

A REVIEW OF THE SUMMER BIRDS

OF A PART OF

THE CATSKILL MOUNTAINS,

WITH PREFATORY REMARKS ON

THE FAUNAL AND FLORAL FEATURES OF THE REGION.

BY

EUGENE PINTARD BICKNELL.

Read in part before the Linnæan Society of New York, February 11 and April 8, 1882.

A REVIEW OF THE SUMMER BIRDS OF A PART OF
THE CATSKILL MOUNTAINS, WITH PREFATORY
REMARKS ON THE FAUNAL AND FLORAL FEAT-
URES OF THE REGION.

OUR present knowledge of the birds, if it cannot as truly be said the entire vertebrate fauna, of our great Appalachian chain of mountains, with the exception of a few limited sections, is virtually reducible to a recognition of the law of latitudinal equivalent in altitude obtaining in the distribution of terrestrial life, qualified by observations scanty and sporadic.

Notwithstanding the ease of access and popularity as summer resorts of many sections of this great mountain system, and its importance from a zoological standpoint, few parts of it are so satisfactorily treated in our ornithological literature as are portions of the distant ranges of the West. Until recently, it could not be said that we had anything at all comprehensive or authoritative pertaining to the birds of any part of this system, and the extent of our published knowledge of its ornithology could almost be summed up in the contents of a few isolated notes and of scanty facts scattered through biographical matter. Indeed the bird biographies of Wilson and Audubon furnish important facts relating to this subject which still remain without other authority.

It is this state of our knowledge which so urgently demands all facts in point, whether for actual increase or merely for verification,

that has called forth the present paper. No excuse need be offered for its manifest incompleteness, albeit it falls far short of a complete review of the summer birds of the region treated, and the subject of their environment is but cursorily entertained, for it is presented solely as the contribution to an important subject permitted by a transient experience in an unworked field. Moreover, completeness in delineating the more pronounced features of the avi-fauna of the defined region may be considered as reasonably attained; and a precise knowledge of salient faunal features, extended and applied, must yield a true conception of the broader principles of geographical distribution. Primary features rather than incidental details must bestow the character of all broad generalization.

Of the Alleghanian system in New York State the Adirondacks have received the most attention, and though we have as yet nothing full on the ornithology of this section, the recent preliminary papers of Dr. Merriam indicate that we have much to expect.

In connection with a knowledge of the avi-fauna of the Adirondacks, a knowledge of that of the Catskills, second in importance only to the former as a culminating point of the mountain system to which both pertain, in New York State, is highly desirable; and though we have had from Mr. John Burroughs some beautiful pen-pictures of the bird-life of this region, and the writings of this author* have much *passim* on the subject of its feathered inhabitants, other than this, and incidental allusions in published matter, a short note by Mr. T. M. Trippe,† is all I find applying directly to it.‡

The observations on which the present paper is based were made during brief explorations of the more southern Catskills in three suc-

* It may here be stated that all references made in this paper to Mr. Burroughs' writings are to the volumes in which have been collected many of his essays which first appeared as magazine articles.

† American Naturalist, VI, 1, 47-48, January, 1872.

‡ A recent paper by the writer renders this statement hardly exact and may here be cited:

“A Sketch of the Home of *Hylocichla Alicea Bicknelli*, Ridgway, with some Critical Remarks on the Allies of this new Race.” Bull. Nutt. Ornith. Club, VII, 3, 152-9, July, 1882.

cessive years: from June 6-15, 1880; 12-18, 1881; 24-27, 1882; on the latter occasion accompanied by Dr. A. K. Fisher, of Sing Sing, N. Y. Mr. R. F. Pearsall, of Brooklyn, also visited the same section of the region from May 30 to June 13, 1882, during this time confining his attention principally to the nidification of the birds, and has kindly permitted me the use of his notes. I have also had occasion to refer to notes taken by my brothers, Pierrepont C. and G. A. Bicknell, who at different times made trout-fishing and camping excursions into these mountains, always carefully noting observations on the birds.

On my first visit to the region head-quarters were made near Summit,* from whence exploration was conducted southward through the Big Indian Valley, over a distance of about twenty miles,—nearly to the southern terminus of the mountains; towards the northeast, about ten miles; and to lesser distances in other directions. On the subsequent visits, exploration was mainly confined to the region about the head of the Big Indian Valley and adjacent mountains, which my former trip had demonstrated to be an interesting section for that purpose.

The country here is very sparingly cultivated, and tilled ground is seen only as a necessary accessory to the dwellings of the settlers which extend interruptedly along the valley, becoming increasingly separated and of more primitive construction towards the remoter portions. Still farther beyond, and above, indications of the former presence of lumbermen, in natural sequence to an abandoned saw-mill in the valley below, remain along the rough mountain road; but up on the precipitous slopes, where the ancient forests of deciduous trees have repelled the devastating bark-peeler, Nature, too austere to re-

* This point is on the line of the Ulster and Delaware Railroad, about thirty miles west from the Hudson River; the altitude in the immediate vicinity varies from 1,500-1,600 feet in the valleys to 2,482 feet on the highest hill.

The altitudes and distances given in this paper are from, or approximated from, Prof. A. Guyot's "Map of the Catskill Mountains," 1880.

tain any impression of the chance explorer or, perhaps, never invaded by the foot of man, remains rugged and absolute as it came from the cosmic forces.

The entire region is decidedly mountainous, and traversed by numerous valleys, of greater or less extent, with their streams and brooks all swiftly flowing over rough and stony beds. The main water-course of that part of the region here considered is Esopus Creek, which, rising in one branch (Birch Creek) almost at a point of junction of three counties—Ulster, Delaware, and Greene—circuitously traverses the former towards the Hudson, which it finally reaches, after a journey of nearly sixty miles, at a point not thirty miles from its source.

The railroad follows the course of this stream on its track through the mountains, and that the birds have also taken advantage of this unobstructed way from the Hudson to the heart of the Catskills seems to be shown by the presence of several species along the valley, even far in the mountains, which were not noticed without its limits.

Extending from this valley, less than thirty miles from the Hudson, is the Big Indian Valley or Hollow, which passes irregularly southward with a gradually increasing elevation until dissipated in mountain passes, about eight miles from its entrance. Here it cradles the early flow of the main branch of Esopus Creek, guiding its rapid and increasing waters into more expansive course below.

The highest elevations in the Catskills are found among the mountains about this point, where are clustered several peaks closely approaching four thousand feet in altitude. Rising among these is Slide Mountain (4,205 feet), which has recently been ascertained to exceed in height all other peaks of the Catskill group, so that to this comparatively unknown mountain has now been awarded the palm which was long supposed to belong to others. Its name was evidently bestowed with reference to an extensive land slide which has bared its eastern slope, for a varying width of rods, from near the summit far down into a gorge, where, from above, its devastation becomes

lost to sight. The sandy and rocky surface of its course seems gradually becoming encroached upon by a sparse growth of small shrubs and plants from the mountain vegetation on either side, and with this was growing scattered clumps of a wood-rush (*Luzula parviflora* Desv.) not before, I think, reported from as far south. Here was found the only exposed ground met with at a high altitude, most of the mountains being well wooded, and lacking those more imposing features which are conferred by bold and rugged outlines and barren summits.

The mountains grouped about the Slide separate two very different water-sheds, and there are many streams of proximate sources, whose waters reach the Atlantic through no less separated outlets than Delaware and New York Bays. From a recent paper "On the Physical Geography and Hypsometry of the Catskill Mountain Region," by Arnold Guyot,* the following, relating to this subject and to Slide Mountain, may be transcribed:—

"The Slide Mountain, the culminating point of the Southern, and the highest of all the Catskills, is in many respects quite remarkable. It terminates abruptly on the northeast towards the deep valley of Woodland . . . From its broad triangular top it sends a ridge towards the southeast, which divides the waters of the Esopus from those of the Rondout, and terminates in the Lone Mountain 3670 feet, by which it is almost connected with the Wittemberg chain. Another high ridge descends towards the south and nearly reaches the high group of Table Mountain 3865 feet, and Peak-o'-Mouse [Peak-o'-Moose] 3875 feet, which separates the head-waters of the Rondout from those of the East branch of the Navesink. It thus becomes the main hydrographic centre of the region, sending its waters to the northwest by the Esopus; northeast to the same by the Woodland Creek; south by the Rondout to the Hudson; southwest by the Navesink to the Delaware."

Though an exploration of other peaks adjoining the Slide Mountain would have been of the highest interest, circumstances did not admit of its accomplishment, and, excepting that of the Slide Mountain itself, no summits much over 3,000 feet altitude were visited. The greater

* American Journal of Science, XIX, 114, 429-451, June, 1880.

part of the region traversed is in the southern Catskills, as defined by the authority already quoted, in the following words:—

“The mountain region is divided by the Esopus Creek into two groups differing considerably in their physical structure, one on the north, the northern or Catskills proper, situated mainly in Greene county; the other on the south, the southern Catskills or Shandaken Mountains, in Ulster county.”

Of the geological origin of the region Mr. Guyot says:—

“The masses of rocks forming the Catskill Mountains were deposited in a gulf of the Devonian Sea comprised between the Adirondack plateau and the Green Mountain range, including the low Silurian ridges between the Hudson and the foot of the Catskills, all of which were probably emerged when the Devonian age began. Most of New England was also above the level of the ocean. The thickness of the sediments shows that the bottom of this gulf gradually subsided during that time to a depth of some 5000 feet, constantly making room for new deposits. The presence of the gray conglomerate capping the highest hills proves that the deposition of these sediments continued into the sub-carboniferous period, after which they were upheaved above the level of the ocean, before the deposit of the Coal-measures, and have remained emerged ever since.”

A further quotation of some very pertinent remarks on the general character of the region may here be made:—

“In a former paper on the physical structure of the Appalachian system, I noted the fact that, though extending through the most populated and civilized part of the United States, that system of mountains was still among the least known of our country. This remark applies with double force to the Catskill Mountain region.

“Situated in the old and flourishing State of New York, only one hundred miles from its metropolis, in full sight and within a few miles of the great artery of travel, the Hudson River; visited every summer by thousands of tourists in search of the beauties of nature and of the cool air of its high valleys and plateaus, its real mountain region has been thus far almost a sealed book to the geographer and the geologist as well as to the transient visitor The whole region was originally an unbroken forest, and, with the exception of the bottom and slopes of a few valleys and of some portions of the northeastern plateaus, it has remained so to this day.

“The wilderness of the Adirondacks is more extensive but hardly more complete than that of the pathless forests of the Southern Catskills, the habitual haunts of numerous bears, wild-cats, and occasional panthers.”

In connection with the summer birds of the region it will be profitable to consider briefly the general aspect of its Fauna and Flora, as exhibited by associated forms of life, so far as the result of limited observation will permit.

Necessarily so transient an acquaintance with the region as was experienced was insufficient to afford a clear idea of its Mammalian Fauna, so that few quadrupeds not of special faunal significance in the present connection will be alluded to.

One of the most interesting mammals encountered was the Porcupine (*Erethizon dorsatus*). The local distribution of this animal seemed to be but little influenced by altitude, and it was observed in the lower valley as well as at the mountain tops. On the occasion of my first visit several were met with about the summit of Slide Mountain, but the following year at the same spot none were to be found, and a necrology inscribed on a smooth log accounted for two victims, and was interpreted as a tale of the local disappearance of their race with the advent of thoughtless tourists. The next year, however, it was discovered not only that there were survivors, but that these were given to aggressive familiarity toward strangers. From evening till morning dusk our cabin on the extreme summit of the mountain was virtually besieged by them, and through the chinks their dark forms could be seen moving about among the shadows in the moonlight, while their sharp cries, and often low conversational chatter singularly like the voices of infants, were weird interruptions of the midnight silence, or later, of the moaning wind.

The seeming nocturnal temerity of these creatures appeared to be simply an exhibition of excessive stupidity. It was found impossible to drive them from the camp for any length of time; they seemed to be destitute of the faculty of memory, and even a light charge of shot sent among them was only for the moment effectual. Even when one particularly stupid individual had been shot dead in the doorway trying to effect an entrance by gnawing its way through a

gap, another, shortly after, continued the operation beside the lifeless body of its companion.

It seems probable that these singular rodents cannot long survive human settlement. Incapable of rapid motion they are easily approached, and their spiny armature, so potent a protection from their natural enemies, fails before the merciless power of man. In the isolation of the mountain top where we have just seen them, they appeared to be at a loss to understand the nature of their disturbers, and when met with showed little excitement, or anxiety to escape. Their greatest effort in this direction appeared to be leisurely shuffling out of the immediate way, often climbing with sluggish effort into a small balsam and composing themselves among the branches just out of easy reach.

An interesting interchange of animal forms between the highlands of this region and the lower country is remarked by Mr. Burroughs,* who speaks of the Little Gray Rabbit (*Lepus sylvaticus*) of the lowlands, being replaced by the Northern Hare (*Lepus Americanus*) on the mountains. The latter species, though long known to extend far southward in the Alleghanies, is characterized by the same writer as abundant in this section.† Testimony to the same effect was given by residents, and both species were said to occur together in certain parts of the valleys; but nothing further regarding them than the presence of both was determined by personal observation.

The most abundant animal appeared to be the Chipmunk (*Tamias striatus*) which was everywhere met with, even near the top of Slide Mountain. These little rodents probably constitute a large proportion of the prey of the rapacious birds inhabiting the region, which, however, do not appear to be many either in species or, excepting owls, in individuals. In a pellet of fur and bones from some bird of prey were the remains of one or more of these animals, and with them those of the Mole Shrew (*Blarina brevicauda*) were recognized by

* Wake Robin, ed. 1871, 42.

† Winter Sunshine, 1876, 65-66.

Dr. Fisher. Red Squirrels (*Sciurus Hudsonius*) were common, but the Gray Squirrel (*Sciurus Carolinensis*) was not observed. Inquiry elicited the information that it sparingly occurred on the mountains about the Big Indian Valley, and never in the black form, which, however, was common in an adjoining town. Bears were said to be common, and indications of their presence in "scratched trees" and torn ground were not infrequent.

A marked negative character in the Fauna and one bearing out its Canadian affinity is the scarcity of the *Testudinata*. In the case of certain aquatic turtles this is of course coincident with the scarcity of localities suited to their habits, but with the terrestrial species is undoubtedly the result of faunal restrictions. None, indeed, of the terrestrial forms were observed, nor could I learn of their presence, so that though the occurrence of at least one species is probable it certainly cannot be common.

Except in the case of a single species, a scarcity of *Ophidia* was also noticeable, and three serpents only were observed: the Striped Snake (*Eutænia sirtalis*), the Ring-necked Snake (*Diadophis punctatus*), and the Milk Snake (*Ophibolus doliatus triangulus*), and evidence gathered of the occurrence of one other. The former was the common serpent of the region and showed the impress of an environment diverse from that which dominates the species in the Lower Hudson Valley, in differences from the typical form there found which doubtless constitute the variety *ordinata*. Individuals, seen but not secured, at the highest altitudes at which the species was observed—about 3,000 feet—appeared to typically represent this race and were strikingly different from the striped forms, but others, captured in the valley, were less completely differentiated. A specimen of the Ring-necked Snake was found dead on June 12, 1880, containing five ova measuring .90 inches by .25–.30. This individual was of large size for the species, measuring eighteen and one-eighth inches in length. The residents were well acquainted with a "bright green" snake, without question *Liopeltis*. It was a common belief among

the inhabitants that Rattlesnakes do not occur where there is white ash timber, and I was assured that there were none nearer than Phœnicia, of about 800 feet elevation.

Of the *Batrachia* the following named species were observed :—

Rana clamitans Merrem.—Green Frog.

Rana Catesbiana Shaw.—Bull Frog; occurs about certain small lakes not distant from the Big Indian Valley, in which section it was not observed.

Rana temporaria sylvatica (Le Conte) Gthr.—Wood Frog.

Hyla Pickeringii Holbrook.—Hyla; Piping Tree Frog.

Bufo lentiginosus Americanus (Le Conte) Cope.—Common Toad.

Plethodon erythronotus (Green) Baird.—Red-backed Salamander.

Spelerpes bilineatus (Green) Baird.—Two-striped Salamander.

Spelerpes ruber (Daudin) Gray.—Red Triton or Salamander.

Desmognathus ochrophæa Cope.—Alleghany Mountain Salamander.*

In addition to these, *Amblystoma punctatum* (L.) Baird (Large Yellow-spotted Salamander), and *Diemyctylus miniatus* Raf. (Red Eft)† were brought by my brother (P. C. B.) from the same county.

*The only common name that I have seen used for this Salamander, "Yellow Desmognath" (Jordan's Manual), it seems undesirable to perpetuate. The animal is *not yellow*, and there is no reason why the surnominal appellation should not conform with that of other members of the same genus. For these reasons I have taken the liberty of using a common name based on the very characteristic distribution of the animal.

† Although this species has been regarded as merely a variety, or state, of *D. viridescens*, and recently developed facts (See *American Naturalist*, XII, 6, 399) have been construed as proof of its identity with that species, it is perhaps yet too soon for a final decision in the premises. I am induced here to retain the forms as distinct, from the fact of having dredged an individual of *miniatus* from a pond containing abundance of *viridescens*; both animals under these common conditions remaining obviously different. The specimen referred to was taken from a depth of over two feet of water, and showed indications of activity of the procreative functions. The pond where it occurred was well shaded, with dark water and muddy bottom, and naturally the influence of these conditions was expressed in the color of the animal. This was unusually dull with little obvious reddish tinge, and a careless glance might have referred the specimen to *viridescens*; but a difference in the texture and appearance of the skin, and a slenderness and delicacy of general form at once proclaimed the difference, which comparison emphasized.

The notes of *Hyla versicolor* Le Conte (Common Tree Toad) were heard from the train on the way into the mountains, but this species appeared to be absent from the higher parts of the region.

Along the borders of Esopus Creek *Spelerpes bilineatus* was found to be common, and its larvæ were numerous among the stones at the shallow margin. One individual was taken at an elevation of nearly 2,700 feet. Extending to a still greater altitude—nearly or quite a thousand feet higher—occurred that high northwardly extending Salamander, *Plethodon erythronotus*, of which several specimens were unearthed. In one example the red color of the dorsal aspect was of a brighter and more pink shade than is common, and seemed to have burst out laterally from the conventional dorsal band, invading the dusky color of the sides, running out on the limbs and passing almost around the neck. That characteristic Alleghany Mountain Salamander, *Desmognathus ochrophæa*, was found in abundance near Pine Hill exhibiting great variation in color. In some fresh examples the yellowish-brown coloration of the upper surface had a peculiar satiny or metallic lustre, closely resembling the color of old gold. This same characteristic of coloration is often seen in *Spelerpes bilineatus*, rendering the singular general resemblance between these species still more close.

The mountain streams abounded with Brook Trout, but no other fish large enough to take the hook was noticed beyond, about, 1,600–1,700 feet elevation, though, as no special search was made, small species could easily have been and doubtless were overlooked. The little Black-nosed Dace (*Rhinichthys atronasus*) ascended however to about the elevation named, and several common fishes were reported from the stream in the main valley.

Although it was intended to limit this cursory survey of faunal characteristics to the vertebrates, we may pause for a brief glance at the Molluscos Fauna of the region, which differs strikingly from that of the Lower Hudson Valley at New York City. In general it may be said that the more conspicuous species of land-shells most

abundant in the mountains occur rarely, or not at all, in the latter section, and the converse is also, in a measure, true. Indeed, several genera, or subgenera, of each region are unrepresented in the other. Twenty-one species of land, and two of fresh-water mollusks which were collected, are named as follows by Mr. Henry Prime of Riverdale :

<i>Macrocyclis concava</i> Say,	<i>P. striatella</i> Anth.,
<i>Zonites fuliginosus</i> Griff.,	<i>Tebennophorus Carolinensis</i> Bosc.,
“ <i>ligerus</i> Say,	<i>Helicodiscus lineatus</i> Say,
“ <i>inornatus</i> Say,	<i>Pallifera dorsalis</i> Binn.,
“ <i>arboreus</i> Say,	<i>Stenotrema monodon</i> Rack., and
“ <i>indentatus</i> Say,	var. <i>fraterna</i> ,
“ <i>minusculus</i> Binn. (?),*	<i>Mesodon albolabris</i> Say,
“ <i>Binneyanus</i> Morse,	“ <i>dentifera</i> Binn.,
“ <i>exiguus</i> Stimpson,	“ <i>Sayii</i> Binn.,
“ <i>fulvus</i> Drap.,	<i>Succinea obliqua</i> Say,
“ <i>multidentatus</i> Binn.,	<i>Physa heterostropha</i> Say,
<i>Patula alternata</i> Say,	<i>Anodon Benedictii</i> Lea.

This collection was made without systematic or extended search, and, though it is to be considered as reasonably representative of the immediate localities explored, must necessarily be too imperfect for a broader application.

Although justice cannot here be done to the Flora of the region it should not be passed over without some allusion to its decidedly Canadian characteristics. These, and the abrupt physiographical changes from contiguous regions which they represent, cannot be more clearly brought out than by comparison, and to this end the Flora of the vicinity of my own home at Riverdale-on-Hudson may be considered in counterview. The Flora of this section may be regarded as fairly representative of that of the Hudson Valley for some distance above New York City, and is far less southern in character than that of the coast region of New York and New Jersey,

* Specimen too fragmentary for positive identification.

not many miles below, where numerous species occur, many in abundance, which do not reach the Hudson Valley. Although many plants absent from this locality have been recorded from points at no great distance, the fact of their non-occurrence over a certain diversified tract shows them to be not of general distribution, and it would obviously tend to a false result to include other than well-represented species in a comparison of general features.

The deciduous forests of that section of the Catskills under consideration are largely composed of hard maple, beech, and birch; the oaks, hickories, and chestnuts of the lower country gradually disappearing with increasing elevation, a few stragglers only of some of these trees penetrating the region through the main valley, and none occurring in the mountain forests.

Whatever invasion there has been of the vegetation of the lower country into the mountains has without doubt been assisted by involuntary human agency, for the influence that has resulted in the introduction and naturalization of many foreign plants along the railroad and about the villages, and the effects of which are often recognized remote from human settlement, cannot have been inoperative with native vegetation.

The many familiar introduced plants abounding near the railroad, and in populated sections, affords a feature of correspondence with the Flora of the Lower Hudson Valley, but in ascending the secondary valleys, the true Flora of the region appears with gradually increasing purity, and in those portions remote from settlement, and in the mountains, the contrast between the vegetation of these adjoining districts is most striking. A more detailed comparison will show that this contrast is caused more by the absence in the vegetation of the mountains of genera and species which abound in the Hudson Valley, than by the addition of forms not found in the latter region. In the arboreal vegetation of the mountains the following genera of trees, which constitute the most conspicuous and important elements of the Hudson Valley woodland, are not represented: *Liriodendron*,

Liquidambar, *Nyssa*, *Sassafras*, *Celtis*, *Morus*, *Carya*, *Quercus*, *Castanea*, *Juniperus*, *Platanus*.* On the other hand, one of the most abundant and characteristic forest trees of the mountains, the Yellow Birch (*Betula lutea* Michx.), extends only as a chance straggler into the lower country. This species, however, among the deciduous trees, and the Balsam Fir and Black Spruce (*Abies balsamea* Marshall, and *A. nigra* Poir.) among the evergreens, were the only larger trees which the contrasted Flora does not also possess. Continuing the list of important absences from the mountain Flora, the following genera and species of smaller trees, shrubs, and woody plants may be mentioned: *Euonymus*, *Cornus florida* L., *Viburnum prunifolium* L., *Vaccinium vacillans* Sol., *Leucothoe*, *Andromeda ligustrina* Muhl., *Clethra*, *Azalea viscosa* L., *Lindera*, *Myrica*, and *Alnus serrulata* Ait.

Of the arborescent and woody vegetation of the mountains the following species I have never observed about Riverdale: *Acer Pennsylvanicum* L., and *A. spicatum* Lam., *Pyrus Americana* DeC., *Amenanchier Canadensis oligocarpa* Gray, *Ribes Cynosbati* L., *R. rotundifolium* Michx., *R. lacustre* Poir., *R. prostratum* L'Her., and *R. hirtellum* Michx., *Lonicera ciliata* Muhl., *Sambucus pubens* Michx. (occurs on Palisades in Lower Hudson Valley), *Viburnum nudum cassinoides* Gray, *V. opulus* L., *V. lantanoides* Michx., *Rhododendron maximum* L., *Ilex lævigata* Gray, *Corylus rostrata* Ait., *Taxus baccata Canadensis* Gray, *Nemopanthes Canadensis* DeC.

The foregoing comparison is, of course, merely a superficial one dealing only with more prominent species, and many other names might have been mentioned.

More than three hundred and twenty-five species of trees and plants, exclusive of Vascular Cryptogams, were observed during my stay in the mountains, and of these the names of some seventy-five do not appear on my records of the Riverdale Flora. Nearly fifty of the number mentioned, however, are not indigenous to the region,

* Representatives of the latter five were noticed sparingly in the main valley, but did not occur in the mountains.

and leaving these out of consideration, together with the species of *Cyperaceæ* and *Gramineæ*, for, at the time of my visits, owing to their immaturity, few but the most familiar species of these orders were to be recognized, we find nearly one-third of the indigenous Flora to be different from that of the region with which it is compared.

Reversing the comparison it appears that of over three hundred indigenous Phanerogams which, in the less elevated region, come into flower prior to the end of June, nearly two-thirds were not found in the Catskills. Not having visited any bodies of water in the latter region, restricted aquatic species have not been allowed to figure in the enumeration.

Among the characteristic plants of the Catskills, such northern species as most of the following occur, many in abundance: *Coptis trifolia* Salisb., *Actæa spicata rubra* Michx., *Dicentra Canadensis* DeC., *Arabis perfoliata* Lam., *Viola rotundifolia* Michx., and *V. Canadensis* L., *Claytonia Caroliniana* Michx., *Geranium Robertianum* L., *Impatiens pallida* Nutt., *Oxalis acetosella* L., *Geum rivale* L., *Fragaria Virginiana* Ehrhart, and *F. vesca* L., *Rubus odoratus* L., *R. triflorus* Rich., and *R. strigosus* Michx., *Tiarella cordifolia* L., *Mitella diphylla* L., *Circæa alpina* L., *Epilobium spicatum* Lam. (= *E. angustifolium* L.), *Archangelica atropurpurea* Hoffm.,—abundant along the railroad before entering the mountains; *Aralia racemosa* L., *A. hispida* Michx., *A. nudicaulis* L., and *A. quinquefolia* Gray, *Cornus Canadensis* L., *Lonicera ciliata* Muhl., *Diervilla trifida* Moench, *Galium lanceolatum* Torr., *Aster acuminatus* Michx., *Solidago thyrsoidea* E. Meyer, *Trientalis Americana* Pursh, *Veronica Americana* Schw., and *V. officinalis* L., *Polygonum cilinode* Michx., *Calla palustris* L., *Habenaria viridis bracteata* Reich., *Trillium erythrocarpum* Michx., *T. erectum* L., *Veratrum viride* Ait., *Streptopus amplexifolius* DeC., and *S. roseus* Michx., *Clintonia borealis* Raf., *Smilacena bifolia* Ker., *Luzula parviflora* Desv., *Carex vitilis* Fr., *C. Deweyana* Schw., *C. arctata* Boot, *C. plantaginea* Lam. and *Careyana* Torr., which are per-

haps closer than specifically related, *C. pallescens* L., and *C. scabrata* Schw., and *Poa alsodes* Gray.

Of twenty-seven species of Ferns (including *Ophioglossaceæ*) which were noted (a number of others have been reported from different localities in the Catskills) ten do not occur about Riverdale, and one, *Aspidium aculeatum Braunii* Koch, discovered in Greene County on June 14, 1880, in "Deep Hollow,"—a steep defile where the winter's ice was yet lingering in the recesses of the rocks,—although before found in the Catskills, has been reported farther south only from a single locality in the mountains of Pennsylvania.

Some plants find their extreme southern limit, so far as known, in these mountains, while others which assist in bearing out the northern aspect of its Flora are known to extend along the higher peaks of the Alleghanies into the Southern States.

In passing from the valleys into the mountains it was interesting to observe of plants of general distribution how much less advanced was their seasonal condition as the elevation increased. The extremes of this contrast, as shown by the vegetation at the summit of Slide Mountain and that of the valleys below, was most striking. Some species which in the valleys had ceased flowering and were bearing green fruit were still in full bloom at the mountain tops, while others in like condition in the valleys and on lower slopes, on the mountains had not advanced beyond their earliest buds. In the case of generally diffused species this retrogressive gradation in seasonal condition with increasing altitude was, of course, complete.

Professor Chas. H. Peck has somewhere recorded* the fact that many swamp-loving plants grow upon the higher mountains of the Adirondacks, the necessary condition of moisture being supplied by the frequent presence of clouds and the increased precipitation on the elevated summits. The same fact was observable in the Catskills,

* Since this was written I have received from Prof. Peck a paper entitled, "Plants of the summit of Mount Marcy," from the seventh report of the Adirondack survey by Verplanck Colvin, in which the facts here referred to are repeated, pp. 405-406.

and most strikingly illustrated by that well-known swamp plant, the White Hellebore (*Veratrum viride* Ait.). This plant was observed in low damp woods in the valleys, and along the streams, and again, nearing the summit of Slide Mountain where it was growing in some profusion. Close around the summit, too, were found, growing in abundance upon the carpeting of wet moss, plants which at a less elevation were rare or altogether absent, owing, obviously, to the scarcity of suitable swampy land. Thus, *Coptis trifolia*, which had not been noticed lower was abundant. *Viburnum* 'cassinoides, elsewhere met with only in a small marsh at an elevation of about 1,900 feet, here reappeared, as well as *Viola blanda* Willd., *Carex intumescens* Rudge, and other plants less distinctly confined to wet and marshy situations.

I am not aware that the fact of high mountain summits simulating the conditions of swampy lowland has ever been recognized as a factor of special influence in the distribution of vertebrate life; but it certainly appears to be thus resultant, at least in certain cases, with birds. Besides abundant moisture supplied by enveloping clouds and active precipitation, which completely saturates and is long retained by the deep beds of moss among the rocks, the analogy is further borne out by resemblances in the general character of the vegetation, especially as contrasted with the surroundings. Instancing the case of the summit of Slide Mountain, we see imitated not alone the conditions but also the general features of low marsh land. The largest trees are of very moderate size, and the prevailing growth is of Canada Balsams of most diverse age, stature, and vitality. In their exposed situation these trees, from a vigorous youth, seem rapidly to decline, retaining but a weak and precarious hold on life, and many have succumbed, gnarled and distorted from their struggles with the elements. Interspaces thus opened in the general growth admit the sunlight to an undergrowth of moss, ferns, mountain plants, and occasional shrubbery. That conditions obtaining at high altitudes similar to those of the mountain top now under con-

sideration are not without special influence on avian life can scarcely be doubted; and it seems highly probable that, in the case of several species found about the summit referred to, and not elsewhere in the same region, that their presence was due not alone to the altitude *per se* but also to the collateral conditions above depicted.

Passing up the mountain side few birds were observed, but when the high ridge leading to the summit was gained their numbers increased, and about the summit the following species were noted :

Olive-backed Thrush,	Black-throated Green Warbler,
Bicknell's Thrush,	Mourning Warbler,
Hermit Thrush,	Purple Finch,
Winter Wren,	Red Crossbill,
Black-capped Chickadee,	Slate-colored Snowbird,
Canada Nuthatch,	Blue Jay,
Brown Creeper,	Yellow-bellied Flycatcher,
Yellow-rumped Warbler,	Hairy Woodpecker,
Black-and-yellow Warbler,	Red-tailed Hawk.
Black-poll Warbler,	

It seems strongly probable that the presence of some of these birds was governed, in a measure at least, by the dampness and humidity of the situation. From what is known of the breeding habits of the Black-poll Warbler and the Yellow-bellied Flycatcher, it seems evident that low swampy situations are their favorite haunts during their season of reproduction; and it is probable that considerations of humidity in surroundings influence, in a greater or less degree, others of the species mentioned in the choice of a breeding resort.

That so many birds should have found their way to so remote and isolated a situation when it is not probable that all reached it by direct migration, is an interesting fact, and may for a moment be dwelt upon. In a recent paper by the writer* allusion is made to the gradual awakening of the birds at the top of Slide Mountain.

* Previously cited.

In watching, as there related, from the first ray of dawn on an elevated summit the effect of the gradually increasing light upon bird life, the thought is naturally suggested that, the light of morning reaching first the mountain tops thence gradually descending, not improbably exerts an influence in attracting avian-life to high summits; for at the early hour at which they stir, the birds, it would seem, must unconsciously be guided upward toward light rather than downward toward darkness.

The longer period of daylight, also, upon high as compared with lower elevations, furnishes another point of similarity between such situations and the northern habitats of those species which extend southward on mountain ranges.

This difference in the length of the period of daylight in valleys and on mountains is not improbably a cause of some variation in color of species inhabiting both situations; and from the known effect of the action of light on organic color, the varying period of light in different regions would seem properly to be a matter for consideration in connection with the subject of geographical variation of species, as well as their seasonal movements. In regions where occur great seasonal changes of light, there, also, take place the most complete seasonal color-changes in resident animals.

Before passing to a formal consideration of the birds of the region a few remarks upon the subject of its Avi-fauna in general will not be out of place.

Although along the more cultivated portions of the valleys the familiar birds were not different from those which abound at the same season in the valley of the lower Hudson, a marked difference in the Fauna resulted from the absence or rarity of many species common in the latter region. Aside from those southern species now well known to characterize the Fauna of the lower Hudson Valley, but which would obviously be excluded from this territory, there were absent other species, less definitely restricted in their northward range, as well as certain Alleghanian forms which, from the latitude

and moderate elevation, might reasonably be expected to occur. Though some of these deficiencies are doubtless, in part, due to causes other than those acting directly on the physical organization, they furnish the investigator entering the region the first insight into its true faunal character.

Passing along the Big Indian Valley, among the songs of the common birds along the way there were missed the notes of such familiar species as: the Brown Thrush, the Warbling, Yellow-throated, and White-eyed Vireos, the Chèwink, the Meadow Lark, the Great-crested Flycatcher, and the Orioles and Cuckoos. Some of these species were sparingly represented in the main valley, but none appeared to regularly extend into the secondary valleys at this portion of the region. Other familiar species, of which mention is made beyond, although somewhat generally distributed were not abundant and were rather restricted in their local distribution. Of the familiar birds, one only, the Cliff Swallow, seemed to be more abundant than in the region with which I have compared this. This bird, from its numbers and domestic habits, was conspicuous and well-known all along the valley, and far outnumbered the Barn Swallow, the only other species which occurred.

Another feature to be noticed in this hasty comparison was a local variation in the habits of some of the birds between this and other, more settled, districts. Certain species which, closer to civilization, are more or less familiar and confiding in disposition, often making their abode in the close vicinity of man, here were rarely found about human habitation, although well represented in the wilder portions of the valleys or even in the mountains. This was very noticeable in the cases of the Wood Thrush, Scarlet Tanager, and Golden-crowned Thrush; and less so with the House Wren, Purple Finch, Least Flycatcher, and other species. In the case of the Wood Thrush these habits seemed to be quite general throughout, but with most of the other species appeared to be more or less local, seeming to be directly dependent on the extent of settlement. Thus about the vil-

lages of Pine Hill and Big Indian, some of the named species were somewhat common and familiar, while in the main valley where the settlers' cottages were few and scattered their habits were as above indicated.

These facts seem to show a tendency toward primitive habits so long as the original and natural predominate over the artificial in surroundings, and the adoption of artificial habits (if the term may be employed) when similiar conditions prevail.

Ere proceeding with the individual treatment of the birds observed it may be well to glance at the character of the lowland between the mountains and the Hudson, at the same time remembering that along the valley of this river, not many miles farther down, occur, as regular and, in most cases, common summer residents, such species among the land birds as: the Worm-eating, Blue-winged Yellow, Golden-winged, and Hooded Warblers (*Helminthotherus vermivorous*, *Helminthophila pinus*, *H. chrysoptera*, and *Myiodiotes mitratus*), the Yellow-breasted Chat (*Icteria virens*), the Large-billed Water Thrush (*Siurus motacilla*), the Rough-winged Swallow (*Stelgidopteryx serripennis*), and, less commonly, other species of limited northward range.*

In correspondence from Mr. John Burroughs, the following species are given as occurring at Esopus-on-Hudson, but not inland among the mountains:—

White-eyed Vireo (*Vireo Noveboracensis*). Common.

Fish Crow (*Corvus maritimus*).† Common; breeds.

Chewink (*Pipilo erythrophthalmus*). Common.

Great Crested Flycatcher (*Myiarchus crinitus*). Breeds.

Orchard Oriole (*Icterus spurius*). Breeds.

Mourning Dove (*Zenaidura Carolinensis*). Common.

* See "A List of the Birds of Hudson Highlands," by E. A. Mearns (Bulletin Essex Institute, vols. X-XIII).

† The Fish Crow has not before been reported from so far north in this State, and in reply to inquiries concerning its occurrence, Mr. Burroughs sent me the following particulars: "The Fish Crow

Mr. Trippes' note, already referred to, on "Birds found breeding in the Catskills," makes mention of the following species, all of which are further considered beyond: *Regulus satrapa* (Golden-crested Kinglet), *Sitta Canadensis* (Canada Nuthatch), *Anothura 'hyemalis* (Winter Wren), *Dendræca Canadensis* = *D. cærulescens* (Black-throated Blue Warbler), *Dendræca coronata* (Yellow-rumped Warbler), *Dendræca virens* (Black-throated Green Warbler), *Junco hyemalis* (Slate-colored Snowbird).

The wide faunal diversity between continue regions indicated in the above comparison of characteristic birds, is called for by the complete and abrupt physiographical changes which give rise to the Catskill range, the eastern end of which "stands isolated on three sides by deep and broadly open valleys, as a mighty promontory, to within ten miles of tide water in the Hudson River."

How far southward the Fauna of the Alleghany range preserves the Canadian characteristics possessed in the Catskills, and under what restrictions and modifications, is an interesting question; but the reply is not yet, although scattered notices of the occurrence in summer and, in some cases, the breeding of birds southward of their usual range, in the Alleghanies, allow an insight into what it will be.

Apropos to this subject are some remarks by Professor E. D. Cope in a paper entitled "Observations on the Fauna of the Southern Alleghanies":*

"In Giles County, E. Virginia, at an elevation of five thousand feet, I observed in August, 1867, the following species of birds: *Junco hyemalis*, *Dendræca icterocephala* [= *D. Pennsylvanica*] *D. Blackburniæ*, *D. cærulescens*, *D. maculosa*, *D. virens*, *Myiodiotes Canadensis*, *M. mitralus* [sic], *Parula Americana*, *Mniotilta varia*,

is common here [Esopus] and annoys me much by robbing birds' nests. Last summer [1881] a pair built their nest in a Norway spruce that stands in a thick grove near a gentleman's country house adjoining my place." I am myself almost positive of having seen one of these Crows, in June, near Rondout, perched upon a spile far out in the here shallow river; and also feel almost satisfied that, on different occasions, I have seen the Rough-winged Swallow at the same locality, where undoubtedly it occurs.

* American Naturalist, IV, 7, 395-399, September, 1870.

Setophaga ruticilla. From the season at which these were observed, they evidently bred in the locality in question. They were most of them abundant.

"In the high valley of Henderson County, and on the Black, Rich, and other mountains in southern North Carolina, in September, 1869, I observed the following: *Junco hyemalis*, *Vireo solitarius*, *Dendræca coronata*, *D. maculosa*, *D. virens*, *D. cærulescens*, *D. Blackburniæ*, *Parula Americana*, *Mniotilta varia*, *Myiodioctes mitratus*, *Setophaga ruticilla*. These were also abundant, and no doubt bred in the localities in question."

Of the species mentioned of any direct value to the present consideration, the only one which has actually been ascertained to breed with regularity in the southern Alleghanies is the Slate-colored Snowbird. Although it is very probable that with this species are associated in the breeding season most of the others mentioned, the evidence quoted is hardly sufficient to establish this. Again accepting the Snowbird and, of the latter enumeration, the Blue-Headed Vireo and Yellow-rumped Warbler in addition, all the species mentioned,—contrary to what most published records of migrations would lead us to suppose, but which data is at hand abundantly to prove,—enter upon their southward migration in August, most of them, indeed, so early as the middle of that month; therefore, the fact of the occurrence of any of these birds in the late summer or early autumn in the southern Alleghanies is by no means conclusive evidence that they have bred there.

Most of the birds referred to, however, have been recorded as breeding in southern Pennsylvania, although the fact appears to have been very generally overlooked. In the Bairds' "List of Birds found in the vicinity of Carlisle, Cumberland County, Penn., . . . ".* the following named species, of interest to the present consideration,

* Sillim. Am. Journ., XVI, 1844, 261-273.

are marked as breeding :—

<i>Sylvicola pardalina</i> Bon.	=	<i>Myiodioides Canadensis</i> Aud.
“ <i>virens</i> Lath.	=	<i>Dendræca virens</i> Baird.
“ <i>Blackburnia</i> Lath.	=	“ <i>Blackburniæ</i> Baird.
“ <i>icterocephala</i> Lath.	=	“ <i>Pennsylvanica</i> Baird.
“ <i>Canadensis</i> Lath.	=	“ <i>cærulescens</i> Baird.

Vireo solitarius Vieill.

Picus varius L. = *Sphyrapicus varius* Baird.

A distinct Canadian element in the Fauna of the south Pennsylvanian Alleghanies is thus shown.

The facts hereinbefore narrated regarding the animal and vegetable life of the Catskill Mountain region are sufficient for a tolerably full understanding of the faunal character of this geographical tract. Considered in its entirety, the region, though of limited extent, cannot be said to pertain exclusively to any minor Faunal Province,—the totality of its life cannot be summed up in a single abstract term expressive of a distinct zoö-geographical relation. Between the Hudson River and the mountainous parts of the region, where we can recognize the influence of three distinct Faunæ, one only can be considered to prevail in its integrity at any single point. This is the Alleghanian, and extends over all the less elevated country. In the lowland along the Hudson it is perceptibly modified by a southern element introduced with certain species which extend up from the lower part of the valley of that river where the influence of the Carolinian Fauna is so strongly impressed, but passing inland this Carolinian affinity is gradually lost, the Alleghanian Fauna, true and untainted, succeeding, spreading over the greater part of the region and passing into and up the valleys in its invasion of the mountainous sections, but in its turn gradually giving way to a still more northern Fauna,—the Canadian; it is not, however, before the high mountain elevations are gained that this Fauna has completely succeeded and all traces of the Alleghanian, as such, are obliterated. But even at the highest altitudes the Canadian Fauna, although taintlessly, is not fully represented, for some of the most character-

istic Canadian birds undoubtedly never occur. But these are non-migratory species, and it becomes plain, with this fact in view, that the limited extent and isolation of the Catskill region renders their absence in the face of favorable conditions easily explicable. The higher mountain Fauna of the Catskills may therefore be regarded as purely Canadian in character.

Between those altitudes where these simplified faunal conditions prevail and the lower valleys, we may trace the two approximating Faunæ in every degree of union. The result is that we find species of totally different distributional relationship occupying the same ground. This is easily illustrated: While such species as the Winter Wren, Black-throated Blue, Black-and-Yellow, Mourning, and Canadian Fly-catching Warblers, Blue-headed Vireo, and Slate-colored Snowbird, occur certainly as low down as 1,500–1,600 feet, species of much more southern distribution, as the Chewink, Field Sparrow, House Wren, Wood Thrush, Indigo Bird, Large-billed Water Thrush, and Bluebird (named approximately in the order of their altitudinal limitation from below upward) extend to an altitude of from 2,000 to perhaps 2,500 feet.

Further details regarding the local distribution of species appears in the following review of the birds, in which, with respect to a very limited portion (already defined, page 117) of the great Appalachian Mountain system, the facts regarding the summer Avi fauna will, so far as brief but continuous and careful observation could discover them, be presented.

As has already been said, the geographical scope of the present paper is restricted to the southern Catskills. But as this section of the region can claim the highest of the mountains, it seems probable that few if any birds of the Canadian Fauna are regular summer residents in the northern Catskills which do not also occur in the southern.

Unless otherwise stated, all references to the region are to the Big Indian Valley and the adjoining mountain slopes in Ulster County, the whole section being included in the township of Shandaken.

THE SUMMER BIRDS OF THE SOUTHERN CATSKILL MOUNTAINS.

FAMILY TURDIDÆ: THRUSHES.

The summer Fauna of the Catskill region lacks but two members of this family of the full number of its species pertaining to the Eastern Faunal Province of the United States, viz.—the Mocking-bird (*Mimus polyglottus* Boie.) of more southern, and the Gray-cheeked Thrush (*Hylocichla Aliciæ* Baird) of more northern breeding range.

It can be said of no other region of such limited extent, that all eastern representatives of the genus *Hylocichla*, excepting of course true *H. Aliciæ*, are found as summer residents within its borders; much less that they all breed within an area of a few miles. Among the Catskills we find in the valleys, *H. mustelina* and *H. fuscescens*, on the mountains, *H. 'nanus* and *H. 'Swainsoni*, while *H. 'Bicknelli* inhabits one if not others of the higher peaks.

Hylocichla mustelina (Gm.) Baird. Wood Thrush.

Apparently not uncommon, but showing none of the confidence or familiarity which characterize it in other, more settled, regions. Here it was found to be a shy, retiring inhabitant of the woodland along the valleys and lower slopes, and except in the morning and evening hours its song was not often heard. Once only was it found high on the mountains. This was at an elevation of perhaps 2,500 feet, where the refrain of a most accomplished singer reached me simultaneously with the wilder melody of the Winter Wren.

Mr. Pearsall discovered two nests, completed but without eggs, June 12.

Hylocichla fuscescens (Steph.) Baird. Wilson's Thrush.

Common along the water-courses in the valleys and in damp woody tracts on the lower slopes of the hills, but not noticed at a greater elevation than about 2,000 feet.

A nest discovered near Summit, June 7, 1880, contained two eggs, and the following day a third had been deposited. The situation and position of this nest were rather unusual. It was built near the border of a wood containing little undergrowth, and placed at a height of about three feet, on the stumps of several closely clustered saplings which, having been chopped into and incompletely severed, had fallen over on one side. In the Big Indian Valley, Mr. Pearsall discovered seven nests; the first June 3, with two eggs, the last June 12, with three eggs, both sets being fresh; the largest set observed was of four eggs—June 10. Without exception these nests were

placed "about six inches to a foot above the ground, fixed upon some dead branch or in a patch of fallen branches, generally but little concealed."

***Hylocichla Aliciaë Bicknelli* Ridgw.** Bicknell's Thrush.

Regarding this Thrush little at present can be said beyond what has already been made public—by Mr. Ridgway in his introduction of the bird,* and by the writer in the paper previously cited. Since the latter appeared, however, the Slide Mountain was again visited by the writer, in company with Dr. A. K. Fisher, and the bird met with as before; but although a night was passed on the mountain, and an afternoon and morning spent in exploration, with this bird directly in view, a single specimen only was secured. This result was owing to the difficulty of detecting the birds in the dense balsam growth they principally inhabited before they had been startled by the unavoidable sound of approach; and not seldom were they heard singing at close quarters as secure as if out of range. Although no one of this species was actually identified in the act of singing, circumstantial evidence seems demonstrative that a song must be attributed to it which was neither that of the Hermit, or Olive-backed Thrush,—at least, differed from the usual songs of these species, both of which were to be heard singing at the same time,—but was very similar to that of the Gray-cheeked Thrush, as the latter is heard on its spring migration. This granted, the bird may be considered common about the mountain top. The songs referred to were, in fact, like that, as I recalled it, of the type specimen of *H. 'Bicknelli*, which was shot while singing.

The dimensions of the single specimen secured agree closely with those of the two which were previously taken, and are as follows in inches and hundredths: length, 7.22; wing, 3.60; tail, 2.90; tarsus, 1.20; middle toe, .67; bill, culmen and from nostril, .53–.38. The length of the original Slide Mountain specimens was 7.28 and 7.40 inches, but the latter figures are excessive as the bird was limp when measured. The singular shape of the bill of these specimens which was remarked upon by Mr. Ridgway, does not hold with the latest taken example. In this, the bill, as compared with the former, is less slender, with the base of the culmen instead of being depressed plainly elevated in outline, so much so, indeed, as to suggest an abnormality.

***Hylocichla ustulata Swainsoni* (Cab.) Ridgw.** Olive-backed Thrush.

Not uncommon on the mountains, especially in the balsam woods of the Slide, and in full song. An adult male taken at the top of

* "Descriptions of two new Thrushes from the United States." Proceedings U. S. National Museum, IV, 374-379.

Slide Mountain, June 15, 1881, and two taken on the same mountain by Mr. Pearsall, June 7, 1882, are perfectly typical of the species and manifestly distinct from the preceding. In connection with the latter their dimensions are of interest and are appended, in inches and hundredths :—

Ad. ♂ June 7, '82—wing, 4.15; tail, 3.10; tarsus, 1.03; middle toe, .65; bill, culmen and from nostril, .49-.37.

Ad. ♂ June 7, '82—wing, 3.90; tail, 3.00; tarsus, 1.10; middle toe, .68; bill, .48-.37.

Ad. ♂ June 15, '81—wing, 3.85; tail, 2.87; length of this specimen in the flesh, 7.10.

It is possible that the earlier taken of these specimens were late migrants representative of a more northern habitat; certainly they do not show the reduction from maximum specific size that we should expect to find in individuals from the southern limit of the breeding range of their species. But with this bird decrease of latitude seems to be nearly compensated by moderate increase in altitude, and a specimen from another locality at the southern breeding limit of the species is rather over than under the average size. This was taken by my brother (P. C. B.), in the western part of the State (Allegany County) at about the same latitude as the Catskills, and gives the measurements here recorded in the order previously followed :—

Ad. ♂ ? July 19, 1871—3.92, 3.00, 1.08, .68, .51-.37.

I have elsewhere alluded to a Thrush's nest taken at the top of Slide Mountain which, containing blue brown-speckled eggs, may have belonged either to *H. 'Swainsoni* or *H. 'Bicknelli*. Notwithstanding the uncertainty as to the identity of this nest a brief description may be not without interest. It was built upon some lateral branches of a young balsam, close to the trunk, about seven feet from the ground. Moss had been largely used in the external construction with plant stems and some dead leaves, the interior being finished with a lining of black rootlets. Several nests of the previous year were similar to this, both in position and construction.

The three eggs were fresh and measured respectively : .82 x .63, .82 x .64, .81 x .65. These dimensions appear to be much smaller than the average of those of *H. 'Swainsoni*, and smaller than any minimum measurements of those of either this species or of *H. Alicia* that I have seen. While one is nearly elliptical the others are more ovate in outline, and all differ in shade and markings; but from the uncertainty of their ownership further description is not called for. A nest, supposed to be of *H. 'Swainsoni*, was discovered near Slide Mountain by my brother (P. C. B.), on June 26, 1873, which was built about fifteen feet from the ground in a small beech-tree, and

contained young and a single spotted egg. The latter, still in my possession, though in a fragmentary condition allows a measurement of .66 of an inch in transverse diameter.

Hylocichla unalascae nanus (Aud.). Hermit Thrush.

Mr. Burroughs' remarks upon this Thrush (Wake Robin, p. 51) indicate it to be a not uncommon summer resident of this region; and undoubtedly it is somewhat generally distributed at suitable places on the mountains, although apparently absent from the valleys.

Its song was frequently heard from elevated balsam woods, and high on the Slide Mountain a specimen was secured. Being representative of the more southerly breeding individuals of its species the measurements of this bird are appended:—

Ad. ♂ June 25, 1881—length, 7.10; wing, 3.52; tail, 2.85; tarsus, 1.17; mid. toe, .66; bill, culmen and from nostril, .53–.38.

Merula migratoria (L.) Sw. & Rich. Robin.

Common; their songs at daybreak showing them to be much more so than observations at a later hour indicated. Two nests—June 6 and 13, 1880—both but a few feet from the ground in small trees by the roadside, contained young almost able to fly.

Mimus Carolinensis (L.) Gr. Cat-bird.

Common along the more cultivated parts of the valley, a few extending into the wilder portions about shrubbery bordering the way and the woods.

Harporthynchus rufus (L.) Cab. Brown Thrush.

Mr. Pearsall observed a single individual of this species in the lower part of the Big Indian Valley, though I failed to find it outside of the main valley, where two were noted.

FAMILY SAXICOLIDÆ: STONECHATS AND BLUE-BIRDS.

Sialia sialis (L.) Hald. Bluebird.

Abundant along the line of the railroad, numbers being startled from the telegraph wires by the passing train. Less common in the Big Indian Valley, where a brood, noticed on June 11, 1881, were stated to have been in their nest, in a hollow stump, a few days previously.

FAMILY SYLVIIDÆ: TRUE WARBLERS—KINGLETS.

Regulus satrapa Licht. Golden-crowned Kinglet.

Mr. T. Martin Trippe states* that he found this species breeding in the Catskills, and says of it: "The golden-crested wren, I noticed only on the summits of Round Top, and one or two others of the highest peaks. On the eighth of July, I saw several young birds apparently not many days from the nest. They were attended by their parents and hid themselves from observation amid the densest hemlock boughs. At times the old birds uttered a lisping sort of warble, beginning like that of *Dendroica striata* but winding up with a few sprightly notes similar to those of *D. virens*. The young had no notes save the usual faint chirp." Near the summit of Slide Mountain in 1880, I felt almost positive of seeing this species, but failed to get as satisfactory sight or to secure a specimen. On subsequent visits to the same mountain, although looked for, none were observed.

FAMILY PARIDÆ: TITMICE OR CHICKADEES.

It is hardly to be presumed that the Hudsonian Chickadee (*Parus Hudsonicus* Forst.) ever occurs in summer so far south as the Catskills.

Parus atricapillus L. Black-capped Chickadee.

Noted at various places from the valleys to the mountain tops.

FAMILY SITTIDÆ: NUTHATCHES.

Sitta Carolinensis Gm. White-bellied Nuthatch.

Seemingly not common: observed on three occasions only. A pair followed by their young were seen near Summit, June 7, 1880.

Sitta Canadensis L. Red-bellied Nuthatch.

Inhabiting the stricken growths of Canada balsams upon the wild slopes of Slide Mountain, this species was met with from an altitude of about three thousand feet up to the extreme summit, where its characteristic notes were frequently heard.

FAMILY CERTHIIDÆ: CREEPERS.

Certhia familiaris rufa (Bartr.) Ridgw. Brown Creeper.

Observed at different localities on Slide Mountain, almost to the summit.

* Loc. cit.

FAMILY TROGLODYTIDÆ: WRENS.

Naturally the Long-billed Marsh Wren (*Telmatodytes palustris* Baird) is wanting in the Catskills; though sections inhabited by it are plainly visible from the mountain tops.

The Short-billed Marsh Wren is of too uncertain distribution to be here considered.

Troglodytes domesticus (Bartr.) Coues. House Wren.

Not uncommon, though more retiring and less domesticated in habits than in more settled regions; its song, also, seeming often to be more subdued. On different occasions it was met with in wild and uninhabited localities, and none were noticed domiciled about the farm buildings in the valley. These facts may be taken as indicative of the primitive habits of the species, before the advent of civilization, and sufficiently explain the supposed diverse habits from it of Audubon's "Wood Wren."

Anorthura troglodytes hiemalis (Wils.) Coues. Winter Wren.

This little minstrel of the mountain woods inhabits the wildest retreats from the higher valleys to the highest mountain tops. Even the summit of Slide Mountain had not proved too distant for its tiny wings, and on this remote height Dr. Fisher came upon one at work on its nest. The upturned roots of a fallen tree had been selected as a building site, and within a cavity, extending behind a flat stone inlaid in the perpendicular face of the earthy mass, the nest was being framed. The substructure alone had been laid, consisting mainly of moss with a few dried plant stems; and these materials had been disposed so as to reduce the natural entrance to a small circular opening. This was two feet above the bottom of the concavity remaining from the upturn foundations of the tree, and was so inconspicuous that had not the diminutive architect been surprised at work its secret would never have been disclosed.

This bird is a common inhabitant of the mountains throughout the Catskill group. Often it is found near the noisy brooks, often in the silent depths of the forest; but in whatever situation, mossy logs, rocks and dampness, with the negative requisite of absence of sunlight, seem to be all that is necessary to render its happiness complete. In such situations as may readily be imagined from these given characteristics, it makes its home; and, though so retiring in disposition and furtive in movements as rarely to allow a glimpse of itself, small and sombre-hued, its voice continually tells of its presence. There is an indescribable effect from the song of this bird peculiarly

in keeping with the wildness of its haunts; others may excel it in more definable vocal qualities, but "None sing so wildly well."

FAMILY MNIOTILTIDÆ: AMERICAN WARBLERS.

As represented in the Catskills, the Mniotiltidæ constitutes an important definitive element of the Avi-fauna, and is the most numerously represented family of birds in species, and doubtless also in individuals, of the region. Notwithstanding that seventeen species are enumerated as occurring, it is probable that several others will have to be added; while some half a dozen species which faunal limitations exclude from the mountain region proper, regularly breed in numbers in the adjacent Hudson Valley. These have already been named. Of species which were not observed *Helminthophila ruficapilla* Ridgw. is of probable occurrence; *Dendroeca pinus* Baird, less so, while several others are not improbably occasional summer residents.

Mniotilta varia (L.) Vieill. Black-and-White Creeping Warbler.

Frequent in the woods along the valley, but not extending far into the mountains.

NOTE.—The Blue-winged Yellow Warbler (*Helminthophila pinus* Ridgw.) is given by Giraud,* under Audubon's name of *Helinaia solitaria*, as having "been shot during summer on the Catskill Mountains." Even if this bird was found in the mountainous portions of the Catskills it can hardly be considered as more than a straggler there; but we may be allowed to suspect that the capture referred to was on some of the outlying hills or the lowland bordering the Catskills proper.

Parula Americana (L.) Bp. Blue Yellow-backed Warbler

Not uncommon in the wooded valleys, and noticed in the mountains up to about 2,700 feet altitude.

Dendroeca æstiva (Gm.) Baird. Summer Yellow Warbler.

Seemingly confined to the immediate vicinity of the dwellers' cottages in the valleys, and noticed on three or four occasions only.

Dendroeca cœrulescens (L.) Baird. Black-throated Blue Warbler.

Between the lower parts of the valleys and the higher elevations of the mountains this warbler seemed to be generally distributed in

* Birds of Long Island, 1844, p. 67.

suitable woodland, and excepting the Chestnut-sided Warbler was, perhaps, the most common representative of its genus.

Three nests were discovered by Mr. Pearsall. One was in process of construction, May 31, and nine days later contained four eggs; another held the same number on June 12; and one found with a single egg in the intermediate time on a subsequent visit had been destroyed. The respective situations of these nests were: "fully four feet from the ground in a wild raspberry;" "in the crotch of a Hobble Bush [*Viburnum lantanoides*] about a foot high;" about the same distance from the ground "in a bunch of beech sprouts." Mr. Pearsall's description of two of these nests shows that a single type of structure is not adhered to: The first nest was bulky "and not so neat a structure as that of the Chestnut-sided Warbler, the outside seeming a thick layer of dead bits of wood and fine bleached leaves, the cup being rather shallow and small, and lined with fine grasses." The last nest found was "more loosely constructed, of fine hemlock bark exclusively, depending upon the thick sprouts for its support." Mr. Burroughs describes a nest of this bird from the Catskills* which was "built in the fork of a little hemlock, about fifteen inches from the ground." My brothers, on May 31, 1874, met with a pair of these warblers working on a partially constructed nest "in a beech sprout, about a foot above the ground."

***Dendroeca coronata* (L.) Gray.** Yellow-rumped Warbler.

Not until my last visit to the Catskills was this species detected. Although I had twice previously failed to find it, even at the summit of Slide Mountain, on the latter occasion it was found to be a rather common bird, not only at that elevated point but for some distance lower down, and seemed almost entirely to replace the Black-and-Yellow Warbler which had before been common there. The birds were in full song, and a female which was shot showed evident signs of incubating. Mr. Pearsall observed a pair on one of the lower slopes along the valley.

***Dendroeca maculosa* (Gmel.) Baird.** Black-and-Yellow Warbler.

Found about Summit and throughout the Big Indian Valley, but evidently much more at home among the balsams on the mountains. At the top of Slide Mountain a nest was discovered June 12, 1880, built about five feet above the ground in a young balsam tree; it contained three fresh eggs but was somewhat disordered and had been deserted. Mr. H. B. Bailey who examined this nest states that it is so nearly identical with those of the Black-and-Yellow Warbler

* Locusts and Wild Honey, 1880, p. 258.

taken at the Umbagog Lakes in Maine, as to leave no question as to its identity.

***Dendroeca Pennsylvanica* (L.) Baird.** Chestnut-sided Warbler.

Perhaps the most common warbler and, excepting the Summer Yellow Warbler, the only one ever noticed about cultivated land. Though apparently not penetrating high in the forests it was, nevertheless, found in the woods, but principally about their borders and in clearings.

A nest found June 8, 1880, amidst briers and shrubbery at the edge of woods, contained four young several days old. Four nests were taken by Mr. Pearsall between June 10 and 13, all, except one on the latter date with three, containing four fresh eggs. "One taken June 12, was commenced May 31." With one exception these nests were built in the forked stem of a brier. The excepted instance was one in which a "cluster of young beech sprouts in an open hillside pasture" had been utilized.

***Dendroeca striata* (Forst.) Baird.** Black-poll Warbler.

This northerly breeding species was found to be common, in fact, the most common warbler, about the summit of Slide Mountain, though lower than a few hundred feet from this point it was not met with. In June of three successive years (12, 1880; 15-16, 1881; and 25-26, 1882) it was there present, and, on the last occasion especially its characteristic notes more frequently, perhaps, than those of any other bird, broke the silence of that lonely spot. That it is there a regular summer resident can hardly be doubted. Though from the exceeding lateness of the spring of 1882 its presence late in June of that year might well have been exceptional, the balance of the evidence above given weighs strongly against the probability of its having so been. As the Black-poll Warbler is, however, our most dilatory spring migrant, and its southernmost breeding limit has been supposed to fall far short of southern New York, some collated data bearing on the duration of its vernal migration and the time of its nesting period will here be apposite.

Pertinent to the subject are the following latest dates of its departure on the spring migration from points of the Middle and Eastern States: Washington, D. C., June 1 (Coues and Prentiss); New Jersey, June 5 (Gentry); my own record carries the time of its presence near New York City to June 11 (1882; a female), but this instance of its stay is exceptional, the record of other years not extending beyond June 4; Hudson Highlands, May 29 (Mearns); Connecticut, June 2, (Merriam = Sage); Massachusetts, June 10 (Brewer);

eastern Massachusetts, June 9 (Maynard), and we have the same authority for its departure from Upton, Maine, June 5; Central Vermont, "only a few days in the first of June" (N. A. Birds), while Audubon gives it as arriving in Labrador, June 1 to 10. As to the data of its breeding we have the records of nests with eggs at Fort Yukon, June 1 and 9, and at Great Slave Lake the same month. In a paper read before the Linnæan Society of New York, an abstract only of which has appeared in print,* Mr. R. F. Pearsall said of this species that, on the island of Grand Menan, "We found them (June 12, 1878) with full complements of four, frequently five eggs, incubation having just commenced," and also, that at the Rangeley Lakes, Maine, a nest with five eggs was taken June 19, 1879.†

The facts above stated form a chain of evidence which strongly supports the probability that the individuals of the Black-poll Warbler found in southern New York after the middle of June were summer residents of the mountain summit they inhabited.

***Dendroeca Blackburniæ* (Gm.) Baird.** Blackburnian Warbler.

Though I did not myself meet with this species, Mr. Burroughs writes me that it breeds in Delaware County, just beyond Pine Hill. The same author, in a delightful account of the bird life of a Catskill forest, in "Wake Robin," page 49, alludes to the capture of one of these beautiful warblers.

Mr. Pearsall observed an individual of this species in the Big Indian Valley on May 30.

***Dendroeca virens* (Gm.) Baird.** Black-throated Green Warbler.

Not uncommon; preferably inhabiting hemlock woods, and scattered sparingly through the deciduous forests.

***Siurus auricapillus* (L.) Sw.** Golden-crowned Thrush.

Not uncommon in mountain woods; often its song was heard far in the forest.

***Siurus motacilla* (Vieill) Coues.** Large-billed Water Thrush.

Had we not been prepared by Dr. A. K. Fisher's recent announcements ‡ of the presence of this species in its breeding season at Lake George for other records of its occurrence north of its known

* Forest and Stream, April 8, 1880, XIV, 184.

† Since the above was penned Mr. Brewster has described a nest and set of three eggs of the Black-poll Warbler which was taken by Mr. M. A. Frazar at the Magdalen Islands, June 23, 1882. The eggs were fresh.—See Bull. Nutt. Ornith. Club, VII, 4, 253-254, October, 1882.

‡ Bull. Nutt. Ornith. Club, V, 2, 117, April, 1880; and VI, 4, 245, October, 1881.

range, the discovery of its being a regular inhabitant of the Catskill Mountains would have been a matter of greater surprise. Though the Catskill region is not forty miles north of the Highlands of the Hudson where the Large-billed Water Thrush has been characterized as a common summer resident by Dr. E. A. Mearns,* it was scarcely to be expected that a species regarded as of distinctly Carolinian relationship would be found in the character of a regular summer resident under conditions congenial to other species pertaining to a sub-fauna two removes northward. The seeming incongruity is especially striking when we consider that not only do none of its associates in the Hudson Valley, which with it there constitute the decided southern element of the Avi-fauna, enter this region, but several Alleghanian forms (already specified) seem to be completely barred out, while others are much restricted in their entrance. As explanatory of these facts are to be entertained the distinctive traits of the species under consideration. Its preferences are decidedly, at least Eastward, for active shaded water-courses, with rocky and deeply worn beds; and it can easily be conceived how an inherent trait of ascending toward head-waters in search of these conditions might result in the continuance of a slight deviation from its usual range into a more or less extended journey. Thus may strong specific traits result as primary factors in distribution. In the case before us, unless the bird be of less southern relationship than has been supposed, this apparent innovation in the recognized rules of the distribution of a species would seem to arise from the subordination of physical regulations to specific characteristics and preferences. There are many localities in the Catskills admirably adapted to the requirements of this bird—that is, in so far as appearances permit judgment—and which unoccupied by it would suggest a vacuum in nature.

There are birds adapted to the many characteristic features of mountains and valleys, but the mountain torrents but for this species would be left unavailed. We have, indeed, in the Large-billed Water Thrush, our closest Eastern representative of our *Cinclus* of the West.

The apparent absence in the Adirondacks of any bird specially adapted to the mountain water-courses seems like a deficiency in the life of the region; and now that this species has been found on the borders of that "Canadian Island," it may not be too far in the region of speculation to anticipate a time when we shall learn of it as a true summer resident there.

Among the Catskill Mountains it appeared to be perfectly at home. At the head of the Big Indian Valley, along the Esopus, the louder

* Bull. Essex Inst., XI, 159.

notes of its song rose above the roaring of the torrent, or a sharp sound as of two impacted pebbles, and a darting object more rapid than the waters, marked its flight up or down the stream. On the occasion of my first visit, its fine song, so clear and rapid that the waters might have taught it, in its nestling days in some steep terrace beside their flow, was frequently heard repeated for minutes at a time, high in the trees bordering the stream. An anxious note, doubtless from a female, whenever a certain steep bend in the stream was approached, seemed to argue a special interest in the locality, but as the birds were shy their movements could not be traced, nor could a specimen be secured. It was principally to reverse this ill-fortune that a second trip was undertaken, for the interest of the case demanded scientific verification that the Water Thrushes were the Large-billed species. Although the next visit to the region was but a few days later in the season, the species was silent; but an adult male was secured.

The question of the route taken by these birds in gaining the head of the valley where they were found is an interesting one. Though the locality is not thirty miles from the Hudson River, and directly connected with it by Esopus Creek, the distance following all the windings of the latter is more than twice as great, and with the last seven or eight miles leading toward the south. However, this course, or a modification of it, must have been pursued if the birds came from the Hudson Valley. But, on the other hand, it must be remembered that this is the region of the head-waters of the Delaware River, several tributaries of which rise close to the sources of Esopus Creek. It is therefore possible that individuals of the species under review ascended the Delaware River into the Catskills, and, led up into a low mountain spur, advanced along another water-course, into a different section of the region. Along the Esopus in the main valley the species was not met with.

In this connection appears the interesting fact that the Large-billed Water Thrush enters the Catskills, at least the borders of the mountains, in a more northern and eastern part of the region. Mr. L. S. Foster showed me a specimen which he had taken about seven miles west from Catskill Village on the Hudson, and informed me that he had noticed several individuals between July 18 and August 2, 1880, along a mountain brook near the same locality. This fact reveals a tendency of the species to extend inland from the Hudson; but whether the remoter parts of the region are gained from this or from an opposite direction remains to be ascertained.

Siurus naevius (Bodd.) Coues. Small-billed Water Thrush.

Mr. Burroughs speaks of having secured a specimen of this species,

in June, in the Catskills,* and writes me that he has taken both species of Water Thrush in this region. Reference to its occurrence along the Neversink is also made by the same writer.†

The song of a Water Thrush was indistinctly heard at a swampy place in the mountains, beyond the source of Esopus Creek, which was very probably that of the small-billed species.

This Water Thrush is doubtless a regular summer resident at suitable localities.

Geothlypis Philadelphia (Wils.) Baird. Mourning Warbler.

One of the most characteristic birds of parts of the Catskills, inhabiting, chiefly, old cleared or burned-over land grown up with weeds, briars, shrubbery, and saplings. Always conspicuously component of these mixed growths are the Wild Red Cherry (*Prunus Pennsylvanica*) and the Great Willow Herb (*Epilobium spicatum* Lam.) but the breeding season of the Mourning Warbler must fall between the times when the white flower-clusters of the former and the brilliant crimson spikes of the latter plant beautify the waste tracts which are its home.

Few Mourning Warblers were noticed in the valley until about half its length had been traversed, after which its song was almost constantly heard until entering the forest. At the summit of Slide Mountain, however, several were noticed, and must have there been breeding. These remarks apply, in strictness, to the seasons previous to that of the last visit when, except on the mountain top, the bird was found to be uncommon, and in the valley but a single individual was observed.

It will be remembered that the first known nest of this species was discovered by Mr. Burroughs in this region.‡

Geothlypis trichas (L.) Caban. Maryland Yellow-throat.

Not uncommon about the more settled parts of the valley, seeming to be replaced in wilder and more elevated land by *G. Philadelphia*.

Myiodiocetes Canadensis (L.) Aud. Canadian Flycatching Warbler.

Though not abundant this species seemed to be generally distributed in suitable localities. Mr. Burroughs gives an account of its nest.§

Setophaga rutacilla (L.) Sw. American Redstart.

Not uncommon about Pine Hill, but apparently rare in the Big Indian Valley, and not noticed at all on the mountains.

* Wake Robin ; ed. 1871, pp. 194-195, 220.

† Locusts and Wild Honey, p. 123.

‡ Wake Robin, pp. 123-124.

§ Loc. cit., pp. 61-62.

FAMILY VIREONIDÆ: VIREOS.

Of our common Vireos, the White-eyed (*V. noveboracensis* Bp.) and the Yellow-throated (*V. flavifrons* Vieill.) do not appear to belong to the mountainous parts of the Catskills. It is not probable that the former ever extends, unless it be fortuitously, far into the mountains, but it is not unlikely that the latter is an occasional visitant.

Vireo olivaceus (L.) Vieill. Red-eyed Vireo.

A common and unrelenting songster.

Vireo gilvus (Vieill.) Bp. Warbling Vireo.

This species was noted only at Pine Hill, where its song was frequent from the elms lining the single village street, and at Big Indian; both places being in the main valley.

Vireo solitarius Vieill. Blue-headed Vireo.

Rather common in rich woods along Birch Creek near Pine Hill; extending, to all appearances sparingly, through the Big Indian Valley, beyond which it was noted to an elevation of about 2,700 feet.

Although this species on its migrations inhabits indiscriminately the low shrubbery of swamps or the high trees of the woodland, here, its preferences were decidedly for the latter situation, and high in the most lofty maples several were often to be heard at the same time in full song. It seems inconsistent with these arboreal habits on its breeding grounds that the nest of this Vireo so often should be built low down. One discovered on June 9, 1880, was not seven feet above the ground. It was built in the fork of a descending branch of a beech tree growing in a lightly wooded depression leading from a "sugar camp," at the foot of a steep timbered slope. The four eggs were perhaps a third incubated. This nest among those of our Vireos most resembles that of *V. flavifrons*.

Two nests taken by Mr. Pearsall in the Big Indian Valley were, one ten the other six feet above the ground, and contained respectively, on June 5 and 8, three and four fresh eggs. The parent of the latter nest sat very closely, and Mr. Pearsall, fearing that by suddenly starting the bird from its nest the eggs might be broken, found it no easy matter to drive it from its charge. In reference to this Mr. Pearsall writes: "I repeatedly pushed her with a stick, striking her sharply on the head, and finally had to bend a twig round her neck and lift her off."

As long since observed by Nuttall, the song of the Blue-headed Vireo partakes of the character of both that of its Red-eyed and Yellow-throated cousins. It has the prolonged interrupted warble of the former, though more irregular and with greater range and varia-

tion, while some of its louder notes, especially when divested through distance of their accompaniment, sound strikingly like the song of the latest mentioned species.

FAMILY AMPELIDÆ: WAXWINGS.

Ampelis cedrorum (Vieill.) Baird. Cedar Waxwing.

Not uncommon. A nest built in a hemlock, against the trunk, about seven feet from the ground, contained five fresh eggs, June 15, 1880. Descriptions of two nests were recorded by my brothers; one was built in the top of a soft maple about twenty-five feet high, July 10, 1874; the other, found three days later, was built about ten feet from the ground in an apple tree, and contained five eggs with large embryos.

FAMILY HIRUNDINIDÆ: SWALLOWS.

As has been earlier remarked there are but two swallows which occur as summer residents in that section of the Catskills here considered, though at least one other is found in the immediate region.

Undoubtedly the Bank Swallow (*Cotile riparia* Baird) occurs at suitable localities, and the Purple Martin (*Progne subis* Baird) may also be locally represented. One species of the Hudson Valley is excluded—*Stelgidopteryx*.

Petrochelidon lunifrons (Say) Lawr. Cliff Swallow.

An abundant, familiar, and characteristic species of the valleys. The nests of a colony, located under the eaves of an old barn in the Big Indian Valley, were examined June 17, 1881, and again the next year, ten days later in the season. On the former occasion the closest approach to the singular retort-shaped structure which this species is so well known to construct, was a semi-globular mud shell with a simple opening on the side no larger than was necessary for the admission of the birds. Most of the nests were of a still more simple form, being merely shallow cups of mud, plastered against the perpendicular boards close up under the eaves. Among the different nests every gradation between these diverse styles was to be seen. In some of the cup-shaped structures one or both sides had been continued upward to the eaves above from behind forward to enclose an opening of varying size in the front wall. Though the young were well advanced the work of building was still being carried on, as shown by fresh pellets of mud in some of the nests, so placed as to reduce the opening; and it was evident that if building operations continued until the young were fledged, the most open nests would

be largely enclosed, and a second brood would give an opportunity for the well known "bottle-neck" extension. In one of the more open nests two adult birds were observed.

On June 27, 1882, the nests of the same colony possessed their complete vestibular attachments. One examined at this time contained four eggs, more than half hatched.

Hirundo erythrogastra Bodd. Barn Swallow.

Associating with the above-mentioned species, but much less numerous. A single nest was noticed in the barn occupied by the colony of the others.

NOTE.—Observation has not shown that the White-bellied Swallow (*Tachycineta bicolor* Caban.) can properly be introduced into the present list. An inconsiderable extension of the limits within which the latter applies, however, would allow of its being included, for Mr. Burroughs has observed it in summer about the head-waters of the Delaware River.

FAMILY TANAGRIDÆ: TANAGERS.

Pyrrhula rubra (L.) Vieill. Scarlet Tanager.

This brilliantly plumaged bird was not uncommon, but appeared possessed of a wilder nature than at many places where settlement is more advanced; and it was seen and heard more frequently about the borders of the forests along the wilder parts of the valley than elsewhere. In the main valley it appeared to be less of a woodland bird.

FAMILY FRINGILLIDÆ: FINCHES.

This family is more fully represented in the Catskills than any other excepting the Mniotiltidæ, albeit it gives to the region few species which are not abundant throughout the contiguous country; only one, in fact, of the character of a common summer resident—the Slate-colored Snowbird.

Species of the neighboring territory which appear not to enter the mountains are, the Swamp Sparrow (*Melospiza palustris* Baird), which, however, is probably of local occurrence, and the Yellow-winged Sparrow (*Coturniculus passerinus* Bp.), while the Chewink (*Pipilo*) seems to be but a casual visitor. The genus *Ammodramus* is of necessity not represented.

Carpodacus purpureus (Gm.) Baird. Purple Finch.

Both in the valleys and on the mountains a common bird. It appeared to be in full voice, but its song was so different from that of

the same species near New York City that I could not feel complete satisfaction regarding the identity of the birds heard singing until a specimen had been secured. Not only in the notes of the strain, but also in the manner and character of its delivery was this difference noticeable. In the Lower Hudson Valley the song of the Purple Finch, in summer resident birds, is rich and voluble, with the notes of definite character and number. We have, perhaps, no bird melody more expressive of passionate emotion than the outbursts from this species at the height of its breeding season. Especially is this true when, as is often the case, it rises full of song high over the trees, thence descending with undiminished melody to the earth. At such times its song is repeated with a precipitancy which allows no perceptible pause, and this strain may be supported for many moments until, the notes becoming confused, the performer ceases as if from breathlessness or absolute exhaustion. No approach to this exuberance of song was heard in the Catskills, all the notes of the species there being weak and inexpressive and the songs brief and of uncertain character. Somewhat similar songs are often heard near New York when the birds are passing on their migration; still, it remains to be demonstrated that there actually exists the geographical variation in song which the facts here given seem to indicate.

Loxia curvirostra Americana (Wils.) Coues. American Red Crossbill.

On the high ridge leading to the summit of Slide Mountain, Mr. Pearsall observed a pair of Crossbills on the 7th day of June; "they were apparently feeding on young balsam-tree buds and were very restless and wild for the species." On the 25th day of the same June, Dr. Fisher and I, while separated on the mountain top, both distinctly heard the unmistakable notes of a passing flock of these birds.

Astragalinus tristis (L.) Cab. American Goldfinch.

Common.

Passerculus sandvicensis savana (Wils.) Ridgw. Savanna Sparrow.

In full song, and evidently breeding, in some high upland pastures (about 2,500 feet altitude) near Summit.

Poœcetes gramineus (Gm.) Baird. Vesper Sparrow.

The most common Sparrow; frequenting stony pastures and hill-sides. A nest with a single fresh egg, June 8, 1880.

The song of this bird remains associated with the evening twilight when often it faintly reaches the listener in the valley from far up some barren mountain side.

NOTE.—*Zonotrichia albicollis* Bp. White-throated Sparrow. Among the notes of my brothers, who were never in the Catskills earlier

than the 29th of May, nor later than July, I find this species recorded from the east branch of the Navesink. Though I failed to note the bird within a few miles of the locality given, the record allows a suspicion that the species may occasionally summer in the region.

Spizella domestica (Bartr.) Coues. Chipping Sparrow.

Common about cultivation; being replaced by the Snowbird, of very similar song, in wilder situations.

Spizella agrestis (Bartr.) Coues. Field Sparrow.

Uncommon, although several times met with; but not at a higher altitude than 2,000 feet.

Junco hiemalis (L.) Scl. Slate-colored Snowbird

Met with almost everywhere, except in the lower and more cultivated portions of the valleys, this species may be considered the most universally distributed bird of the Catskills.

In the valleys, it may be observed along the roadsides, or even hopping about in the roadway like the common Song Sparrow; while it is also found in the woodland glades, and penetrates the mountain forests up to the highest altitudes, where no other ground nesting member of its family attains. Sloping banks overgrown with moss, ferns, and wood-plants, along the borders of mountain roads, are favorite nesting sites. Data of its nidification in the Catskills indicates great variation in the time of laying, and also that two or more broods are reared. On May 30 and 31, 1874, two nests, each with four eggs containing embryos, were found by my brothers, and July 7 and 8, of the same year, two nests contained equal sets of eggs perfectly fresh. In June, 1880, young only were found, but of great diversity of age; on the 7th a brood, out of the nest, and well able to fly was met with, and just a week later two broods were about equally advanced; but on the 8th, a nest contained young but a few days old, and on the 10th, the living contents of another nest were about half grown. A nest on June 20, 1873, contained two young and a single egg. Of three nests examined by Mr. Pearsall between June 5 and 7, the eggs were, in one almost fresh; in another almost hatched; in the remaining one in a condition intermediate to the other two. So far as observed the number of eggs or young was always four, both at the earliest and latest limits of the breeding season.

One nest was built in a cavity scooped directly beneath part of a fence-rail lying on the ground, and was most effectually concealed; another was very similarly situated.

Melospiza fasciata (Gm.) Scott. Song Sparrow.

Common.

NOTE.—The English Sparrow (*Passer domesticus* L.) does not appear yet to have extended to the remoter villages of this region; and for the first time in a number of years the writer experienced the pleasure of passing some consecutive days with this, now well-nigh ubiquitous pest, out of sight and sound.

Pipilo erythrophthalmus (L.) Vieill. Chewink.

Except on my latest trip to the Catskills, when it was twice noted in the Big Indian Valley, this bird was not observed. Evidently the region is uncongenial to it, for there are many localities, including the low growth tracts inhabited by the Mourning Warbler, which are admirably suited to its habits.

Zamelodia ludoviciana (L.) Coues. Rose-breasted Grosbeak.

A somewhat generally distributed species, much more often heard than seen. It appeared to be a characteristic mountain bird below about 3,000 feet altitude, and did not seem to be common before the higher valley was reached.

Nests were found by Mr. Pearsall on the 9th, 10th, and 13th of June, the first with three, the others with two eggs each. In every case the eggs from the same nest were in different stages of incubation, some being perfectly fresh, while others were approaching the hatching point.

This is another low nesting bird which appears to pass much of its leisure time in the taller trees; and along the higher valley, thence up into the mountains, its rich song from the most lofty tree-tops, was the loudest and most voluble that sounded through the woods.

Passerina cyanea (L.) Gray. Indigo-bird.

Rather common about Summit and Pine Hill; less so in the Big Indian Valley, and not extending throughout its entire length.

FAMILY ICTERIDÆ: AMERICAN STARLINGS.

Of this family the Orchard Oriole (*Icterus spurius* Bp.), though it enters the confines of the region, does not reach the mountainous parts; and the Meadow Lark appears to be confined to the more fertile valleys. The Rusty Blackbird (*Scolecophagus ferrugineus* Sw.) was not found to be present.

Dolichonyx oryzivorus (L.) Sw. Bobolink.

Common in the valleys about pasture lands and meadows.

Molothrus ater (Bodd.) Gray. Cowbird.

Certainly uncommon in that part of the region which was visited, as a single individual only was observed—in the main valley. Mr.

Burroughs, however, speaks of it as common in the adjacent country, and gives instances of its imposition on *Dendræca virens*, *D. Pennsylvanica*, *Myiodiotes Canadensis*, *Vireo olivaceus*, and *Junco hiemalis*.*

Agelæus phœniceus (L.) Vieill. Red-winged Blackbird.

This species was noticed from the train along the main valley, but scarcely extended beyond Big Indian, doubtless from the absence of suitable breeding places. "One or two" were noticed by Mr. Pearsall in the lower part of the Big Indian Valley.

Sturnella magna (L.) Sw. Meadow Lark.

Noticed only along the railroad below Big Indian.

Icterus galbula (L.) Coues. Baltimore Oriole.

Excepting a single individual noticed by Mr. Pearsall, nothing was seen of this bird in the Big Indian Valley, although it was several times heard about the villages of Big Indian and Pine Hill. Here its notes seemed to be less vigorous and otherwise different than those of the same species near New York.

NOTE.—The Crow Blackbird (*Quiscalus purpureus*) was not observed at any part of the region, nor has Mr. Burroughs met with it. Its name appears, however, in a nominal list of birds observed in the Catskills by my brothers; but probably it was observed before the mountainous portion of the region had been entered.

FAMILY CORVIDÆ: CROWS AND JAYS.

The close approach of the Fish Crow in summer to the Catskills has already been alluded to. The Canada Jay (*Perisoreus Canadensis* Bp.) we would hardly look for so far south.

NOTE.—The Raven (*Corvus corax carnivorus* Ridgw.) must now be nearly extirpated from the Catskill region. Mr. Burroughs writes me that he has known of but one instance of its occurrence—at the border of Schoharie County.

Corvus frugivorus Bartr. Common Crow.

Cyanocitta cristata (L.) Strickl. Blue Jay.

The notes of both of the above species were often heard about the mountains.

NOTE.—An interesting account of the occurrence of the European Skylark (*Alauda arvensis* L.) near Esopus-on-Hudson, on the confines of the Catskill region, has been given by Mr. Burroughs.†

* Loc. cit., pp. 62-64, 70, 124.

† Pepacton, pp. 150-153.

FAMILY TYRANNIDÆ: AMERICAN FLYCATCHERS.

The Great Crested Flycatcher (*Myiarchus crinitus* Cab.) which was not encountered, being a regular inhabitant of the lower country may be an occasional visitor to the mountains.

Tyrannus Carolinensis (L.) Baird. King-bird.

Uncommon far from the main valley, and not noticed distant from human settlement.

Sayornis fusca (Gm.) Baird. Phœbe-bird.

Not uncommon. Two nests, just completed, were found May 31, 1871 (P. C. B.) Mr. Burroughs says* 'nearly every high projecting rock in my range has one of these nests, following a trout stream up a wild mountain gorge . . . I counted five in the distance of a mile, all within easy reach.'

Contopus borealis (Sw.) Baird. Olive-sided Flycatcher.

This species was found through the upper section of the Big Indian Valley, and while exploring this region its notes were frequently heard. Not uncommon along Biscuit Brook, a tributary of the Delaware River—P. C. B.

Tall charred stubs rising from the low growth of burned-over tracts, and dead branches projecting from topmost foliage along streams or in openings in the woods are favorite lookout stations of this bird. In one place where the woods had been cleared for a "charcoal job" and the charcoal burners were busy below, one of these birds was in full note overhead in the tall maples and beeches which had been left standing here and there through the clearing.

Contopus virens (L.) Cab. Wood Pewee.

More common near the main valley than elsewhere, and seemingly not extending far into the mountain woods.

Empidonax flaviventris Baird. Yellow-bellied Flycatcher.

This little flycatcher was found inhabiting with the Canada Nuthatch the extreme summit and immediate slope of Slide Mountain. On the ascent it was first met with at an altitude of not more than 3,500 feet, but not far above became common, haunting the growths of thickly clustered balsams which clothed the damp mossy slopes. Though it was evidently in full voice nothing was heard of the "sweet song" which has been attributed to the species. Its notes were low and subdued, with a suggestion of melancholy, which, however, may have been induced by the loneliness and often silence of the situation.

* Wake Robin, p. 130.

Like the general character of those of all our Empidonaces, each utterance was of two distinct but connected notes, though lacking the abrupt vigor of the other species, and at a little distance the louder and more prolonged final note was often the only one heard.

In view of our very deficient knowledge of the breeding range of this bird, and the short time that we have known anything positive regarding its nidification, the discovery of its breeding in the Catskill Mountains is of interest, not only as greatly extending the area within which its nest has actually been found* but also as assisting to render clear the apparently misunderstood subject of its precise faunal relationship.

Close to the summit of Slide Mountain, on June 26, 1882, its nest, containing four fresh eggs was discovered by Dr. Fisher. At the outset it may be said that the eggs were spotted, and generally similar to those of authentic sets which have recently been described.

On the slope whereon the birds had made their home an abundant growth of bright green moss invested the rugged configuration of the surface and enfolded the scattered remains of trees, ancestors, perhaps, of the young growth of balsams which clustered about the spot and afforded seclusion to the little pair that had come among them. The nest was built in a cavity scooped in a bed of moss facing the side of a low rock. The cavity had been excavated to a depth of two and a half inches and was two inches across. The opening, but little less than the width of the nest, was nine inches from the ground and, partially hidden by overhanging roots, revealed the eggs within only to close inspection.

The primary foundation of the nest was a layer of brown rootlets; upon this rested the bulk of the structure, consisting of moss matted together with fine broken weed stalks and other fragmentary material. The inner nest could be removed entire from the outer wall, and was composed of a loosely woven but, from its thickness, somewhat dense fabric of fine materials, consisting mainly of the bleached stems of some slender sedge and the black and shining rootlets of, apparently, ferns, closely resembling horsehair. Between the two sections of the structure, and appearing only when they were separated, was a scant layer of the glossy orange pedicels of a moss (*Polytrichum*) not a fragment of which was elsewhere visible. The walls of the internal nest were about one half an inch in thickness, and had doubtless been accomplished with the view of protection from dampness.

Professor Daniel C. Eaton, of New Haven, very kindly assumed the task of determining the different species of moss which entered into the composition of the nest and of the moss-bed in which it

* All records of the nests and eggs of this bird prior to 1878 are here ignored as being too dubious to be entertained.

rested, and his investigation disclosed the fact that the mosses which abounded immediately about the nest had not been utilized as building material. As determined by Professor Eaton, the species of moss composing the bed were: *Hypnum umbratum*, *H. splendens*, *H. Schreberi*, *H. Crista-castrensis*. Those appearing in the nest: *Hypnum Mullerianum*, *H. Muhlenbeckii* (?), *Dicranum longifolium*, *D. flagellare*, *Polytrichum commune*, *P. formosum*. With these occurred the following Hepaticæ: *Mastigobryum trilobatum*, *Scapania albicans*, *Cephalozia bicuspidata*. In addition were found among the materials of construction, catkin scales of the birch, leaves of the balsam, and fragments of the dried pinnæ of ferns, but, as suggested by Professor Eaton, the presence of some of these was probably accidental. Springing from the verdant moss beds immediately about the nest were scattered plants of *Oxalis acetosella*, *Trientalis Americana*, *Solidago thyrsoides*, and *Clintonia borealis*.

It is rather surprising to find specimens of the Yellow-bellied Flycatcher—undoubtedly a bird of the Canadian Fauna*—from southern New York to be of large size for the species. We might well have expected the reverse to be the case, and the fact of maximum specific size thus obtaining at, so far as we now know, the southernmost breeding limit of the species, illustrates well the close correspondence between the conditions imposed by altitude and by more advanced latitude without elevation, on organic nature.

The following measurements and comparison will show the relative size of the Catskill birds with the largest examples of eleven specimens taken on the migrations at New York.

New York Specimens.

Date.	Sex.	Length.	Wing.	Tail.	Tarsus.	Middle toe.	Bill, culmen and from nostril.
Aug. 20, '81,	?	5.45	2.63	2.33	.64	.33	.41-.31
May 29, '79,	♂	5.47	2.60	2.30	.65	.35	.41-.31
" 24, '78,	♂	5.50	2.65	2.25	.67	.33	.43-.33
Aug. 25, '75,	♂ (?)	5.56	2.65	2.32	.68	.32	.43-.33

Slide Mountain Specimens.

June 12, '80,	♂	5.60	2.73	2.48	.63	.33	.44-.34
" 26, '82,	♂	5.57	2.65	2.37	.64	.35	.42-.32

As compared with the specimens from New York those from the Catskills, besides greater size, also present some difference in the

* That this bird has been suspected to breed in regions thoroughly Alleghanian or even more southern in Fauna, is to be accounted for from the fact that the times of its migration are such as might easily give rise to the impression. The species is one of the latest of the migrants to remain with us in the spring, and one of the first to reappear on the return movement. Thus, in the neighborhood of New York, where it occurs strictly as a transient semi-annual migrant, it remains, on the advance movement, sometimes into June, and is always to be again looked for early in August; and, though I have no actual July records, individuals doubtless sometimes appear by the latter part of that month.

proportion of parts, owing to the relative smallness of the tarsi and toes.

The female parent of the nest which was secured is also large for her sex and gives the following measurements, in like sequence to the above :—

June 26, '82, ♀ 5.15 2.47 2.20 .62 .32 .38—.31

Empidonax Trailli (Aud.) Baird. Traill's Flycatcher.

Seemingly one of the characteristic birds of the higher valleys, inhabiting growths of shrubbery and small trees, preferably in wet ground, and consequently not found on the mountains. Its characteristic notes were almost daily heard. The late Dr. Brewer has referred to a nest found in the Catskills by Dr. Merrill,* one of the eggs of which was nearly unspotted.

Empidonax minimus Baird. Least Flycatcher.

Not uncommon. In the absence of suitable surroundings to the dwellers' cottages in the valley, they repaired to the shrubbery along the roadsides and streams.

FAMILY TROCHILIDÆ : HUMMING-BIRDS.

Trochilus colubris L. Ruby-throated Humming-bird.

Not uncommon; frequently observed remote from cultivated land.

FAMILY CYPSELIDÆ : SWIFTS.

Chaetura pelagica (L.) Baird. Chimney Swift.

Abundant through the valley; and even on the slope of Slide Mountain beyond an altitude of 3,000 feet, their rapid chatter continued above the tree tops. Mr. Burroughs alludes to a case of their nests being glued to the rafters within a barn,† but from the abundance of the birds in wild and uninhabited sections, it is evident that the majority must here follow their primitive method of nesting; certainly the luxury of housekeeping in a chimney must be unknown to them.

FAMILY CAPRIMULGIDÆ : GOATSUCKERS.

Caprimulgus vociferus Wils. Whip-poor-will.

The Whip-poor-will was well known to residents, by whom its notes were closely imitated. It was said to be frequent at the

* Proceedings U. S. National Museum, II, 4.

† Pepacton, p. 26.

entrance of the valley, but rarely to be heard over five miles within. Mr. Burroughs reports it as common just out of the mountains.

Chordeiles popetue (Vieill.) Baird. Night-hawk.

Several times noticed.

FAMILY PICIDÆ: WOODPECKERS.

It would be idle to speculate on the possible occurrence in the Catskill Mountains of either of the Three-toed Woodpeckers.

Picus villosus L. Hairy Woodpecker.

Not uncommon. Two were shot near the top of Slide Mountain showing on the crown the red feathering of the young of the year; though scarcely appreciable in the female, this was conspicuous in the male bird. Another bird of the year was without indication of this character.

Picus pubescens L. Downy Woodpecker.

Though several times noticed in the neighborhood of Pine Hill, this common bird was not elsewhere observed.

Sphyrapicus varius (L.) Baird. Yellow-bellied Woodpecker.

Rather common about the head of the valley, often descending close to the ground on small trees and even bushes, and once noticed on a prostrate log. Mr. Pearsall discovered a nest of the species, "about twelve feet from the ground in an immense dead pine stub," which contained six fresh eggs, June 1. "The aperture was so small that had I not witnessed the female bird go through, I should have thought it impossible for her to do so." For an account of another instance of this bird breeding in the Catskills, see "Wake Robin," pp. 107-8.

Hylotomus pileatus (L.) Baird. Pileated Woodpecker.

With regard to this species Mr. Burroughs writes me: "I spent part of last August [1881] near the head of Dry Brook in the southern Catskills. I there saw and heard the Pileated Woodpecker. Last fall a fox-hunter of my acquaintance shot one in Roxbury, my native town." Mr. Pearsall writes of a pair of these birds which he observed on a mountain slope falling into the Big Indian Valley at a point about halfway through its course, that: "One alighted about two hundred feet from me in a live tree whose top was blasted. The pair were nesting on the slope I am fully convinced." James W. Dutcher—guide, whose dwelling is directly across the valley from the point where these observations were made, stated that previous to this time the pair had been very noisy and he had heard them through the spring.

Melanerpes erythrocephalus (L.) Sw. Red-headed Woodpecker.

Although this fine woodpecker was not observed I have the authority of Mr. Burroughs for its occurrence. Mr. L. S. Foster noticed it August 28, 1880, in the vicinity of Catskill village.

Colaptes auratus (L.) Sw. Golden-winged Woodpecker.

Not uncommon.

FAMILY ALCEDINIDÆ: KINGFISHERS.

Ceryle alcyon (L.) Boie. Belted Kingfisher.

Found along the Esopus Creek, even where it had become a rushing trout stream five or six miles within the valley. My guide complained that they were too frequent about his trout pond.

FAMILY CUCULIDÆ: CUCKOOS.

Undoubtedly both of our Cuckoos are more or less frequent visitors to the valleys of the Catskills.

Coccyzus sp.—?

A Cuckoo, which appeared to be *C. erythrophthalmus*, was seen in the valley, but escaped capture. *C. erythrophthalmus* was observed by Mr. L. S. Foster in the vicinity of Catskill.

FAMILY STRIGIDÆ: OWLS.

Strix nebulosa Forst. Barred Owl.

This species was unmistakably described to me, and is, of course, common, though I did not myself meet with it.

Scops asio (L.) Bp. Screech Owl.

One seen, attended by irate small birds.

Bubo Virginianus (Gm.) Bp. Great Horned Owl.

Noted by my brothers. The owls were not hooting at the time of my visit and I failed to meet with it.

FAMILY FALCONIDÆ: DIURNAL BIRDS OF PREY.

Both Hawks and Owls appeared to be uncommon at the time of my visits, and, unquestionably, others besides the few which are here recorded breed in the region. Mr. Burroughs writes me that the Golden Eagle (*Aquila chrysaëtus Canadensis* Ridgw.) is occasionally seen in the mountains, and that the Fish Hawk (*Pandion haliaëtus* Sav.) he has seen along the upper Delaware River and lower Beaverkill.

Accipiter fuscus (Gmel.) Bp. Sharp-shinned Hawk.

One observed by Mr. Pearsall.

Buteo borealis (Gm.) Vieill. Red-tailed Hawk.

From the summit of Slide Mountain two handsome adults of this hawk were seen wheeling in the air below.

Haliaëtus leucocephalus (L.) Sav. White-headed Eagle.

From the summit of Slide Mountain an adult bird was seen passing high over the valleys.

FAMILY COLUMBIDÆ: PIGEONS AND DOVES.

The Mourning Dove (*Zenaidura Carolinensis* Bp.) being a bird of the outskirts of the region, may occasionally stray along the valleys into the mountains.

Ectopistes migratorius (L.) Sw. Passenger Pigeon.

Information was received that Wild Pigeons formerly bred abundantly in this region, and Mr. Burroughs has written to the same effect, but also, that owing to the slaughter of both old and young the species has become rare. In "Wake Robin" (p. 174) we read: "Wild Pigeons, in immense numbers, used to breed regularly in the Valley of the Big Ingin and about the head of the Neversink. The tree-tops for miles were full of their nests, while the going and coming of the old birds kept up a constant din. But the gunners soon got wind of it, and from far and near were wont to pour in during the spring, and to slaughter both old and young. This practice soon had the effect of driving the Pigeons all away, and now only a few pairs breed in these woods."

From a reliable resident I received the information that it is not many years since vast numbers of Wild Pigeons formed a breeding colony on the mountains beyond the head of the Big Indian Valley. It seems probable that it is to this breeding ground that Mr. Burroughs alludes (Locusts and Wild Honey, p. 118) in an account of a trout-fishing excursion along the Navesink in 1869: "Here and there I saw the abandoned nests of the pigeons, sometimes half a dozen on one tree. In a yellow birch which the floods had uprooted a number of nests were still in place, little shelves or platforms of twigs loosely arranged and affording little or no protection to the eggs or the young birds against inclement weather."

A single Wild Pigeon seen by Mr. Pearsall was the only evidence furnished by recent exploration in the region of the present occurrence of this formerly abundant bird.

FAMILY TETRAONIDÆ: GROUSE.

The Spruce Partridge (*Canace Canadensis* Bp.) is a conspicuous absentee among the birds of the Canadian Fauna in the Catskills.

Bonasa umbella (L.) Steph. Ruffed Grouse.

Not uncommon, but their drumming at the times of my visits was rarely heard. A brood of very young birds was met with June 15, 1881.

NOTE.—The Quail (*Ortyx Virginiana* Bp.), Mr. Burroughs writes me, “abounds in the town of Olive* but not among the mountains.

NOTE.—Family Ardeidæ: Herons.—Though several members of this family undoubtedly breed in the Catskills, their local absence over that portion of the region covered by the present list is explained by the absence of suitable breeding-places. At least four species of the family are regular visitors along the neighboring Hudson River, others being of casual occurrence. Mr. Burroughs has observed the Great Blue Heron (*Ardea herodias* L.) “along the upper Delaware, in Roxbury.”

FAMILY SCOLOPACIDÆ: SNIPE; SANDPIPERS, ETC.

It is not unlikely that the Solitary Sandpiper (*Totanus solitarius* Aud.) is of occasional occurrence in the Catskills in summer.

Philohela minor (Gm.) Gray. Woodcock.

Common.—John Burroughs.

Tringoides macularius (L.) Gray. Spotted Sandpiper.

Frequent along the stony margins of streams in the valleys. A nest with four eggs, May 31, 1874.—G. A. B.

FAMILY ANATIDÆ: WATERFOWL.

Anas obscura Gmel. Dusky Duck.

Noticed by my brothers at Balsam Lake.

Aix sponsa (L.) Boie. Wood Duck.

A female of this species was observed from the train, by Dr. A. K. Fisher, in a pool at the edge of woods beside the railroad. It is undoubtedly a common summer resident.

* This township adjoins that of Shandaken, and is principally of moderately elevated and rather level country.

NOTE.—As to the occurrence of other water-birds in the Catskills we can only speculate. Mr. Burroughs speaks* of meeting with a brood of Hooded Mergansers (*Lophodytes cucullatus* Reich.) at the junction of the Beaverkill—east branch—with the Delaware River, and our other Mergansers have been recorded as breeding still farther south in the Alleghanies. Nuttall narrates † the discovery of a brood of the Common Sheldrake (*Mergus merganser Americanus* Ridgw.), on the Susquehanna River, in Pennsylvania, and both this species and the Red-breasted Merganser (*Mergus serrator* L.) have been recorded by the Bairds ‡ as breeding in Perry County, in the same State. Undoubtedly others of the Anatidæ than those which have been mentioned occur in the Catskills. It also seems likely that the Pied-billed Dabchick (*Podilymbus podiceps* Lawr.) may breed at some of the small lakes, but it was not found by my brothers, by whom several of the lakes were visited, and Mr. Burroughs writes me that this bird as well as the Great Northern Diver (*Colymbus torquatus* Brünn.) he has failed to meet with on the waters of the Catskill region.

* Pepacton, p. 39.

† Manual of Ornithology, II, 461-462.

‡ Sillim. Am. Journ., XIV, 1844, 273.



Bicknell, Eugene P. 1882. "A review of the summer birds of a part of the Catskill Mountains with prefatory remarks on the faunal and floral features of the region." *Transactions of the Linnaean Society of New York* 1, 113–168.

View This Item Online: <https://www.biodiversitylibrary.org/item/203200>

Permalink: <https://www.biodiversitylibrary.org/partpdf/315095>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Biodiversity Heritage Library

Copyright & Reuse

Copyright Status: Not in copyright. The BHL knows of no copyright restrictions on this item.

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.