

Much of my pursuit of birds has been carried on in Michigan and Minnesota with my long-time friends the Cottrilles of Jackson, ~~Michigan~~. We became friends in the spring of 1955 when we were together for several weeks near the Seney Federal Wildlife ~~Reserve~~ in the Upper Peninsula photographing principally warblers. I went there with Bill Dyer, whom I had met several years before, and Dr. Lawrence Walkinshaw the famous crane specialist with whom I had visited the Kirtland Warbler area in central Michigan back in fortysix and fortyseven. It was Larry Walkinshaw who showed me the first Kirtland nest near Lovells where I photographed the bird, and where I also photographed Prairie warblers and Clay-colored sparrows. In fact my connections with Michigan began right after the war in 1946 with an introduction from the National Audubon Society to Ed Brigham II in Battle Creek. The generous, warm hospitality/with which the Brighams welcomed and took me into the family circle, introduced me to their friends and ornithologist acquaintances was not simply an experience I shall always remember, but became a turning point/and of the direction of my interest in bird photography. During this period my obsession with wood warblers received its

The five of us made our headquarters at a rustic lodge half way between Seney and Grand Marais on Lake Superior whence we spent our days regardless of the weather -- and bad it was most of the time -- for three weeks exploring the black spruce bogs and upland hardwood forests in rubber boots, waterproof suits, and head nets as a protection against black flies for nesting birds. Walkinshaw and the Cottrilles were very good at finding nests in the rain, and on the few good days we divided up to photograph what we had found. Here I obtained my first pictures of Nashville and Western Palm Warblers.

We <sup>would</sup> ~~used to~~ meet in the Cottrilles room for coffee <sup>after</sup> ~~before~~ supper and to talk about birds and equipment. Powell Cottrille always managed to display a more carefree attitude towards our daily experiences and tribulations <sup>either</sup> than Larry Walkinshaw or his wife Betty who were much more competitive and

deadly serious about nest finding ~~than the rest of us were~~, as though their careers and reputations <sup>not of us</sup> depended on beating the others out, and in fact for Larry his ambitions as an ornithologist and the reputation he sought did to some extent depend on it. Powell's sense of humor carried him along on a higher level than ~~the rest of us~~ <sup>we often</sup> were able to maintain and it helped to smooth the way for us all. One evening in particular I remember, following a day in which the Cottrells had been photographing from a blind and had been rained out. We were arguing the relative merits of various designs for blinds. To illustrate a point about the blind he had designed, of which he was inordinately proud, Powell started to set it up, soaking wet as it was, in the middle of the room. Betty protested because of the mess he was making but he persisted nevertheless. She finally exploded, whereupon he quickly dismantled it saying with a good natured laugh, "I know what you are trying to do. You're trying to break my spirit, but ~~I live here too and~~ you can't do it".

In 1959 I persuaded the Cottrells to join me for a month in southern Arizona to photograph southwestern warblers. I had made arrangements <sup>for a month</sup> to stay at the Southwestern Research Station of the American Museum of Natural History in Cave Creek in the Chiricahua Mountains. We met there early in May. The birds we particularly hoped to find were the Red-faced Warbler, the Painted Redstart, the Olive Warbler, and the Grace's Warbler. <sup>In June</sup> Before I left the Research Station in June I had photographed them all as well as several other species of birds including three varieties of hummingbirds/native <sup>to</sup> the Sonoran Desert. ~~the Blue-throated, Rivoli's, and the Violet-crowned all~~

In May and June of the year before, for the first time since 1953, I had photographed birds in the desert around Tucson, Arizona, but this year was by far the most productive of all my bird photography trips to the Southwest.

Because the Chiricahua trip proved so successful in terms of the photography we had hoped to and did accomplish, but also, more importantly, because the mutual harmony in field collaboration established between us forecast a continuing felicitous future association, we looked forward to working together again the following year. Aside from the pleasure our association gave me, its practical advantage for me was undeniably greater than for Betty and Powell since they outnumbered me two for one, and even without considering their remarkable skill at nest finding they would be certain to discover the greater number of nests. By now I had become far more deeply committed to a program of photographing as many as



possible of the warblers that occur within the continental limits of the United States, <sup>than ever before</sup> I had already photographed thirty species which was about half of the total number found north of Mexico not counting ~~the~~ <sup>the closely indigenous to the mid-temperate zone which are</sup> related subspecies. Several varieties still remained to be photographed common in southern Michigan. Among these are the Golden-winged, its hybrids with the Blue-winged, and the Cerulean warbler. Not only to find a nest of the latter, but when once found to photograph it was ~~and~~ most challenging goal. The habitat of ceruleans is the upper branches and leafy crowns of broad-leaf deciduous trees in the hardwood forests. This is where they sing, where they forage, and where they build their nests, seldom less than forty to sixty feet high.

Aside from the pleasure ~~our association~~ gave me, its practical advantage for me was undoubtedly greater for me than for Betty and Powell since they outnumbered me two to one and <sup>even</sup> without counting ~~with~~ their remarkable skill at nest finding <sup>they</sup> would be certain to discover the greater number of nests.

At that distance surrounded by leaves they are hard to see and harder to follow, but assuming that persistence will be rewarded, the <sup>discovery</sup> ~~location~~ of a nest <sup>will be</sup> ~~is~~ only the beginning of an incredible amount of planning and work necessary to put a camera near enough to the nest for any ~~useful purpose~~ meaningful photography.

These were some of the difficulties by which we would surely be confronted. ~~and We decided to attempt to overcome them~~ the reward of success would be great enough to justify almost any amount of time and effort that we could put into the project and so we agreed to work together on it next year. They generously invited me to <sup>come in the spring and</sup> stay with them in Jackson. I arrived on the 20th of May, ~~and~~ The next day I found a Cerulean in an oak woods near their house building a nest at least sixty feet from the ground in a red oak tree. It was saddled far out on a long horizontal branch extending over a clear space in the woods with no smaller trees or other branches below it. To photograph the birds here obviously would involve construction of a very high tower at considerable cost and effort. If this was a typical nest site the prospect for success was poor indeed, to say the least, and our best hope rested on finding

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~~find~~ a more conveniently located nest. In this we were extremely fortunate.

The very next day, May 22nd, we were all together working in a small bird sanctuary maintained for the Jackson public schools when we saw a Cerulean pulling bits of lichen from the trunk of a tree not more than fifteen feet high. We all knew immediately what that meant and our attention was frozen on the bird. She, for it appeared to be a female, continued to pull at the lichen for a few more seconds and then flew up into the woods at an angle of about thirty degrees. The steepness of her flight suggested that the nest she was building was not far away and that it was <sup>obviously</sup> in the direction she had taken. We suppressed our excitement and Powell was even able to assume an attitude of indifference as we moved through the woods towards the place where the bird had disappeared. Each of us selected a likely nest tree and proceeded to examine it carefully from top down for the warbler or any sign of a nest. We did not see the

a nest. ~~I don't remember how long it was before we saw the cerulean again~~ until we went back to the place where we had first seen her and found her <sup>again</sup> pulling off more lichen. She flew off once more in the same direction as before and once more we followed after. She seemed to have flown ~~none~~ towards a large bass wood tree and on this we focused our attention. The three of us were standing around the base of it peering up through our binoculars when Powell announced in a casual almost bored tone that he saw her and she was on a nest. There was no doubt about it; the nest, a gray knot-like structure, resembling that of a gnatcatcher, was placed on a slightly up-turning limb at a point not far put from the trunk of the tree where a tuft of broad new leaves had sprouted forming a ~~XXXXX~~ sheltering canopy over it. The height from the ground we judged ~~to be~~ about forty feet. - later measured at 45 feet.

<sup>We saw immediately that</sup> It was entirely possible to photograph the birds at this nest by setting up a tower, the height of which <sup>not less than</sup> should be <sup>lower</sup> five feet ~~less than that~~ of the nest. We discussed ways and means and decided to rent the required number of sections of contractors' metal scaffolding. During the ensuing days I leveled off a place on the ground where the tower would be set up, ~~and~~ after



which  
~~that~~ there was nothing more for us to do but wait until the eggs had been  
 laid and hatched. Laying would take four days assuming the usual number of eggs  
 for warblers and that they <sup>would be</sup> ~~are~~ laid on successive days. The incubation  
 period for Cerulean warblers has never been precisely determined but is  
 probably twelve to thirteen days as it is for other warblers of the <sup>same</sup> ~~genus~~.  
 and  
 Thus, assuming three days more for completion; ~~nest and~~ four days for egg  
 laying, incubation should begin on the 25th of May, the nest having been  
discovered on the 22nd. Thirteen days more to hatch the eggs would take until  
 June 11, and allowing two to three days more for the young birds to develop <sup>the</sup>  
 withstand the <sup>caused by our activities</sup> ~~extra exposure~~ not  
 strength necessary to ~~extra exposure~~ to which they would/ordinarily be  
 subjected would bring the day when photography might begin to June 12 or 14.  
 The scaffold could be set up two or three days before that.

So we had more than two weeks to devote to the photography of other  
 birds, and not many days passed before we had located/a large number of nests  
 including a Golden-winged warbler, a Blue winged, Ovenbird, Chat, Acadian  
 flycatcher, Yellow warbler, Rose-breasted grosbeak, Short-billed marsh wren,  
 and many other common birds. The one that interested me most was the Golden-  
 winged which I had found building a nest a day or two after Powell found the  
 Cerulean. But the Blue-winged, which Betty discovered, was equally advanced  
 and ~~was~~ ready to photograph at the same time. Because the Golden-winged was  
 a new bird for me I photographed it first on June 9, the Blue-winged on June 10,  
 and the Golden-winged again on June 11. Other birds I worked on were meadowlarks  
 grasshopper sparrows, and bob o'links.

In the mean time Powell and I had set up all but the top section of  
 the scaffolding by the cerulean nest. On June 12 we saw the ceruleans carrying  
 food and knew <sup>on the nest we completed</sup> that the eggs had hatched, and ~~that day/put the top section on~~  
<sup>and placed</sup> the scaffolding with a platform of planks on top. As I stood there with the nest  
 level with my shoulders the female ~~XXXXXXXX~~ who had been frightened off by  
 our activity returned with food, fed her young and settled over them to brood.

I reached over to see how she would react to my hand and she didn't budge. Withdrawing, I watched her for a while as she adjusted her position <sup>on the nest</sup> ~~young~~ and presently the male came and <sup>gave</sup> ~~fed~~ her a green caterpillar which she then, by backing off onto the edge of the nest, ~~she~~ fed to one of her young. This was almost too good to be true. We had been prepared for quite a different reaction; for the possibility that they would be very much alarmed by the nearness of the strange structure, not to mention our presence, but in contrast to the behavior of ground nesting birds, which are vulnerable to many ~~more~~ predators, <sup>It would seem</sup> ceruleans ~~have~~ not been conditioned to ~~xxx~~ dangers that ~~xxx~~ include ~~xxx~~ large mammals and people and are therefore quite fearless when confronted with them.

The next day it <sup>rained and June 14 was still unsettled</sup> ~~drizzled~~ but the weather was not bad enough, I felt, to interdict photography, and because the Cottrilles preferred to wait for better weather, I decided to have go at it. I hauled all my equipment up onto the platform with a rope and set it all up without unduely disturbing the warblers who went about their domestic affairs with apparently little concern for me. After that it was a very simple matter to photograph them intermittantly between showers. When the rain got too hard to work I would cover up my camera and power packs with waterproof sheets, and <sup>when</sup> ~~as~~ it let up start again. Conditions were far from being the most favorable although I was still able to take quite a few pictures. While so occupied I noticed that the nest, which, being constructed of ~~lichens and plant~~ <sup>material</sup> ~~fibers~~ and <sup>possibly of</sup> ~~spider web~~ <sup>lim</sup> would quickly become soaked and soggy, was on the contrary quite impervious to water. Lichens are well known to absorb water and change from a brittle to a flexible state, and this nest was partly composed of lichens. I was very curious to know if it had changed in this respect, <sup>due to the rain</sup> and so I gently touched ~~it~~ it, expecting it to feel soft if not wet, but to my surprise it was hard and stiff as though it had been cemented together <sup>on the outside</sup> with some kind of impervious glue, the way the sticks of a chimney swift's nest are stuck



Do

produce

together. I wonder whether Cerulean warblers also <sup>produce</sup> a salivary secretion <sup>(that they)</sup> <sup>their nests</sup> ~~to use as a bonding material for?~~ Considering their adaptation to the high forest canopy and the sites they prefer for their nests on the exposed top of a branches where there are no twigs for anchoring ~~for attachment~~ are available some kind of adhesive material might indeed be necessary to hold them in place against the dislodging effects of wind and rain. We all had ample opportunity to photograph the Ceruleans several times and the last time I photographed them was on June 18th, when the young were still several days from fledging.

By the time we had finished with the Cerulean Warblers, <sup>peak of the</sup> the nesting season for the majority of southern Michigan warblers had passed, and we decided

more delayed to return to our old stamping ground in the Upper Peninsula at Seney, where the / advent of spring is more delayed but when it comes it is more impetuous like a breaking ~~XXX~~ green wave over the land, and try our luck with the / later nesting warblers. To contribute <sup>my</sup> a special incentive to our purpose a report stemming from University circles was circulating that Connecticut warblers in an area west of Marquette. If a nest could be found it would be the first nesting record for the state. Bill Dyer and Larry Walkinshaw were going with us to Seney and proposed that after working there for a while we move on west to the Connecticut <sup>warbler</sup> area. For whatever worth these state records have Larry was very eager to establish this one, and since none of us had seen many Connecticut Warblers we agreed to go along on the search. I have always felt unsympathetic with the field ornithologists propensity <sup>away</sup> for attaching importance to a correlation <sup>between</sup> bird distribution and political boundaries. The relationship is entirely arbitrary, without ecological significance. ~~When~~ <sup>(who)</sup> <sup>(zeal to)</sup> the zeal of the record collectors carry their the point of shooting all ~~exterminate~~ the advance individuals of a species which is extending its range, simply because it happens to cross a state or international boundary, are <sup>reflecting good individual</sup> guilty of / ~~XX~~ / morally untenable practices <sup>with little or no</sup> ~~and without the least~~ scientific justification.

At Seney we photographed Black-throated blue Warblers, Nashvilles, Chestnut-sided Warblers, <sup>and</sup> Lincoln Sparrows but missed out on Morning Warblers.

At the Connecticut area we found the birds without difficulty, but unfortunately we were too late for best photographic conditions. To his great satisfaction and our common delight Larry found one nest containing well feathered-out young that fledged the next day, and together we discovered another Connecticut feeding fledgelings. The terrain was flat dry logged-over land which was becoming reforested with poplars, maples, and saplings of other hardwood species. Quite naturally we concluded, which the next summer working in northern Minnesota bogs where we went in search of other warblers proved to be an erroneous generalization, that this type of association was typical Connecticut breeding territory. The dryness of the land and the hardwood vegetation we found the warblers associated with here in Michigan was completely unlike the swampy habitat they frequented in Minnesota.

There ~~must have been~~ <sup>will</sup> at least four to six pairs of birds in the territory we searched. Probably because the majority were feeding young out of the nest they were not difficult to locate and to observe for rather prolonged periods of time. We quickly noted certain idiosyncrasies of behavior that distinguished them from most other warblers if not from the other *Sporeornidae*. The alarm call which is loud like that of the ovenbird/is more like a whip of the genus *Seiurus* but on the other hand, than a chuck, but in a manner more like the ovenbird than its congener the ~~from place to place~~ Morning Warbler the Connecticut has a tendency to walk deliberately along a branch or on the ground / instead of hopping or flitting from place to place. They are less secretive than Morning warblers staying more in the open and seeking less the ~~concealment~~ <sup>protection</sup> of thickets in which the latter creep around mouse-like ~~to retain~~ <sup>assuring themselves</sup> always maximum concealment.

Our success in 1960 encouraged us to lay plans for a more ambitious expedition the following year into Canada and the heartland of the sub-boreal breeding warblers; those types that migrate across the United States in spring <sup>zones</sup> to the coniferous forests of Canada, north of the Great Lakes, where they have accommodated to the more uniform, less complicated associations of spruce and birch not found in such abundance to the south. This part of Canada, geologically speaking, recently liberated from ~~the~~ glacier ice, is a ~~land~~



continuous  
 watery land of lakes and ponds and bogs where a ~~progressive~~ change from  
 open bodies of water to forest is plainly visible and swiftly progressing  
 even in the terms of human lives. A shallow pond shrinks rapidly as the  
 bordering vegetations encroaches from all sides and ~~XX~~ organic ~~XXXXXX~~ matter  
 fills it in at the bottom. Bushes grow out from the shore, collect litter  
 about their stems and roots; a spongy land develops that supports more  
 vegetation; trees take root; and so the advance continues towards the center  
 until the whole area is filled with ~~marsh bushes~~ <sup>shrubby plants</sup>, Labrador tea, hummocks  
 of sphagnum, leatherleaf, ~~marsh~~ <sup>(and a bog is formed.)</sup> ~~grasses~~ <sup>advance invaders</sup>. Following the ~~invasion~~ water tolerant  
 black spruce, ~~small scrubby short-lived conifers~~ <sup>(and tamarack)</sup> march into the area a few  
 at a time preparing the way for more permanent occupants. Eventually with  
 the consolidation of the accumulating organic matter and the building up  
 of soil the developing land becomes less water logged and is able to support  
 the climax ~~XXXXXX~~ evergreen forest. During this sequence of events the bog  
 becomes the home of many birds some that nest <sup>close to</sup> on the ground and in the  
 hummocks and bushes, others <sup>higher</sup> in the spruce trees. In this favorable environment,  
 richly endowed <sup>(with a productive potential for)</sup> during the short summer growing season <sup>(number of)</sup> of the insect food  
 needed to raise their broods, the varieties which find favorable conditions  
 is very large <sup>indeed</sup> and contains representatives from all the major families of the  
 passerine birds. ~~Sparrow, finches, vireos, flycatchers, waxwings, thrushes,~~  
~~titmice, and warblers are all there.~~ White-throated and Lincoln Sparrows,  
 Rosebreasted Grosbeaks, Red-eyed and Blue-headed Vireos, Yellow-bellied  
 Flycatchers, Tree Swallows, Cedar Waxwings, Swainson's Thrushes, Boreal  
 Chickadees, and among the warblers Nashvilles, Tennessees, Connecticut, and  
 Blackburnians, Black-throated Greens, Bay-breasteds, and Cape Mays are all  
 there.

The warblers we had our sights set on for 1961 were the Tennessee  
 and the Cape May whose breeding range extended south from northern Canada  
 and Alaska to the northern New England, Michigan, and Minnesota. The nesting  
 records <sup>of these species</sup> in the United States are few and ~~occasional~~ <sup>well scattered</sup> and we concluded that

our best chance for finding breeding birds would be in Canada. A recent study by Charles Kendeigh on the relations between spruce budworm infestations and breeding bird populations showed that wherever a ~~fulminating development~~ <sup>plague</sup> of the insects occurred arborial nesting <sup>warblers</sup> ~~birds~~ increased <sup>to</sup> greatly. His survey covered an area in Ontario around Lake Nipigon north of Lake Superior where an budworm outbreak had been rampant for several years and he noted that one of the commonest warblers there was the Cape May. Here we decided to try our luck hoping that we would be able to add at least one new warbler to our list of those photographed.

We met in Jackson again and started north on June 12th crossing into Canada late in the day at Sault St. Marie. The highway along the north ~~shore~~ <sup>east</sup> coast of Lake Superior had recently been improved and passed through beautiful wild rocky country very reminiscent to me of the coast of Maine. This part of Ontario was scarcely populated at all, the settlements on Lake Superior were few and small depending for their existence ~~on~~ largely on the pulpwood industry and to a minimal degree on the slowly increasing automobile tourists. To the north the broken rock-ribbed land of the Canadian Shield ~~stretched away~~ clad in uninterrupted stunted spruce forest stretched away for hundreds of miles to James Bay and the taiga beyond. The only breaks in this whole vast wilderness were the thin steel ribbons of the trans-Canadian railroads. On June 14th we reached Nipigon a wooden town that lives by the lumber and pulp wood floated out from Lake Nipigon and the interior by the Nipigon and Blackver which is shipped off to paper mills in the United States. The logs are floated down from the interior on the Black Sturgeon River that drains ~~Lake Nipigon into Lake Superior~~ the back country into Lake Superior. This was the country - the source of the Black Sturgeon River west of Lake Nipigon - where <sup>had</sup> Kendeigh found so many Cape May warblers attracted by a budworm plague. We signed in at the Black Sturgeon River Lodge and set out to explore the areas he had described. The whole region for hundreds of square miles was laced with logging roads making it possible for us to cover a lot



of ground. For long distances in every direction the spruce ~~XXXX~~ forest had been clear cut several years before and was being replaced with poplar. With the wiping out of the spruces the budworms had/also been eliminated and the Cape Mays, deprived of suitable habitat as well as abundant food, had gone too. We met a man on a back road who was making a ~~timber~~ survey for the lumber company of the natural regeneration of spruce trees. He told us that the company was very worried because <sup>also</sup> ~~regrowth was not taking place~~ by spruce <sup>reforestation</sup> (even when reseeded was tried) <sup>(dense)</sup> was not taking place as had been expected and in place of ~~regrowth~~ <sup>with of</sup> spruce seedlings the cut over land was being pre-empted by poplar, willow, and other -- worthless as he called it -- short-lived deciduous vegetation. It was plain for anyone to see by the scarcity of young conifers that this was the case and that the land would not yield another crop of pulpwood for many years.

Our quest for the Cape May warbler was obviously not going to ~~be~~ successful here, but there still remained the Tennessee which was second on our list so were we heard Tennessees singing we shifted our search to swampy places that had not been disturbed by lumbering.

The next day in a black spruce-sphagnum bog we located a pair that gave every indication of having a nest by their behavior ~~apt~~ within a limited circumscribed area. For several hours we observed and followed them around until Betty and Powell simultaneously spotted the nest. It was sunk in the side of a mound of moss and woody shrubs and contained 5 eggs. Despite this find and another day's work in the field with little in the way of nest discoveries to show for our efforts we reluctantly concluded that the Nipigon country was not going to be the profitable region for birding we had anticipated and decided to leave Canada. Northern Minnesota near the town of Ely, ~~the~~ the outfitting community for canoe trips into the Quetico-Superior lake country, from all reports offered much in the way of variety and abundance of breeding birds. An added advantage from our point of view was that the forests in the neighborhood of Ely had not been recently lumbered.

We were fortunate in being able to rent a cabin <sup>at</sup> ~~from~~ Pine Point Lodge for a month. The lodge was right on the edge of a network of lakes and streams

chance

our best/for finding breeding birds would be in Canada. A recent study by Charles Kendeigh on the relation between spruce budworm infestation and wherever a fulminating development of the breeding bird populations showed that arboreal nesting birds increased during fulminating increases in the budworm greatly wherever the budworm infestations were rampant. His survey covered an area in Ontario north of Lake Superior around Lake Nipigon where a budworm outbreak had occurred

LABE-EMVGE



and bogs that connected with the canoe area just to the north. Our first explorations proved that we had not made a mistake in coming to Minnesota. Birds of all kinds were everywhere, including all the common species of warblers including, best of all, both Tennessees and Cape Mays. We quickly realized that the numbers of warblers and particularly the presence of Cape Mays was very probably related to a budworm plague which for the past few years had been present in this part of Minnesota. In some places <sup>but not generally</sup> the infestation of young spruces and balsams were heavily infested to the point that balsams had been killed by complete defoliation. The larger trees appeared to be less vulnerable to have suffered and/less damaged by the insects. On inquiring about the spruce budworm infestation we were informed that the Department of Agriculture had sprayed the forest with DDT in several consecutive seasons but had ultimately <sup>in despair</sup> terminated the program as ineffective, consigning control to the birds.

In the first two days we explored a black spruce <sup>tamarack</sup> bog and found three Tennessee nests all with eggs. The sites of the nests <sup>(were all)</sup> ~~were~~ much the same: placed in the sides of sphagnum hummocks or in old stumps so overgrown with club moss, snowberry and twin flower vines, and grasses as to ~~be~~ scarcely permit recognition of their origin. Cape Mays were present in the bog, much to our satisfaction as justification for having left Canada, and also Nashville Warblers, White-throated Sparrows, Cedar Waxwings, Boreal Chickadees, Winter Wrens, Myrtle, Parula, <sup>and</sup> Magnolia Warblers, <sup>and</sup> Olive-sided Flycatchers, to mention only some of the birds we saw those first two days. So many were there we were constantly being distracted from the primary goal of finding Cape May nests. <sup>H</sup> The principal disadvantage we encountered to working in the bog <sup>also called buffalo gnat swamp because of the flies</sup> was the swarms of black flies and mosquitoes. They rose up in clouds around us making the use of head nets essential most of the time, and therefore the manipulation of binoculars awkward <sup>to say</sup> / least and at most impossible. The mosquitoes were considerably less bothersome than the flies for they can generally be discouraged with repellants or reasonably impervious clothing, but not so the black flies which are the most diabolical, insinuating, and also called buffalo gnats because of their hump-backed appearance

persistent of all the biting insects that ever have learned to make the lives of men miserable. Their only redeeming virtue - if the absence of an evil can be exhalted to the position of a benefit - is that they carry no disease. They emerge into adult life out of purity and beauty and would be destroyed by pollution of their larval environment. Black flies start life as aquatic insects in the foaming, leaping, sparkling brooks found only today in clear, clean wilderness places. When the larva is ready, sometime in June, to trade its watery existence for the freer aerial life of a fly, it builds around itself a sac of air and at the propitious moment lets go its attachments to the stone/and in its crystal sphere floats to the surface where the bubble bursts releasing at that instant its winged ~~adult~~ <sup>successful</sup> tennant.

In their search for blood to insure the fertilization and/development of the subsequent generation of flies they exercise all that determination and ingenuity as a result of which they have deservedly acquires the unmitagable loathing of all woodsmen. Noxious ointments and liquid repellants deter them little. The only effective way to keep them from sampling your body fluids is to erect a physical barrier between them and you. Trousers must be tucked into the tops of boots; <sup>your</sup> jacket must be tight around the waist to frustrate any fly that may attempt to crawl up under it; a zipper <sup>zipper</sup> must close the front up to your chin; sleeve cuffs must be buttoned up and covered by gauntleted gloves; you must wear a broad-brimmed hat over which a fine-mesh head net hangs down well onto your shoulders where it should be pinned to your jacket. Even in this armour some flies will mannage to work their way into your skin. Spruce bogs where buffalo gnats abound are sultry places on a sunny day in June, and should you be concerned that the protection against gnats here recommended is oppressive and hot I can only assure you that hot as <sup>the clothing</sup> ~~it~~ most certainly is, it is far less uncomfortable in the long run than the days of misery you will suffer as a consequence of the ~~XXXXXX~~ flies/unimpeded access to your body.

However, the bog as a beautiful place. <sup>(and larch)</sup> Spruce trees and gradually Conifers



taking it over as it progresses from a filled in pond to a forest, but they have not yet made much progress. The trees ~~are~~ standing about singly and in small groups, <sup>chiefly</sup> ~~largely~~ black spruce <sup>(and larch)</sup> with an occasional taller white spruce. ~~Cotton grass - a sedge~~  
 The billowy open surface of the bog is white with blooming Labrador tea ~~and~~ giving the impression by its prominence of being by far the most abundant growth ~~and cotton grass - a sedge~~ although leather leaf and other woody bushes contributed almost equally to the complex mixture of bog vegetation. In the early morning light the packed white blossoms ~~are~~ as dazzling as frost, to which the <sup>shalo-like</sup> the/shine reflected by the needles of the spruces from a low sun added a wintry impression. All this brilliance slowly subsided as the day advanced and the bog assumed a more common place aspect. On the higher ground surrounding the bog that was once the bank of the long since obliterated pond the trees of the mixed forest are larger and older. Here the air is perfumed in June by the honeysuckle sweetness of thousands of twin flowers that in places carpet the forest floor, and is whitened with blooming bunchberry and maianthemum, the wild lily of the valley.

In this setting we finally found our most sought for bird. For several day we had been seeing Cape Mays but they were all males and we were forever being frustrated when we tried to keep them in sight. Then on June 25th one carrying food was seen. We returned to the bog the next day, a Connecticut <sup>exciting and</sup> warbler was heard singing, a Bay-breasted was seen, but most/significant Betty again found a Cape May with food. <sup>now</sup> <sup>now</sup> We/converged/on the place where twice <sup>now</sup> she had seen this happen and after two hours in which the three of us noted and identified every bird that moved Betty finally found the nest. It was built close to the trunk near the top of a black spruce at an estimated height of 26 feet ~~height of the nest as 26 feet near the top of a black spruce,~~ <sup>(of the tree)</sup> later measured as 20 feet high and 3 1/2 feet from the top. The behavior of the Cape Mays was interesting and accounts for our failure to find the nest sooner. The birds do not fly directly either to the nest or to the nest tree. They approach at a low level usually going first to a nearby tree, then to the lower branches of the nest tree which they climb close to the trunk until they reach the height of the nest when they go out onto the end of a branch to look around before before going back in to feed the young. On

leaving the nest neither bird flies straight out very often but instead usually dives towards the ground and flies away low down. When in the nest tree the Cape Mays do not behave the way most birds do by hopping and jumping but rather they walk on the branches very much after the manner of the Connecticut Warblers we had observed last year in Michigan. The female was much more timid than the male taking much longer than he did in her approach to the nest, hesitating and waiting often for many minutes only a few feet from the nest before she got up courage to feed her young. Now we knew why they <sup>were</sup> so difficult to follow when we had found them before carrying food.

The only way we could see to photograph the birds was to lower the tree, ~~and to start right away.~~ The nest tree was fortunately rather thin with short weak branches and would therefore not be too difficult to mannaage.

On a ladder I brought into the swamp I climbed up to find out what the nest contained. There were eight young birds in it about five days old with their eyes open, and so we decided to start the lowering right away. We cut a pole which we lashed to the base of the nest tree and attached a pully to its upper end with a rope through <sup>it</sup> ~~the pully~~ to the nest tree half way up. Then we sawed through the nest tree about four feet from the ground and lowered it this distance tying it <sup>firmly</sup> to its own stump and the pole. Both birds were quite cautious in the way they <sup>responded to</sup> ~~approached the nest after~~ this maneuver. The female flew straight to the nest once and fed the young. After a long time she returned, landed <sup>towards</sup> ~~in the nest tree~~ below the nest, climbed up part way, and stayed motionless below the nest for many minutes before flying out again. The male came eventually with food, climbed the tree the usual way and stayed on the nest. We left for the day late in the afternoon hoping for the best.

The next morning both birds were actively feeding the young. We gradually lowered the nest by cutting off three foot sections at a time off the lower end of the nest tree and at the same time shortening <sup>as necessary</sup> ~~the pole~~ to which it was tied ~~as needed~~. The parent birds accepted these changes with apparently very little disturbance to their feeding activities, and we were able to bring



the nest down to six feet from the ground without mishap. The female reacted more timidly to these manipulations than the male who was quite fearless or more adaptable than she. They both were feeding budworms and from time to time the male brought dragonflies on several occasions, but the former constituted by far the principal food item. They came with beaks full of worms, four to six at once, which they distributed among several of their offspring. With eight mouths to feed the budworm infestation was a bonanza for the Cape Mays, and as Kendeigh had observed in Canada was probably a factor in influencing breeding in this area. As the infestation is brought under control by birds and dies down breeding success will gradually decline and fewer Cape Mays will return to these Minnesota bogs in the years to come. Where they will go will depend on the building up of food supplies elsewhere, and if this fails to take place they should become more widely distributed or even diminish in numbers.

As they approach the nest they both fly in low to nearby trees, and climb up near the trunk to the higher branches, and walk out to the branch tips for a better view of the situation and <sup>a</sup> more convenient taking off place. With the nest in its new lowered position from these lookout points they drop down directly to it, but after feeding, as was their habit when we first found the nest, <sup>towards</sup> dive to the ground and fly away low. They were not difficult to photograph as they became accustomed first to the new position of their nest and later to all the photographic paraphernalia. In this respect they behaved in a manner no different from most kinds of passerine birds, and especially other wood warblers, demonstrating remarkable adaptability.

This Minnesota expedition, which began so unpromisingly in Canada, turned out to be such a great success with the photography of two new warblers - the Cape May and the Tennessee - as well as several other species photographed not for the first time, and with the discovery that Connecticut, Bay-breasted, and Morning Warblers were also breeding species in the same bog <sup>(as well as in the</sup> ~~general~~ <sup>surrounding</sup> ~~region about~~, which we had not had time to work on, we determined to return

the following year.

This time we agreed to meet in Ely instead of Jackson and <sup>by</sup> so doing shortening my driving distance <sup>(for me)</sup> by more than a thousand miles. I arrived on <sup>(by the time they)</sup> came June 15th and ~~the~~ Cottrilles/on the 17th, I had already found a Tennessee's and a Canada's nest ~~by the time they came~~. In two days we had found four more Tennessee Warbler nests, two of them <sup>the</sup> in same sites as the year before, presumptive evidence that they were the same pair. This year we found more nests than in '61 and very soon had a larger backlog than we could ever hope to photograph, which included more Tennessees, Yellow-bellied Flycatchers, Cedar Waxwings, White-throated Sparrows, Nashville Warblers, Chestnut-sided Warblers, Magnolias, Least Flycatchers, Red-eyed Vireos, Cape Mays building, and several others. Some of these we were able to work <sup>on</sup> such as the Yellow-bellied and Least Flycatchers. But still our primary quests of the year, for <sup>the</sup> Bay-breasted and Connecticut warblers, remained unrewarded and unfulfilled. We explored much farther afield this year than last, and not only became better acquainted with the country around Ely but even more cognizant of the richness of its bird population. We began to appreciate that the elusive Connecticut Warbler was a much more common bird than we would have suspected from the paucity of published sight and nesting records. <sup>In</sup> almost every black-spruce-tamarack bog we visited after mid-June we would hear its characteristic loud song, <sup>which</sup> <sup>was</sup> in some aspects of its quality not unlike the songs of the Ovenbird and its sympatric relative the Morning Warbler. The apparent preferred habitat of the Connecticut in Minnesota was quite different from the kind of terrain where we found the bird two years ago near Marquette, Michigan, or <sup>(the dry poplar ridges)</sup> <sup>a</sup> on which in southwestern Alberta Taverner in 1926 found them to be common nesting species.

A week after our arrival in Minnesota we were back in our favorite spruce and tamarack bog, where we had photographed the Cape May the year before, trying to delimit the territory of an Connecticut which we had heard singing last year and again intermittently this year, when our attention was drawn



to the high <sup>Sybilant</sup>whispered buzz of a Bay-breasted. The bird was not far fromt on where Instoods and we all saw him, but I was ~~at the moment~~ intent on following a Cape May. Something about his behavior gave me the strong impression that he was especially interested in a clump of medium height black spruces near where he sang, but since at the moment I was intent on following a Cape May, I suggested to Powell, who seemed less occupied, that he go over and examine the grove of spruces from the other side, which he did and immediately announced that he had found the nest. The nest was ten feet high in a twelve foot tall spruce and contained 5 eggs. So we had found one of the two birds we sought and only had to worry about predators finding the nest before the eggs hatched and we could get our photographs.

The only top priority bird left to find now was the Connecticut, but in the mean time we had become almost as anxious to find and photograph the other equally secretive, but less rare, member of the *opporornis* genus the Morning Warbler. Morning Warblers have a disquieting habit of deserting their nests if they are disturbed during the building stage or before eggs are laid. We had already found two nests under construction and both were deserted, so when Betty found another just finished we kept strictly away, keeping track of it only from as far away as possible with field glasses. The prospect for finding a Connecticut nest became increasingly remote as the days passed, but we returned to the search daily in the bog where we had repeatedly seen and heard the birds. Then on July 4th Powell, who was working alone, whistled for help -- we carried police whistles for this purpose -- and Betty and I converged on the area. He had stirred up a Connecticut which was uttering its loud whipor whik protest note that we had heard before only in Michigan. Soon we saw both birds and one was carrying food. The male has a slightly darker gray, cape-like hood than the female but the difference is not as distinctive <sup>as</sup> with the Morning Warbler. An unbroken white eye-ring is the characteristic mark of the Connecticut, whereas only the male Morning Warbler has white on his eye lids but no ring.

from nowhere

carrying a caterpillar

As we watched the birds one or the other/would fly to a small larch, of which several were distributed about in a loose formation. Sometimes a bird simply appeared unexpectedly because we were unable to keep them/constantly both in view. It would walk to the end of a branch where it would stand often for many minutes looking down as birds do when they are getting ready to drop off from a perch. Eventually it would either fly to the ground where it disappeared into the Labrador tea, or with an apparent change of mind fly to another larch and repeat the performance. After the bird alighted on the ground and vanished we never saw it fly up again, but it would reappear ultimately in one of the trees scolding or with more food. We searched carefully all the places - they were not always the same - and for several yards around in all directions where the bird had disappeared in the bog and found nothing.



walk to the end of a branch and stand there often for many minutes looking down just as though it were about to drop to the ground. Sometimes it ~~XXXX~~ seemed to change its mind and would fly to another neighboring tree, and at others it would fly down into the Labrador tea and disappear, but never would it reappear from a place near where it had alighted. When we did catch sight of the bird again it was always back in one of its trees scolding or with another worm. We search carefully the places where ~~XXXXXXXXXX~~ the bird was ~~last~~ seen <sup>to land</sup> ~~on the bog vegetation and for several yards in all directions around these places, for they were not always the same, and found nothing.~~ We knew perfectly well a nest or fledgelings were hidden somewhere in the vicinity, and were beginning to suspect that the peculiar behavior of the birds of disappearing in different places more strongly indicated young birds scattered through the <sup>low</sup> ~~tundra-like~~ vegetation than it did a nest. As the morning wore on we became more and more discouraged and finally decided to knock off and eat our lunch. Besides it was beginning to rain. While Powell and I stayed to watch the Connecticuts, Betty went back to the cars to fetch our sandwiches and coffee. On her return we sat down ~~on~~ each on his own hummock to eat. Hardly had we started <sup>when</sup> ~~then~~ Powell stood up without saying anything, ~~and it is~~ <sup>and grass</sup> ~~and~~ walked about fifty feet over to another hummock, separated the cover of leaves <sup>and with</sup> ~~and with~~ <sup>calculated</sup> indifference said, "You don't have to look any further, here it is". He had seen a slight movement down among some blueberry leaves, but he never saw a bird enter or leave the nest <sup>in</sup> ~~site~~. The nest contained four well feathered-out young. They looked as though they might jump out any minute. <sup>when</sup> ~~then~~ we stood back to <sup>observe</sup> ~~see~~ how the adults <sup>could</sup> ~~approached~~ their nest unseen; <sup>when</sup> ~~we~~ <sup>observed</sup> ~~saw~~ <sup>how they</sup> ~~them~~ creep through the tangled vegetation for a distance of many yards from the place where they ~~dropped to the ground, and how they walked away from the nest the same way.~~ <sup>the</sup> ~~they~~ <sup>creep</sup> ~~walked~~ <sup>again</sup> ~~in~~ <sup>moment</sup> ~~the same way.~~

and after feeding their young stealthily ~~walk~~ <sup>walk</sup> away again sometimes as far as to one of the <sup>into</sup> ~~tamaracks~~, which they would then climb, ~~and so.~~

The nest was beautifully concealed in a hollow in a hummock, visible only by parting the vegetation that completely covered it. A miniature blueberry bush grew above the hollow, leather leaf enclosed one side, and the long thin ribbons of <sup>sedge and</sup> marsh grass hung down on the other. ~~A mound of mixed sphagnum and cranebill moss~~ From under the nest a mound of mixed sphagnum and cranebill moss bulged out in front to afford further protection and concealment, and through the moss laced the tiny flat-leaved vines of snow berry and ~~the~~ tough long stems of lycopodium. More grass<sup>s</sup> trailed out from the clump of moss, old brown blades together with the new year's growth. The nest embedded in moss was made entirely of dry grass. When the birds approached the nest they came to it through a tunnel of leather leaf, grass, and Labrador tea.

The rain had settled down to a steady drizzle. Despite the inclemency of the weather I decided to attempt photography, the determining consideration being that the advanced stage of growth of the young birds, who would soon be leaving the nest, made it imperative to delay no more than was absolutely necessary. The longer photography was put off the poorer would be the prospects for success. Since I had not obtained any photographs of Connecticut's two years before in Michigan and the Cottrilles had, and also because they didn't want to photograph in the rain, I started first. By protecting the camera and electronic components with waterproof plastic covers and by working from a blind set up behind the camera I was able to take a surprisingly large number of pictures without any of the equipment getting wet. The birds adjusting very quickly to the camera and lights were soon feeding their young normally. The bad weather, rather than being detrimental to the success of photography, conferred an unforeseen advantage. The rain undoubtedly deterred the young from leaving the shelter of their nest, which warm sunny weather combined with the human disturbance to which they were being subjected would certainly have stimulated them to do; and this is exactly what happened the next day. The following morning, the weather having improved, I returned to take more photographs since I could not be certain that the dampness the day before had not damaged the film. As the temperature rose and the vegetation dried off the young birds became increasingly restless and before noon were leaving the nest. Thus, had we found the nest just a few hours later so that no photography would have been possible that same day, the chances for taking pictures would have been very much reduced. As it turned out the pictures taken in the rain were the best of the lot.



In the interval between finding the Bay-breasted Warbler's nest and photographing the Connecticut the Bay-breasted's eggs had hatched and on July 6 when the young were three days old I photographed these birds too. With this done, the program we had initially set as our goal, was for me successfully completed, but it was not all we accomplished. Every season of bird photography has its dividends in photographs of birds not on the agenda. Thus this year I had also photographed Chestnut-sided, Canada, Tennessee, and Yellow Warblers, Ovenbirds, Red-eyed Vireos, Rose-breasted Grosbeaks, Phoebe, Yellow-bellied Flycatchers, Veerys, and Swainson's Thrushes; and finally, after Betty and Powell had gone back to Jackson, the last Morning Warbler Betty found which had not deserted. Because the bird was such a late breeder I stayed over an extra week to do it, but I succeeded in obtaining photographs of only the female. On my way home to Santa Fe I stopped off in Gold Hill, Colorado where my son Jonathan was living and spent several days photographing Pileolated Warblers which were common nesters in an alpine meadow below Mt. Audubon in the Rocky Mountains.

of the  
Nineteen sixty two was the last/years I went birding in northern Michigan and Minnesota, but it was not my last with the Cottrilles. We were becoming a very effective team, and for my part I can say without qualification that had it not been for our association the number of warblers I have photographed to date would have been many less. In sixty three we decided to try our luck with some of the more southern species including the Hooded, Kentucky, and Worm-eating. That year we met in late May in Cincinnati where we worked in the Miami-White Water Ohio State Forest with the superintendent Ronald Austing, the well-known his raptore photographer. We did find the Hooded and Kentucky Warblers, but failed on the Worm-eating although the birds were no uncommon in the area. The dividends that year were Louisiana Water Thrushes, Blue-gray Gnatcatchers, Yellow-breasted Chats, White-eyed Vireos, and Wood Thrushes. Failure to find a nest of the Worm-eating ~~irked us~~ rankled so much

(in sixty four I was in the Galapagos Islands)

that we tried again in 1965, this time in southern Indiana, and again without success because we were too early. The birds were plentiful enough in the state forest where we worked but were just beginning to establish their territories and build their nests when we were there the second week in June. Since we had plans to go north to New Hampshire for Black Poll Warblers the Connecticut Lakes region of we could not wait for the worm-eaters. ~~Forest on the logged-~~ Black Polls are abundant nesters in the seedling spruces ~~that are replacing the~~

every land of the St. Regis Paper Company. Betty and Powell each found several nests but the loss was high due probably to predation by chipmunks and red squirrels. Ultimately I was able to photograph at two nests, one in a spiraea bush and the other in a more typical site in a spruce seedling.

The <sup>Connecticut</sup> Connecticut Lakes where the <sup>River</sup> River rises just under the Canadian border is a region of clear trout streams, ~~and~~ many small lakes, and low flat hills once the gravel ridges, moraines, and drumlins scooped up, deposited and left behind by the continental ice sheet. Birds of the Canadian zone are numerous here and include among the warblers Wilson's, Redstarts, Northern Water Thrushes, Magnolias, Black-throated Greens, Canadas, Nashvilles, and Yellow-throats. White-throated ~~Sparrows~~, Lincoln, and Savannah Sparrows are common in their respective habitats, as are flycatchers ~~the~~ Olive-sided, Alder, and Yellow-bellied. I photographed Wilson's Warblers, Redstarts, Savannah Sparrows, and a Yellow-bellied Flycatcher again as well as a quite tame Kingfisher in a gravel pit. A species for which the area is as famous with ornithologist as for the Black Poll Warbler is the Philadelphia Vireo, (other northern vireo species the) locally common and generally much more abundant than the Blue-headed Vireo. We found about a half dozen nests all too high in poplars to photograph; then we were put on to one by an itinerant bird watcher (much more conveniently) located and by building a platform were able to get all the pictures we wanted.

final The sequel to our Worm-eating Warbler search came for me in 1971. In the two preceeding years the Cottrilles had hunted <sup>for</sup> the birds in the West Virginia Kanawha State Park near Charleston, but because they went there too late in



June when the breeding cycle was drawing to a close ~~they~~ found only fledgelings and no nests. Benefiting by their experience I visited the Kanawha State Park in late May <sup>(6/1971)</sup> and found two nests before June at both of which I photographed the birds.