paired with the female of *H. chrysoptera*,* and various birds have been secured which are intermediate between the typical Brewster's and Lawrence's Warblers and the two species above mentioned.

The following specimens of these hybrids have been secured in Pennsylvania and New Jersey :

Typical H. leucobronchialis.

Clifton, Delaware county, Pa., May 12, 1877, C. D. Wood (*Trotter B. N. O. C.*, 1877).

Intermediate between H. leucobronchialis and H. pinus.

Maplewood, Essex county, N. J., May 11, 1883, C. B. Riker (*Auk*, 1885).

Englewood, N. J., May 15, 1886, F. M. Chapman (*Auk*, 1886-1889).

“ “ June 26, 1887, “ “

“ “ July 31, 1887, “ “

Morristown, N. J., May, 1859, A. Blanchet (*Thurber, Auk*, 1886).

“ “ May 15, 1887, E. C. Thurber (*Auk*, 1887).

Chester county, Pa., August 31, 1887, Witmer Stone (*Auk*, 1888).

Intermediate between H. lawrencei and H. pinus.

Morristown, N. J., May 15, 1884, A. Blanchet (*Brewster, Auk*, 1886).

Typical H. lawrencei.

Chatham, N. J., May, 1874, H. Herrick (*Proc. Acad. Nat. Sci., Phila.*, 1874).

Hoboken, N. J., September, 1876, D. B. Dickinson.

289. *Helminthophila chrysoptera* (LINN.). Golden-winged Warbler.

BREEDING RANGE—Eastern N. A., breeding north of the Carolinian Fauna.

WINTER DISTRIBUTION—Cuba and eastern Mexico to Colombia.

A rare species in eastern Pennsylvania and southern New Jersey.

* Sage—*Auk*, 1889, p. 279.

In the vicinity of Philadelphia it occurs only during migrations, May 12-16,* and one or two individuals are generally reported every year by one observer or another.

Along the Blue Mountain and in the northern counties it probably breeds regularly in certain localities, as it has been noted in summer at Delaware Water Gap (*Serrill*) and at Lake Hopatcong, N. J. (*Rhoads*).

290. *Helminthophila ruficapilla* (WILS.). Nashville Warbler.

BREEDING RANGE—Northern U. S. to Hudson Bay.

WINTER DISTRIBUTION—Eastern Mexico to Guatemala.

Regular migrant May 6-14 and September 15-October 1.

It was found in summer once at Englewood, northern New Jersey (*Chapman—Auk*, 1889), and was recorded by Baird to have bred formerly on South Mountain, Cumberland county, Pa. (*Birds of Carlisle*). It will probably be found to breed along the Alleghanies, though it has not yet been detected there in summer so far as we can ascertain.

291. *Helminthophila celata* (SAY). Orange-crowned Warbler.

BREEDING RANGE—Rocky Mts. to Alaska.

WINTER DISTRIBUTION—S. Atlantic and Gulf States to eastern Mexico.

A very rare straggler during migrations,† one was secured on Rancocas Creek, N. J., February, 1860 (*Turnbull*), and one in Bucks county, Pa., November 2, 1867, by Mr. C. D. Wood. (*Warren's Report*.) More recently the following specimens have been shot :

West Philadelphia, March, about 1876, John McIlvaine (*Trotter—B. N. O. C.*, 1879).

Haddonfield, N. J., March 22, 1883, S. N. Rhoads (*B. N. O. C.*, 1883).

Anglesea, N. J., October 6, 1889, P. Laurent (*O. & O.*, 1892).

* We have no fall records.

† Both these species migrate mostly west of the Alleghanies, and are naturally of rare occurrence on the Atlantic slope. *H. peregrina*, however, is much the more common.

292. *Helminthophila peregrina* (WILS.). Tennessee Warbler.

BREEDING RANGE—Maine and northern New York to Hudson Bay.

WINTER DISTRIBUTION—Through eastern Mexico to northern S. A.

Rare migrant, apparently more common in fall. Specimens have been taken recently as follows:

Germantown, Philadelphia, May 21, 1890, F. H. Brown (*Coll. W. Stone*).

Haddonfield, N. J., September 14, 1891, S. N. Rhoads (2 specimens).

West Chester, Pa., September 15, 1891, Josiah Hoopes (3 specimens).

293. *Compsothlypis americana* (LINN.). Parula Warbler.

BREEDING RANGE—Throughout eastern U. S. and Canada, in suitable localities.

WINTER DISTRIBUTION—Southern Florida, West Indies and eastern Mexico and Guatemala.

Abundant migrant, April 30–May 20 and September 10–October 1. Breeds abundantly in the deep cedar swamps of the New Jersey Pine Barren region where the “Beard Moss” (*Usnea barbata*), of which it constructs its nest, abounds. Numerous nests have been collected in various parts of Cape May, Atlantic and Cumberland counties (*Reed, Wilde, Stone, etc.*).

In the swamps of the northern part of Pennsylvania it is also said to breed (*Warren's Report*), and also in the lower Susquehanna Valley (*Stone*), and once in Delaware county (*Parker, O. & O., 1886*). In fact it may be looked for wherever there is an abundance of the *Usnea*.

294. *Dendroica tigrina* (GMEL.). Cape May Warbler.

BREEDING RANGE—Northern New England to Hudson Bay (also mountains of Jamaica.)

WINTER DISTRIBUTION—Greater Antilles.

Rare transient; apparently more common some years than others. Specimens have been taken in the vicinity of Philadelphia during the past few years as follows:

Germantown, Phila., May 21, 1888, Stewardson Brown (*Coll. W. Stone*).

“ “ Sept. 23, 1889, Herbert Brown. “

“ “ May 12, 1890, Stewardson Brown. “

Chester Co., Pa., May 12, 1891, Witmer Stone. “

Conshohocken, Pa., May 13, 1892, Samuel Wright.

295. *Dendroica aestiva* (GMEL.). Yellow Warbler.

BREEDING RANGE—Throughout eastern and northern N. A.

WINTER DISTRIBUTION.—Through eastern Mexico to northern N. A.

Summer resident, but irregular in distribution, being an abundant breeder in some localities, and only a transient in others. The presence of water-courses seems to determine its distribution to a considerable extent.

Arrives May 1 and departs September 25.

296. *Dendroica caerulescens* (GMEL.). Black-throated Blue Warbler.

BREEDING RANGE—Northern New England northward, and southward along the mountains.

WINTER DISTRIBUTION—Florida, Bahamas, Greater Antilles and southern Mexico.

Common transient occurring May 5–20 and September 10–October 10.

It probably breeds all along the higher mountains of Pennsylvania, having been found abundantly in the breeding season at Harvey's Lake (*Stone*), North Mt. (*Dwight-Auk*, 1892), Lycoming county (*Koch*), and less frequently at Mt. Pocono (*Shryock*) and Cresson (*Dwight*).

297. *Dendroica coronata* (LINN.). Myrtle Warbler. Yellow-rumped Warbler.

BREEDING RANGE—Northern border of U. S. northward.

WINTER DISTRIBUTION—Southern Middle States to Panama.

Abundant transient,* passing the vicinity of Philadelphia, April 25–May 20, and September 25–November 1. Throughout the Pine Barren region and as far north at least as Haddonfield, N. J., it is a regular winter resident and occurs irregularly in winter in south-eastern Pennsylvania.

* Dr. Warren states that he has observed this species in Cameron county, Pa., June 25, 1888, McKean county, July 14, 1889, and Clinton county, August 10, 1889, each time a single bird. This would indicate that the species may breed sparingly in the Pennsylvania mountains and plateau region.

[298.] *Dendroica auduboni* (TOWNS.). **Audubon's Warbler.**

BREEDING RANGE—Rocky Mts., westward to the Pacific coast.

A purely accidental straggler.

One was secured by Dr. B. H. Warren, November 8, 1889, in Chester county, Pa.

299. *Dendroica maculosa* (GMEL.). **Magnolia Warbler. Black and Yellow Warbler.**

BREEDING RANGE—Northern New England to Hudson Bay, and southward in the mountains.

WINTER DISTRIBUTION—Bahama, Cuba and Central America.

Common transient, occurring May 10–20 and September 10–October 5.

Along the higher Alleghanies from Luzerne county to Somerset county, Pa., it is a summer resident, though apparently not very abundant.

300. *Dendroica cærulea* (WILS.). **Cerulean Warbler.**

BREEDING RANGE—Mississippi Valley to the Alleghanies.

WINTER DISTRIBUTION—Cuba and southern Mexico to Peru.

Very rare transient; the following are all the captures that have come under our notice in eastern Pennsylvania and New Jersey:

Chester Co., Pa., Dr. B. H. Warren.

West Chester, Pa., May, 1891, T. H. Montgomery.

301. *Dendroica pensylvanica* (LINN.). **Chestnut-sided Warbler.**

BREEDING RANGE—Eastern U. S. and Canada, from the Alleghanian Fauna northward and southward in the mountains.

WINTER DISTRIBUTION—Bahamas and Eastern Mexico to Panama.

Abundant transient, May 5–15 and September 10–25.

Breeds all along the mountains of Pennsylvania and New Jersey (Harvey's Lake and Mt. Pocono, Pa., and Lake Hopatcong, N. J., etc.), and southward in suitable localities nearly throughout the Alleghanian Fauna. It has been found in the breeding season as far south as the Welsh Mountain, Lancaster county (*Stone*), Hamburg, Berks county (*Stone*), and Dr. Warren records it of rare occurrence

in Chester county in summer. Mr. S. N. Rhoads has also taken a very young specimen in Delaware county, Pa., in July.

302. *Dendroica castanea* (WILS.). Bay-breasted Warbler.

BREEDING RANGE—Northern New England to Hudson Bay.

WINTER DISTRIBUTION—Through eastern Mexico to Colombia.

Though this species is a regular migrant, it appears to be very uncommon in some localities, especially in southern New Jersey, and is apparently much more abundant in some years than others.

It occurs in the vicinity of Philadelphia, May 10–20 and September 10–October 1.

303. *Dendroica striata* (FORST.). Black-poll Warbler.

BREEDING RANGE—Northern New England and Labrador to Alaska.

WINTER DISTRIBUTION—Bahamas and northern S. A.

Abundant transient, bringing up the rear of the migrations. Occurs at Philadelphia, May 10–June 1 and September 20–October 15.

304. *Dendroica blackburniae* (GMEL.). Blackburnian Warbler.

BREEDING RANGE—Northern New England northward, and southward in the mountains.

WINTER DISTRIBUTION—Bahamas and eastern Mexico to Peru.

Common migrant, though apparently less abundant in the lowlands of New Jersey than in the higher woodlands of Pennsylvania.

Occurs May 5–15 and September 15–October 1.

Along the higher Alleghanies where the hemlocks remain uncut, this species is a summer resident (Harvey's Lake, North Mt., etc.).

305. *Dendroica dominica* (LINN.). Yellow-throated Warbler.

BREEDING RANGE—S. Atlantic States to the shores of lower Chesapeake Bay.

WINTER DISTRIBUTION—Bahamas and Greater Antilles.

Very rare straggler in the southern counties of Pennsylvania and New Jersey.

The only captures with which we are acquainted are :

Delaware Co., Pa., Middle of June (2 specimens), C. D. Wood (*Trotter—B. N. O. C.*, 1879).

Trenton, N. J., May 29, 1860, Dr. C. C. Abbott (*Birds of N. J.*).

Chester Co., Pa., June 27, 1879, Dr. B. H. Warren.

“ “ July, 1885, “

306. *Dendroica virens* (GMEL.). Black-throated Green Warbler.

BREEDING RANGE—Northern New York and New England, northward and southward in the mountains.

WINTER DISTRIBUTION—West Indies and eastern Mexico to Panama.

Abundant transient May 2–15 and September–October 10. Summer resident along the higher Alleghanies (Harvey's Lake; North Mountain, etc.), etc.

[307.] *Dendroica townsendi* (NUTT.). Townsend's Warbler.

BREEDING RANGE—Pacific coast of N. A.

Accidental straggler. One specimen was secured by Mr. C. D. Wood at Coatesville, Chester county, Pa., May 12, 1868. It was purchased later by Mr. Bernard Hoopes and is now in the possession of Prof. E. D. Cope, of Philadelphia.

308. *Dendroica vigorsii* (AUD.). Pine Warbler.

BREEDING RANGE—Eastern U. S. from Southern States to Ontario and New Brunswick.

WINTER DISTRIBUTION—Southern States to Bahamas.

Common summer resident throughout the Pine Barrens of southern New Jersey, where it arrives as early as March 30.* It occurs in the breeding season at Towanda, Bradford county, Pa. (*Dwight, Auk*, 1892), and perhaps in other suitable localities in Pennsylvania. In the vicinity of Philadelphia it is a rather rare transient occurring May 1–5 and September 25–October 5.

* It is quite probable that it winters occasionally in southern New Jersey but as yet we have not succeeded in finding it at this season.

**309. *Dendroica palmarum hypochrysea* RIDGW.*
Yellow Red-poll. Yellow Palm Warbler.**

BREEDING RANGE—New Brunswick and Nova Scotia to Hudson Bay.

WINTER DISTRIBUTION—S. Atlantic and Gulf States.

Abundant transient, April 12–25, and October 10–20. It also occurs occasionally in southern New Jersey in winter, a specimen having been secured by Mr. S. N. Rhoads at May's Landing, December 2, 1892.

310. *Dendroica discolor* (VIEILL.). Prairie Warbler.

BREEDING RANGE—Eastern U. S., northward to southern New England.

WINTER DISTRIBUTION—Southern Florida and West Indies.

Abundant summer resident throughout the Pine Barrens of New Jersey, and occasionally in southern Pennsylvania (Barren Ridge, Chester Co.—*Warren's Report*). During the migrations it is more generally distributed, but is not abundant, except in southern New Jersey. In the vicinity of Philadelphia it occurs May 10–15 and September 1–15.

311. *Seiurus aurocapillus* (LINN.). Oven-bird. Golden-crowned Thrush.

BREEDING RANGE—N. A., from 38° to Hudson Bay.

WINTER DISTRIBUTION—Southern Florida, West Indies, Mexico and Central America.

Common summer resident throughout Pennsylvania and New Jersey, arriving April 30–May 3 and departing October 6–9. Especially plentiful in the mountains and in the New Jersey Pine Barrens.

312. *Seiurus noveboracensis* (GMEL.). Water-Thrush.

BREEDING RANGE—Northern U. S., northward.

WINTER DISTRIBUTION—Gulf States and West Indies to northern S. A.

Common transient, occurring at Philadelphia May 5–20 and August 3–September 1. It is one of the earliest migrants to reappear after the breeding season, and has been shot as far south as Cape May, N. J., on August 11, 1891 (*Stone*).

*The true *D. palmarum* belongs west of the Alleghanies. Stragglers have however been taken on the Atlantic slope, but not so far as we know in either Pennsylvania or New Jersey.

In the highest Alleghanies of Pennsylvania it is a summer resident (North Mt.—*Dwight—Auk*, 1892, and Lycoming county.—*Koch*).

[313.] *Seiurus noveboracensis notabilis* (GRINN.).
Grinnell's Water-Thrush.

BREEDING RANGE—Western N. A., east to the Mississippi Valley.

A rare straggler during migrations.

One specimen was secured at Raritan, N. J., May 30, 1889, by Mr. W. C. Southwick, which is the only capture that has come under our notice (*Auk*, 1892).

314. *Seiurus motacilla* (VIEILL.). **Louisiana Water-Thrush.**

BREEDING RANGE—Eastern U. S., not ranging much north of the Carolinian Fauna.

WINTER DISTRIBUTION—Gulf States to the West Indies and Central America.

A summer resident in certain parts of southern Pennsylvania. It has been found most abundantly in the lower Susquehanna Valley (*Stone*), and along the South Mountain, Cumberland county (*Rhoads*), where it arrives as early as April 12. It is also reported in summer from the Delaware river near Delaware Gap, N. J. (*Rhoads*), and at Black's Eddy, Bucks county, Pa. (*S. Brown*), and one nest has been recorded* from the Wissahickon Creek, Philadelphia.

The only capture in the vicinity of Philadelphia that we know of is one specimen secured August 18, 1894, at Wawa, Delaware county, Pa., by Mr. H. Y. Pennell. It, however, probably occurs sparingly every year during the migrations.

315. *Geothlypis formosa* (WILS.). **Kentucky Warbler.**

BREEDING RANGE—Eastern U. S., not ranging north of the Carolinian Fauna.

WINTER DISTRIBUTION—Cuba and eastern Mexico to Panama.

Summer resident in southern Pennsylvania, most numerous in York, Chester, Delaware and southern Montgomery counties. It

* H. K. Jamison, *O. & O.*, 1891.

occurs also at Englewood in northern New Jersey, but we have no record of its occurrence in the Pine Barrens.

Arrives May 5 and departs by September 1.

316. *Geothlypis agilis* (WILS.). Connecticut Warbler.

BREEDING RANGE—Manitoba.

WINTER DISTRIBUTION—UNKNOWN.

Transient, but very rare in the spring. Only one specimen has been taken in Pennsylvania or New Jersey at this season, *i. e.*, a male secured by Mr. S. N. Rhoads at Haddonfield, N. J., May 20, 1882.* In the fall it is quite common in weedy fields on the edge of woodland from September 14 to October 2.

317. *Geothlypis philadelphia* (WILS.). Mourning Warbler.

BREEDING RANGE—Northern New York and New England northward, and farther south in the mountains.

WINTER DISTRIBUTION—Costa Rica and Colombia.

Very rare transient, occurring in spring, May 15–25. Apparently rarer in fall.

The following specimens have been secured in the vicinity of Philadelphia within the past few years :

Chester Co., Pa., May, 1886, W. M. Swayne.

“ “ May 19, 1888, Witmer Stone.

“ “ May 15, 1892, Josiah Hoopes.

“ “ May 19, 1893, Josiah Hoopes.

On the higher mountains this species is a summer resident, though apparently not common : Wopsononock Mt., Cambria county (*Dwight—Auk*, 1892), Renovo, Clinton county (*Warren's Report*), Harvey's Lake (*Benners*).

318. *Geothlypis trichas* (LINN.). Maryland Yellow-throat.

BREEDING RANGE—Eastern U. S., northward to Canada.

WINTER DISTRIBUTION—S. Atlantic States, West Indies and Mexico to Panama.

Abundant summer resident, arriving April 25 and departing October 12.

* Now in the collection of Mr. Witmer Stone.

A single individual was seen by Mr. S. N. Rhoads at Haddonfield, N. J., February 5, 1890.

319. *Icteria virens* (LINN.). Yellow-breasted Chat.

BREEDING RANGE—Eastern U. S., limited in its northward range by the Carolinian Fauna.

WINTER DISTRIBUTION—Through Mexico to Guatemala.

Common summer resident within the limits of the Carolinian Fauna, occurring from May 5 to September 20.

A specimen secured at Harvey's Lake, Luzerne county, Pa., June, 1891 (*Stone*), is interesting from being so far north of its regular breeding range.

320. *Sylvania mitrata* (GMEL.). Hooded Warbler.

BREEDING RANGE—Southeastern U. S., not ranging much north of the Carolinian Fauna.

WINTER DISTRIBUTION—Through eastern Mexico to Panama.

Rare visitor at Philadelphia during migrations, but common summer resident in the cedar swamps of southern New Jersey, where it is one of the characteristic species.

Although for the most part limited by the Carolinian Fauna in its northward range, this species is also found in the laurel thickets and wooded swamps skirting the Blue Ridge (Hamburg, Berks Co., Pa.—*Stone*) and in some other suitable localities in eastern Pennsylvania.

An unusually late occurrence was a specimen secured at Germantown, Pa., by Mr. Herbert Brown, November 19, 1887 (*Stone—Auk*, 1888).

321. *Sylvania pusilla* (WILS.). Wilson's Warbler.

BREEDING RANGE—Northern border of U. S. to Alaska.

WINTER DISTRIBUTION—Through eastern Mexico to Panama.

A regular but not very common transient, occurring May 12–20 and August 26–October 10.

322. *Sylvania canadensis* (LINN.). Canadian Warbler.

BREEDING RANGE—Northern New York and New England to Newfoundland and Lake Winnipeg; southward along the Alleghanies.

WINTER DISTRIBUTION—Through eastern Mexico to Ecuador.

Very common transient, May 10–20 and August 20–October 1, and common summer resident in the Alleghany Mountains, frequenting the laurel thickets bordering the hemlock forests (Harvey's Lake—*Stone*, North Mt.—*Dwight*, Mt. Pocono—*Shryock*, Pike county—*Lawrence*—*Auk*, 1887).

323. *Setophaga ruticilla* (LINN.). Redstart.

BREEDING RANGE—Eastern N. A., chiefly north of the Carolinian Fauna.

WINTER DISTRIBUTION—West Indies and eastern Mexico to Ecuador.

Abundant migrant, April 30–May 20 and August 5–October 5. A few probably remain to breed in the vicinity of Philadelphia every year, as one or two pairs have been observed in summer along the Wissahickon creek (*Sheridan* and *Wilde*), and at Haddonfield, N. J. (*Rhoads*); a nest was also secured a few years ago on the Pennypack creek (*Rhoads*).

In Cape May and Cumberland county, N. J., the Redstart has also been found breeding (*Reed* and *Wilde*, 1893).

In northern New Jersey it is a more common breeder (Lake Hopatcong—*Rhoads*), and probably also in the more northern parts of Pennsylvania. In the true forest regions, however, it does not seem to occur, not having been found at Harvey's Lake or North Mountain.

Family Motacillidæ—The Wagtails.

Only one species of this family occurs in eastern North America.

324. *Anthus pensilvanicus* (LATH.). Titlark. Pipit.

BREEDING RANGE—Labrador to the Arctic coast.

WINTER DISTRIBUTION—Southward to southern U. S.

Winter resident, most abundant along the New Jersey coast and lower Delaware Valley, and during migrations scattered more widely

over the country. Always occurs in flocks, and is irregular and erratic in its habits.

Arrives November 1 and departs March 15.

Family Troglodytidæ—The Wrens.

Nine species of the family occur in Pennsylvania and New Jersey: six belonging to the true Wrens and three to the sub-family of Mockers.

The Catbird, Brown Thrasher, House Wren and Long-billed Marsh Wren are abundant breeders, and are all widely distributed except the last, which is restricted to the coast and tide-water marshes. The Carolina Wren is also a common resident, but does not range beyond the Carolinian Fauna. The other three species are of rare occurrence.

325. *Mimus polyglottos* (LINN.). Mockingbird.

BREEDING RANGE—Mainly south of 38°.

WINTER DISTRIBUTION—About the same.

Very rare summer resident. Probably still occurs irregularly in southern New Jersey, and perhaps in some of the southern counties of Pennsylvania.

Mr. Chapman records the breeding of a pair near Englewood, N. J., in 1884, and their subsequent appearance there the following season (*Auk*, 1889).

The only specimens secured of late years that have come under our notice are:

“Barrens,” Chester Co., Pa., Nov. 24, 1879,* B. H. Warren.

Eagle, Pa., about 1880, D. N. McCadden.

Cape May, N. J., Aug. 27, 1891, Witmer Stone.

326. *Galeoscoptes carolinensis* (LINN.). Catbird.

BREEDING RANGE—Eastern N. A.

WINTER DISTRIBUTION—Southern U. S., from 37° to Cuba and Panama.

Abundant summer resident from May 5 to October 18.

A single individual was secured at Atlantic City, N. J., Decem-

* Perhaps an escaped cage bird.—*Forest and Stream*, XIII., p. 25.

ber 26, 1892, by Mr. S. N. Rhoads, and another at Avalon, N. J., February 11, 1894, by Mr. D. N. McCadden, which show that this species occasionally winters along our coast.

327. *Harporhynchus rufus* (LINN.). Brown Thrasher.

BREEDING RANGE—Eastern U. S., northward to southern Maine and Ontario.

WINTER DISTRIBUTION—Southern States from about 37° southward.

Abundant summer resident, arriving April 22 and departing October 20. In one or two instances individuals have been observed in winter. This species does not breed north of the Alleghanian Fauna, and is more characteristic of the Carolinian, so that we find it less plentiful along the mountains than in the lowlands.

328. *Thryothorus ludovicianus* (LATH.). Carolina Wren. Mocking Wren.

BREEDING RANGE—Eastern U. S., not ranging north of the Carolinian Fauna, except as a straggler.

WINTER DISTRIBUTION—The same.

Resident throughout the year, but rarely occurs north of the Carolinian Fauna. It is especially abundant in the lower Susquehanna and Delaware valleys.

329. *Thryothorus bewickii* (AUD.). Bewick's Wren.

BREEDING RANGE—Eastern U. S., but rare east of the Alleghanies.

WINTER DISTRIBUTION—Georgia to Texas.

Rare straggler. One specimen was secured at Wynnewood, Pa., April 12, 1890, by Mr. W. L. Baily, and several others have been reported at rare intervals in eastern Pennsylvania and New Jersey.

On the South Mountain, Cumberland county, Pa., Mr. Rhoads secured a specimen in June, 1894, which would indicate that the species bred there, and a specimen in the collection of the Philadelphia Academy taken by Prof. Baird at Carlisle strengthens this view. We know of no records of its breeding farther east, however.

330. *Troglodytes aëdon* VIEILL. House Wren.

BREEDING RANGE—U. S., mainly east of the Alleghanies* northward to Canada.

WINTER DISTRIBUTION—Southern States.

Common summer resident, but apparently becoming rare in many parts of the country. Arrives April 25 and departs October 5.

331. *Troglodytes hiemalis* VIEILL. Winter Wren.

BREEDING RANGE—Northern border of U. S. northward, and southward on the higher mountains.

WINTER DISTRIBUTION—Through eastern U. S.

Common winter resident from September 25 to April 1, and sometimes individuals linger as late as May 10.

In the higher Alleghanies, where the hemlock forests still stand, the Winter Wren is a regular summer resident (Harvey's Lake—Stone, North Mt.—Dwight, Tobyhanna, Pocono Mt.—S. Brown). Dr. Warren states that Mr. Otto Behr secured a nest and eggs in Sullivan county, Pa.

332. *Cistothorus stellaris* (LICHT.) Short-billed Marsh Wren.

BREEDING RANGE—Eastern U. S. and southern British America.

WINTER DISTRIBUTION—Southern States.

Rare migrant, and in southern New Jersey occasional (regular?) winter resident.

The following captures have come to our notice during the past few years:

Haddonfield, N. J., Sept., 17, 1890, S. N. Rhoads.

Cape May, N. J., Jan. 28, 1892, Witmer Stone.

“ “ Jan. 29, 1892, S. N. Rhoads.

May's Landing, N. J., Oct. 25, 1892, S. N. Rhoads.

A nest of this species was secured on Chain Dam Island, Lehigh river, Pa., by Dr. J. W. Detwiler in July, 1886, and another “unfinished nest” was found near Quakertown, Bucks county, Pa., in 1884.

We know of no other records of its breeding in eastern Pennsylvania or New Jersey.

* The Ohio and Mississippi Valley bird is nearer to *T. aëdon aztecus*, cf. Allen.—Auk, 1888, p. 164.

333. *Cistothorus palustris* (WILS.). Long-billed Marsh Wren.

BREEDING RANGE—Eastern N. A.

WINTER DISTRIBUTION—Southern States.

Abundant summer resident in cat-tail swamps along the coast and large rivers. Generally they do not occur much beyond tide-water, but Mr. Thos. H. Jackson found a small colony on the Brandywine creek near West Chester, Chester county, Pa., May, 1886, (*O. & O.*, 1887,) and they also occur on the Egg Harbor river some distance above May's Landing, N. J. (*Stone and Shryock.*)

In southern New Jersey this species winters in small numbers, specimens having been secured at Cape May, January 28, 1892. (*Rhoads and Stone.*)

Family Certhiidae—The Creepers.

Only one species occurs in eastern North America.

334. *Certhia familiaris americana* (BONAP.). Brown Creeper.*

BREEDING RANGE—Northern border of eastern U. S. northward, and southward on the higher mountains.

WINTER DISTRIBUTION—Through eastern U. S.

Abundant transient and common winter resident, arriving September 20, and departing April 15.

In the higher Alleghanies it is a regular summer resident (Harvey's Lake—*Stone*, North Mt.—*Dwight*, Eaglesmere—*Baily*, etc.).

Family Paridae—The Titmice and Nuthatches.

Six species of this family occur in Pennsylvania and New Jersey. The White-breasted Nuthatch, Tufted Titmouse and Carolina

* The true *C. familiaris* is the European Creeper.

Chickadee are common residents in the southern counties, but the last two do not range north of the Carolinian Fauna.

North of this belt the Black-capped Chickadee is a common resident. Of the two remaining species the Red-breasted Nuthatch is an irregular transient, and the Brown-headed Nuthatch an accidental straggler.

335. *Sitta carolinensis* LATH. White-breasted Nuthatch.

BREEDING RANGE—Throughout eastern N. A.

WINTER DISTRIBUTION—About the same.

Common resident, though most plentiful in the thickly settled regions during the migrations and in winter.

336. *Sitta canadensis* LINN. Red-breasted Nuthatch.

BREEDING RANGE—Mainly north of U. S.

WINTER DISTRIBUTION—Mainly south of the Middle States.

Transient and very erratic, being abundant some years and rare in others; never common in spring. Occurs generally about May 15, and September 10–October 15.

In southern New Jersey it frequently winters in small numbers.

[337.] *Sitta pusilla* LATH. Brown-headed Nuthatch.

BREEDING RANGE—Atlantic and Gulf States to lower Chesapeake Bay.

WINTER DISTRIBUTION—About the same.

Rare straggler, several have been seen at rare intervals in the southern counties of Pennsylvania and New Jersey, and one was secured by Mr. C. D. Wood, near Philadelphia in the fall about 1885 (*Warren's Report*).

338. *Parus bicolor* LINN. Tufted Titmouse. Crested Tit.

BREEDING RANGE—Eastern U. S. South of the upper border of the Carolinian Fauna.

WINTER DISTRIBUTION—The same.

Common resident at Philadelphia and throughout the district covered by the Carolinian Fauna. Farther north it occurs only as a rare straggler.

339. *Parus atricapillus* LINN. Black-capped Chickadee.

BREEDING RANGE—Eastern N. A., north of the Carolinian Fauna.

WINTER DISTRIBUTION—Southward to the Potomac Valley.

Tolerably common winter visitant in southeastern Pennsylvania, but apparently rarer in southern New Jersey, as we have no records of its occurrence south of Haddonfield. Occurs October 24—March 1.

From the Blue Ridge (Wernersville—*Young*) northward it is a common summer resident and breeds (Mt. Pocono, Pa.—*Shryock*, Harvey's Lake, Pa.—*Stone*, Lake Hopatcong, N. J.—*Rhoads*, etc.).

340. *Parus carolinensis* AUD. Carolina Chickadee.

BREEDING RANGE—Eastern U. S., not ranging above the Carolinian Fauna.

WINTER DISTRIBUTION—The same.

Abundant resident throughout southern New Jersey from Pt. Pleasant to Haddonfield, and southward to Cape May. Less common in southern Pennsylvania.

This species seems to exactly replace the more northern Black-capped Chickadee from the Carolinian Fauna southward, and while they both occur in southern Pennsylvania in winter, so far as we can ascertain, their breeding ranges do not overlap.

**Sylviidæ—The Old World Warblers,
Kinglets, etc.**

Three representatives of this family occur in Pennsylvania and New Jersey.

The Golden-crowned and Ruby-crowned Kinglets are abundant transients, the former also occurring in winter, while the Gnat-catcher is a rare straggler from the south.

341. *Regulus satrapa* LICHT. Golden-crowned Kinglet.

BREEDING RANGE—Northern border of U. S., northward, and on the higher mountains farther south.

WINTER DISTRIBUTION—Middle States southward to Guatemala.

Common winter resident in southern Pennsylvania and New

Jersey, and abundant during migrations. Arrives September 30 and departs April 20.

Probably breeds sparingly on the highest parts of the Pennsylvania Alleghanies, as Mr. Dwight records a pair on North Mt. in June (*Auk*, 1892). Mr. Koch has met with the young in August in Lycoming county.*

342. *Regulus calendula* (LINN.). Ruby-crowned Kinglet.

BREEDING RANGE—Northern border of U. S. and Adirondacks northward.

WINTER DISTRIBUTION—Southern States to Guatemala.

Abundant transient especially numerous in fall. Occurs April 12—May 1, and September 15—November 1.

343. *Poliophtila cærulea* (LINN.). Blue-gray Gnat-catcher.

BREEDING RANGE—Eastern U. S. mainly south of Pennsylvania (i. e., east of Alleghanies).

WINTER DISTRIBUTION—Gulf States to Guatemala.

Rare summer resident in southern New Jersey, and much less common in southern Pennsylvania.† Only a rare straggler in the Delaware Valley.† A nest was found at Bridgeton, N. J., by Mr. W. L. Baily some years ago, and the following specimens have been shot :

Cape May Co., N. J., Five mile beach, April 12, 1879, Dr. W. L. Abbott. (3 specimens.)

Cape May Co., N. J., April 15, 1879, Dr. W. L. Abbott.

Woodbury, N. J., May 1, 1880, Dr. W. L. Abbott.

Chestnut Hill, Pa., September 3, 1880, Dr. W. L. Abbott.

Haddonfield, N. J., April 10, 1882, S. N. Rhoads.

Cape May Co., N. J., May, 1891, C. A. Voelker.

Atlantic City, N. J., April 16, 1893, I. N. DeHaven. (4 specimens.)

* Cuvier's Kinglet, *R. cuvieri* Aud., is known only from the figure and description of Audubon, as no other specimens have ever been secured. The original specimen was secured on the banks of the Schuylkill in Pennsylvania, June, 1812, but was not preserved.

† This species may have bred here formerly, as there is a very young bird in the collection of the Acad. Nat. Sci., obtained near Philadelphia many years ago by Wm. Wood.

Family Turdidæ—The Thrushes.

Eight thrushes are found regularly in Pennsylvania and New Jersey. The Robin, Bluebird and Wood Thrush are common summer residents, the first two also occurring during winter. The others are all transients, the Hermit being the most abundant, and the Wilson's, Olive-backed and Gray-cheeked Thrushes somewhat less common, while the Bicknell's Thrush is decidedly rare. The Varied Thrush is a mere accidental straggler.

344. *Turdus mustelinus* Gmel. Wood Thrush.

BREEDING RANGE—Eastern U. S. northward to Massachusetts.

WINTER DISTRIBUTION—Cuba and Mexico to Guatemala.

Common summer resident southeast of the mountains, but rarer in the northern counties. It occurs sparingly, however, even in the primeval hemlocks of the topmost Alleghanies (Harvey's Lake—Stone and North Mt.—*Dwight*). Arrives in the vicinity of Philadelphia May 1, and departs October 1.

345. *Turdus fuscescens* Steph. Wilson's Thrush. Veery.

BREEDING RANGE—Eastern N. A. (north of the Carolinian Fauna) to Newfoundland.

WINTER DISTRIBUTION—Mexico to northern S. A.

Common transient, occurring in the vicinity of Philadelphia May 5–25 and September 1–20.

In the northern counties and in certain localities along the Alleghanies it is a summer resident, and has been found during the breeding season at the following places: Cresson, Altoona and valley east of North Mt. (*Dwight—Auk*, 1892), Northampton county, Pa. (*Detwiler*), and Lake Hopatcong, N. J. (*Rhoads*). Mr. J. P. Norris also records one nest from Montgomery county, Pa. (*O. & O.*, 1890).

346. *Turdus alicia* Baird. Gray-cheeked Thrush.

BREEDING RANGE—Labrador and Hudson Bay to the Arctic coast.

WINTER DISTRIBUTION—Mexico to Costa Rica.

Tolerably common transient, passing through about May 15 and returning September 20–October 10.

347. *Turdus aliciae bicknelli* RIDGW. Bicknell's Thrush.

BREEDING RANGE—Catskills and White Mts. to Nova Scotia.

WINTER DISTRIBUTION—Mexico?

Rare transient; first taken in Pennsylvania by Mr. Wm. L. Collins at Frankford, Philadelphia, October 16, 1878. Several additional specimens were secured by Mr. Collins about the same time, and one was taken at West Chester, Pa., by Mr. Josiah Hoopes, in 1893.

348. *Turdus ustulatus swainsonii* (CAB.). Olive-backed Thrush.

BREEDING RANGE—Chiefly north of U. S., except on higher mountains.

WINTER DISTRIBUTION—Gulf States to Cuba. Central America and S. A.

Common transient, occurring near Philadelphia May 5–25 and September 15–October 15.

Found abundantly as a summer resident on North Mountain, Sullivan county, Pa.,* by Mr. Jonathan Dwight, but not as yet recorded as a breeder from elsewhere in this State. Probably does not breed in New Jersey.

349. *Turdus aonalaschkæ pallasii* (CAB.). Hermit Thrush.†

BREEDING RANGE—Northern U. S. northward, and southward along the Alleghanies.

WINTER DISTRIBUTION—Lower Middle States to Gulf States.

Abundant transient, occurring April 10–May 4 and October 10–November 5.

In southern New Jersey it is a regular though not abundant winter resident, Mr. W. E. D. Scott even records one as far north as Princeton, January 17, 1879 (*B. N. O. C.*, 1879), and Mr. E. C. Thurber one at Morristown, January 30, 1886 (*O. & O.*, 1886). It occurs occasionally in southeastern Pennsylvania in winter.

On the higher parts of the Alleghanies the Hermit Thrush is a regular breeder, and has been found during the breeding season at North Mt., Pa. (*Dwight*), Harvey's Lake, Pa. (*Stone*), Mt. Pocono, Pa. (*Shryock*), and a nest was found at Eaglesmere, Pa., by Mr. W. L. Baily.

*The most southern known breeding ground of the species.

†The true *T. ustulatus* and *T. aonalaschkæ* are Pacific coast birds.

350. *Merula migratoria* (LINN.). Robin.

BREEDING RANGE—Eastern N. A., upper part of Southern States to Hudson Bay and Alaska.

WINTER DISTRIBUTION—Eastern U. S., mainly south of Middle States.

Resident, though much scarcer in winter. Migrants arrive March 15 and depart November 10.

In southern New Jersey it seems to be much more abundant in winter than in the vicinity of Philadelphia.

[351.] *Hesperocichla nœvia* (GMEL.). Varied Thrush.

DISTRIBUTION—Pacific coast of N. A., southward to California.

A purely accidental straggler. One specimen secured in New Jersey is in the collection of Dr. Samuel Cabot (*Baird, Brewer and Ridgway—Birds of North America*, Vol. I., p. 29).

352. *Sialia sialis* (LINN.). Bluebird.

BREEDING RANGE—Eastern U. S., northward to Nova Scotia and Manitoba.

WINTER DISTRIBUTION—Eastern U. S., but mainly south of the Middle States.

Common resident, most plentiful during the migrations, and becoming every year less abundant during the breeding season.

Migrants arrive March 1 and depart November 10.

ADDENDA.

Page 61. **White Ibis.**

A specimen in the collection of the Academy of Natural Sciences of Philadelphia was secured in New Jersey, a number of years ago.

Page 70. **Black-necked Stilt.**

Mr. Chas. A. Voelker secured a specimen at Stone Harbor on the New Jersey coast, April 27, 1894.

Page 99. **Arkansas Kingbird.**

A specimen was shot at Princeton, N. J., September 29, 1894, by Mr. A. H. Phillips, and was exhibited before the D. V. O. C.

Page 36. The following species should therefore be excluded from the list on the upper part of the page:

Himantopus mexicanus. *Tyrannus verticalis.*

BIBLIOGRAPHY

OF THE

BIRDS OF PENNSYLVANIA AND NEW JERSEY.

The region covered by the present list, and more especially the immediate vicinity of Philadelphia, has probably had connected with it the names of more celebrated ornithologists than any other section of our country.

Alexander Wilson on the banks of the Schuylkill and on the Pennypack, and Audubon on the Perkiomen, made their first acquaintance with our birds, and doubtless secured the first specimens of many of their new species, in spots which are still the favorite haunts of the ornithologists of to-day. In the Cumberland Valley some miles to the westward, but still within the scope of the present list, Prof. Baird also pursued his early ornithological studies, and prepared the first extensive collection of bird skins made in this country which afterwards formed the nucleus of the now famous North American study collection of the U. S. National Museum.

The magnificent collection of birds purchased and deposited in the Academy of Natural Sciences of Philadelphia by Dr. Thos. B. Wilson, about 1845, drew thither many ornithologists, and made Philadelphia for a number of years the ornithological centre of the country. We find associated with the collection and publications of the Academy the names of Peale, Harris, Heermann, Cassin, Woodhouse, Gambel, McCall, Turnbull, etc., many of whom evidently devoted time to the study of the birds of the surrounding country as well as to the specimens in the Museum.

After the death of John Cassin in 1869 ornithology at Philadelphia seems to have come to a standstill, and for several years we find no evidence of ornithological study in this vicinity. With the publi-

cation of the *Bulletin of the Nuttall Ornithological Club* (now *The Auk*), however, an opportunity was offered for recording observations upon our birds, and notes from Pennsylvania and New Jersey soon began to appear in rapid succession.

From 1876 to 1885 the most prominent names in our bibliography are Spencer Trotter, W. E. D. Scott, Samuel N. Rhoads, Wm. L. Collins, Wm. L. Abbott and Chas. H. Townsend, all of whom were actively engaged in collecting specimens and recording their observations. From 1885 to 1894 the names most prominent are Dr. B. H. Warren, F. M. Chapman, Jonathan Dwight, Jr., Witmer Stone, J. Warren Jacobs, W. E. Clyde Todd and Philip Laurent.

The first important local list of the birds of Pennsylvania or New Jersey is the Bairds' list of the Birds of Carlisle (1845); after this came Beesley's Birds of Cape May Co. (1857), Barnard's Birds of Chester Co. (1861), Cassin's Birds of Delaware Co. (1862), Abbott's Birds of New Jersey (1868), and Libhart's Birds of Lancaster Co. (1869). With the exception of the last two, these are scarcely more than lists of names. Libhart's is the best of all, though it contains some errors. Abbott's list of New Jersey birds has very extensive annotations, but is unfortunately very unreliable.

Turnbull's Birds of East Pennsylvania and New Jersey summarizes the knowledge of the birds of these States up to the time of its issue in 1869, and is a very carefully prepared list, though it, like other works of the time, lacks the detailed data characteristic of lists of the present day.

Between the years 1869 and 1890 a number of lists of Pennsylvania birds appeared.

Thomas's Birds of Bucks Co. (1876) and Townsend's Birds of Westmoreland Co. (1883) are little more than lists of species. Of the four lists of Chester county birds which appeared during these years, Warren's (1879) and Michener's (1881) are much the best, and contain a great deal of original matter. Pennock's list (1887) is mainly compiled from these two, while Ressel's (1889) is quite unreliable.

Gentry's Life Histories of the Birds of Eastern Pennsylvania, which appeared in 1876, is a popular work, but is very misleading in many respects.

In 1889 appeared the first edition of Warren's Report on the Birds of Pennsylvania, and in 1890 the revised edition of the same. This was the first general work on the birds of the State since Turn-

bull's list in 1869, and contains a vast amount of original matter. The first accounts of the summer birds of the Pennsylvania mountains are contained in Dr. Warren's report, but owing to the large amount of popular matter that was necessarily incorporated in it, many records of great scientific importance are passed with but casual mention. Many statements are also made on the authority of correspondents in various parts of the State, which have since proved erroneous.

In 1891 appeared Stone's *Summer Birds of Harvey's Lake*, the first paper dealing exclusively with the birds of the Pennsylvania mountains, followed the next year by Dwight's *Summer Birds of the Crest of the Pennsylvania Alleghanies*, a much more extensive treatise on the same region. Todd's *Summer Birds of Indiana and Clearfield Counties* (1893) is the first extensive paper on western Pennsylvania birds, and Jacob's *Summer Birds of Green Co.* (1893) is another valuable contribution to the ornithology of the same section.

But few local lists of New Jersey birds have appeared. Scott's *Birds of Long Beach* (1879) and Laurent's *Birds of Five-mile Beach* (1892) are the most important, and are both extremely valuable contributions. Shick's *Birds of Seven-mile Beach* (1890), which was never completed, is the only other paper on the coast birds. Thurber's *Birds of Morris Co.* (1887) is an excellent list, but unfortunately appeared only in a newspaper. Stone's *Summer Birds of the Pine Barrens* (1894) summarizes our knowledge of the breeding birds of this region to date. The only other extensive list of the birds of the State is Nelson's *Birds of New Jersey* (1890), which is unfortunately very unreliable, being practically a reproduction of Dr. Abbott's 1869 list without corrections and with some additional errors.

The following list contains all the important publications relating exclusively to the birds of Pennsylvania and New Jersey, arranged chronologically.

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1860. JACKSON, R. M. S. *The Mountain*, 12mo, Phila., J. B. Lippincott & Co. Chapter V., pp. 317-330, contains a long annotated list of the Birds of the Alleghany Mountains of Pennsylvania.
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1862. CASSIN, J. Birds of Delaware County, Pa.—*History of Delaware County, Pennsylvania*, by George Smith. Philadelphia, 1862, 8vo pp. 581.
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1868. ABBOTT, C. C. Catalogue of Vertebrate Animals of New Jersey.—Cooke's Geol. of New Jersey, App. E., pp. 751-830.
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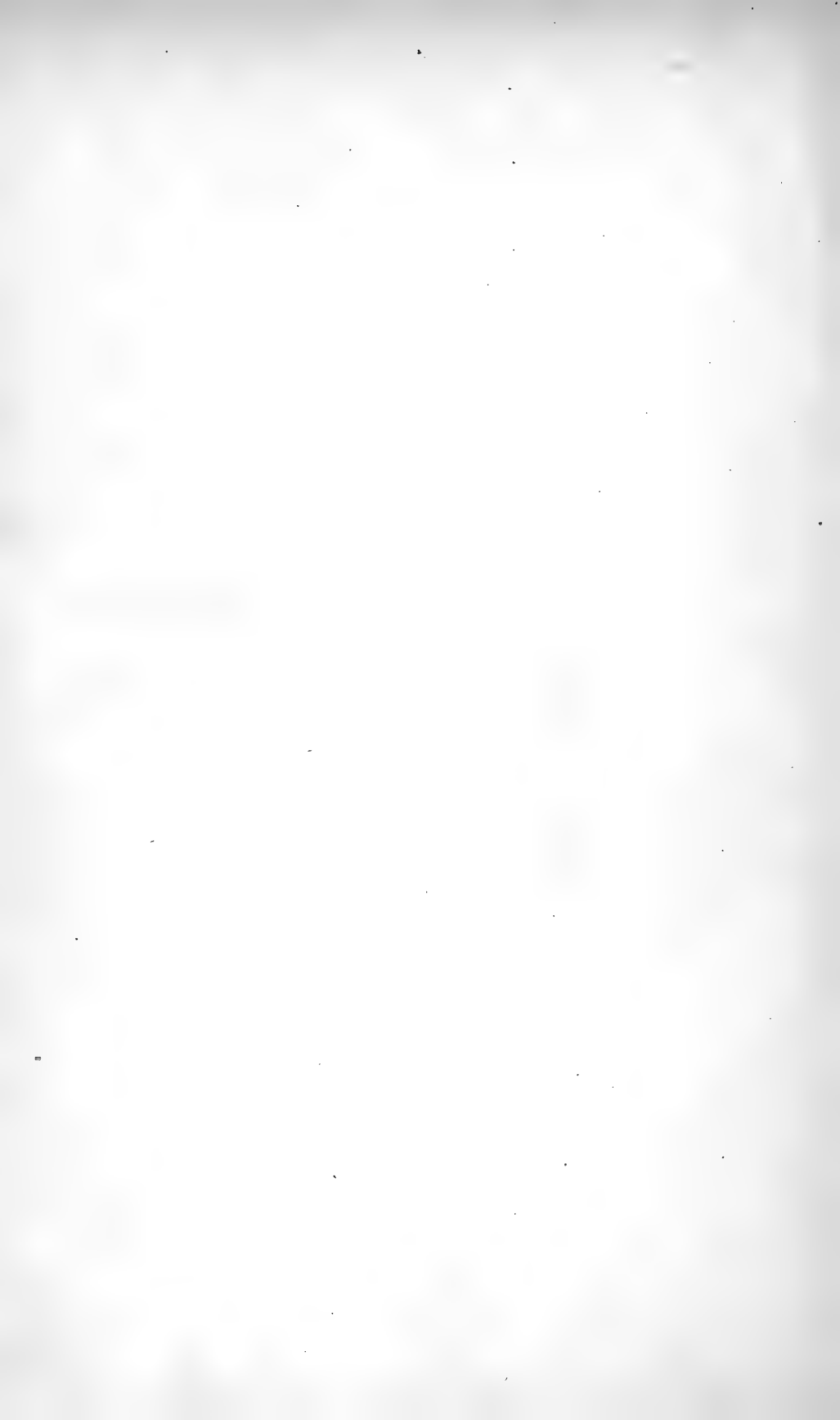
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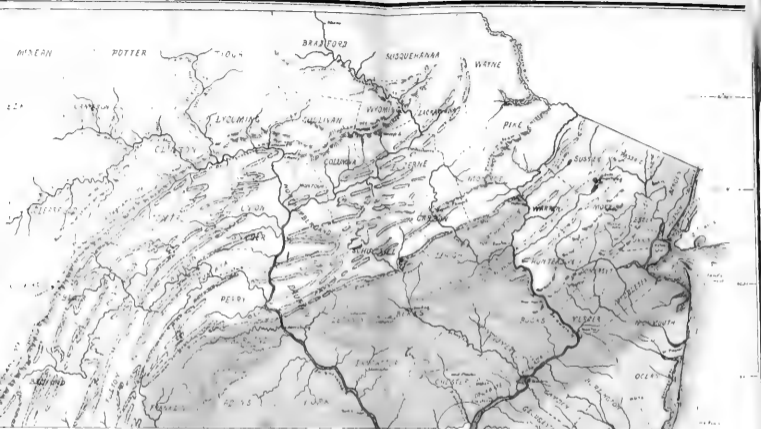




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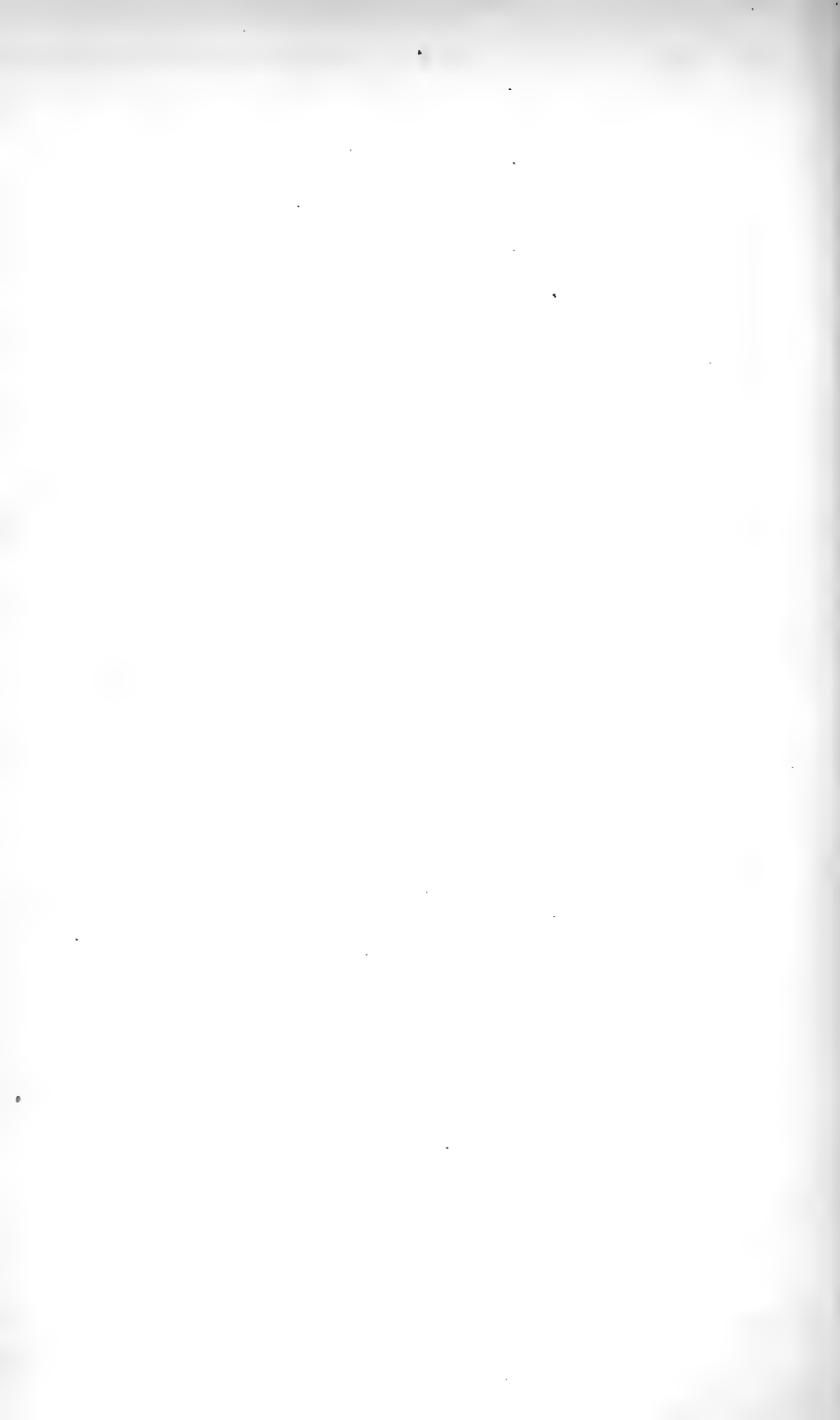




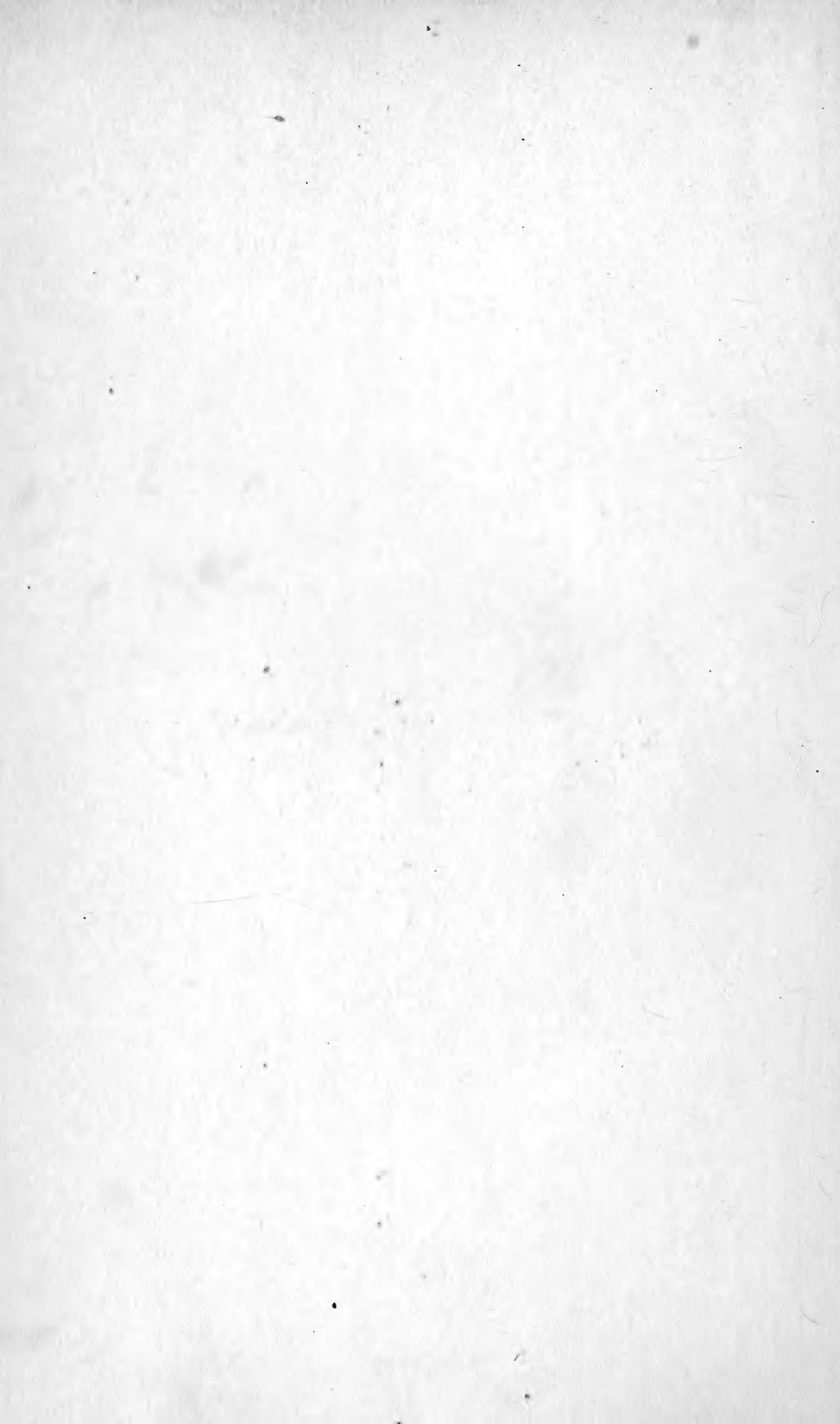
FAUNAL MAP OF EASTERN PENNA. & NEW JERSEY.

DISTRICT	FAUNA
Allegheny and Pocono Plateaus	CANADIAN
Central Mountain Region	ALLEGHIAN
Valley of the Delaware	ALLEGHIAN
Susquehanna, Raritan, and other Coastal Lowlands	CANADIAN
Pine Barrens Region and Maritime Tidal Lands	CANADIAN









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