Michigan + Minnesota

Much of my pursuit of birds has been carried on in Michigan and Minnesota with my long-time friends the Cottrilles of Jackson. 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 forty-six and forty-seven. 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 Bringham II in Battle Creek. The generous, warm hospitality for two successive years 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 crystallization of the direction of my interest in bird photography. During this period my obsession with wood warblers received its decisive orientation.

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 would meet in the Cottrilles room for coffee after supper and talk about birds and equipment. Powell Cottrille always managed to display a more carefree attitude towards our daily experiences and tribulations than either Larry Walkinshaw or his wife Betty who were much more competitive and deadly serious about nest finding, as though their careers and reputations depended on beating the rest of us 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 we others 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 Cottrilles 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 you can't do it".

In 1959 I persuaded the Cottrilles to join me for a month in southern Arizona to photograph southwestern warblers. I had made arrangements to stay for a month at the Southwestern Research Station of the American Museum of Natural History on 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. 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, the Blue-throated, Rivoli's, and the Violet-crowned all native to the Sonora Desert. 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 than ever before. I had already photographed thirty species which was about half of the total number found north of Mexico not counting closely related subspecies. Several varieties indigenous to the mid-temporate zone which are common in southern Michigan still remained to be photographed. 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 a 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. At that distance surrounded by leaves they are hard to see harder to follow, but assuming that persistance will be rewarded, the discovery of a nest will be only the beginning of an incredible amount of planning and work necessary to put a camera near enough to a nest for any meaningful photography.

These were some of the difficulties by which we would surely be confronted. We decided 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 come in the spring and stay with them in Jackson. I arrived on the 20th of May. 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 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 seconds more 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 obviously in the direction she had taken. We supressed 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 cerulean again until we went back to the place where we had first seen her and found her again 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 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 out from the trunk of the tree where a tuft of broad new leaves had sprouted forming a sheltering canopy over it. The height from the ground we judged to be about forty feet -- later measured at forty-five feet.

We saw immediately that it was entirely possible to photograph the birds at this nest by setting up a tower, the height of which should not be less than five feet lower than 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, after which 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 would be 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 same genus. Thus, the nest having been discovered on the 22nd, and assuming three days more for completion, four days for egg laying, incubation should begin on the 25th of May. 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 the strength necessary to withstand the extra exposure caused by our activities to which they would not 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 between us 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 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, grass-

hopper sparrows, and bob o'links.

In the meantime 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 that the eggs had hatched, and on the next day we completed the scaffolding and placed a flatform of planks on top. As I stood there with the nest level with my shoulders the female 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 on the nest and presently the male came and gave her a green caterpillar which she then, by backing off onto the edge of the nest, fed to one of your 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 contradistinction to the behavior of ground nesting birds, which are vulnerable to many predators, ceruleans it would seem have not been conditioned to dangers that include large mammals and people and are therefore quite fearless when confronted with them.

The next day it rained and June 14 was still unsettled 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 a go at it. I hauled all my equipment up onto the platform with a rope and set it

all up without unduly 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 intermittently between showers. When the rain got too hard to work I would cover up my camera and power packs with water-proof sheets, and when 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 plant material and possibly of spider webbing should 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 to this respect due to the rain and so I gently touched 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 on the outside with some kind of impervious glue, the way the sticks of a chimney swift's nest are stuck together. Do Cerulean warblers also produce a salavary secretion that they use as a bonding material? Considering their adaptation to the high forest canopy and the sites they perfer for their nests on the exposed top of a branch where no anchoring twigs are available some kind of adhesive material might indeed be necessary to hold them in place against the dislodging effect 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, the peak of the nesting season for the majority of southern Michigan warblers had passed, and we decided to return to our old stomping ground in the Upper Peninsula at Seney, where the more delayed advent of spring comes like a breaking green wave over the land, and try our luck with the northern, later nesting, warblers. Contributing a special incentive to our purpose, a report stemming from University of Michigan circles was circulating that Connecticut warblers were breeding 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 Warbler 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 field ornithologists propensity for attaching importance to a correlation between bird distribution and political boundaries. The relationship is entirely arbitrary, without ecological significance. The record collectors who carry their zeal to the point of shooting all the advance individuals of a species which is extending its range, simply because it happens to cross a state or international boundary, are guilty of morally untenable practices with little or no

scientific justification.

At Seney we photographed Black-throated Blue Warblers, Nashvilles, Chestnut-sided Warblers and 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 were 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 or 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 Oporornidae. The alarm call which is loud like that

of the ovenbirds of the genus Seiurus is more a whip than a chuck, but on the other hand, in a manner more like the ovenbird than its congener the 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~~ furtive than Morning warblers staying more in the open and seeking less the protection of thickets in which the latter creep around mouse-like assuring themselves 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 to the coniferous forests zones 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 glacier ice, is a watery land of lakes and ponds and bogs where a continuous 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 organic 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

shrubby plants, Labrador tea, hummocks of sphagnum, leather-leaf, marsh grasses and sedges, and a bog is formed. Following the advance invaders water tolerant black spruce, small scrubby short-lived conifers, and tamaracks 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 evergreen forest. During this sequence of events the bog becomes the home of many birds some that nest close to the ground in the hummocks and bushes, others higher in the spruce trees. In this environment, richly endowed during the short summer growing season with a productive potential for the insect food needed to raise their broods, the number of varieties which find favorable conditions is very large indeed and contains representatives from all the major families of the passerine birds. 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, Connecticuts, 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 northern New England, Michigan, and Minnesota. The nesting records of

these species in the United States are few and widely scattered and we concluded that our best chance for finding breeding birds would be in Canada. A recent study by Charles Kendeigh on the relation between spruce budworm infestations and breeding bird populations showed that wherever a plague of the insects occurred arborial nesting warblers increased too. His survey covered an area in Ontario around Lake Nipigon north of Lake Superior where a 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 at Sault St. Marie late in the day. The highway along the north shore 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 largely on the pulpwood industry and to a minimal degree on the slowly increasing automobile tourists. To the northeast the broken rock-ribbed land of the Canadian Shield 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 pulpwood shipped off to paper mills in the United States. The logs are floated out from Lake Nipigon and the interior by the Nipigon and Black Sturgeon Rivers that drain the back country into Lake Superior. This was the country -- the source of the Black Sturgeon River west of Lake Nipigon -- where Kendeigh had 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 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. On a back road we met a man who was making a survey for the lumber company of the natural regeneration of spruce trees. He told us that the company was very worried because reforestation by spruce was not taking place even when reseeding was tried as had been expected and in place of dense regrowth of 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 succeed here, but there still remained the Tennessee which was second on our list so we shifted our search to swampy places that had not been disturbed by lumbering were we heard Tennessees singing. The next day in a black spruce-sphagnum bog we located a pair that gave every indication by their behavior ~~within a limited circumscribed area~~ of having a nest. For several hours we observed and followed them around until simultaneously Betty and Powell 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 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 recently been lumbered.

We were fortunate in being able to rent a cabin at Pine Point Lodge for a month. The lodge was right on the edge of a network of lakes and streams 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, 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, ~~but not generally~~, 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 and to have suffered less damage 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~~ for several consecutive seasons but had ultimately ~~in despair~~ terminated the program as ineffective, consigning control to the birds.

In the first two days we explored a black spruce tamarack bog and found three Tennessee nests all with eggs. The sites of the nests were all much the same: placed in the sides of sphagnum hummcoks or in old stumps so overgrown with club moss, snowberry and twin flower vines, and grasses as to 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, Magnolia Warblers, and 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.

The principal disadvantage we encountered to working

in the bog was the swarms of black flies, also called buffalo gnats because of their hump-backed appearance, 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 to say the 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 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 exhaulted 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, somtime 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 that holds it under water and in its crystal sphere floats to the surface where the bubble bursts releasing at that instant its winged tenant.

In their search for blood to insure the fertilization and successful development of the subsequent generation of flies they exercise all that determination and ingenuity as a result of which they have deservedly acquired the unmitagated 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 your boots; your jacket must be tight around the waist to frustrate any fly that may attempt to crawl up under it; a zipper 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 manage to work their way in to your skin. Spruce bogs where guffalo gnats abound are sultry places on a sunny June day, and should you be concerned that the protection against gnats here recommended is oppressive and hot I can only assure you that hot as the clothing 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 flies having less impeded access to your body.

However, the bog is a beautiful place. Conifers are gradually 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, chiefly black spruce and larch with an occasional taller white spruce. The billowy open surface of the bog is white with blooming Labrador tea giving the impression by its prominence of being by far the most abundant growth

although leather leaf and cotton grass -- a sedge -- and other woody bushes contribute 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 halo-like shine reflected by the needles of the spruces from a low sun add a wintry impression. All this brilliance slowly subsides as the day advances and the bog assumes 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 pink twin flowers that in places carpet the forest floor, and which 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 days 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 warbler was heard singing, a Bay-breasted was seen, but most exciting and significant Betty again found a Cape May with food. We converged now on the place where twice 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 which later measured as 20 feet high only 3½ feet

from the top of the tree. The behavior of the Cape Mays was unusual 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 then they walk out onto the end of a branch to look around before going back in to feed the young. On leaving the nest only occasionally does either bird fly straight out but instead dives toward the ground before flying away. When in the nest tree the Cape Mays do not behave as most birds do by hopping and jumping but walk on the branches very much after the manner of the Connecticut Warblers we had observed the year before in Michigan. The female was much more timid than the male in the way she approached the nest -- hesitating and waiting often for many minutes only a few feet from it before she got up courage to feed her young. Now we knew why they were so difficult to follow when we had found them before carrying food.

The only possible way we saw to photograph the birds was by lowering the tree. When I climbed to the nest on a ladder I found it contained eight young birds about five days old with their eyes open, so we decided to start the lowering right away. The nest tree was fortunately rather thin with short weak branches and would therefore not be too heavy to manage. We cut a gin pole which we lashed to the bottom of the tree and ran a rope through a pulley at the top to the nest

tree half way up. Then we sawed through the tree about four feet from the ground and lowered it this distance tying it firmly to its own stump and to the pole. Both birds were quite cautious in the way they responded to this maneuver. The female flew straight to the nest once and fed the young. After a long time she returned, landed 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 three feet at a time by cutting sections off the lower end of the nest tree and shortening simultaneously as necessary the pole to which it was tied. The parent birds now accepted these changes quite readily with 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 however reacted somewhat more timidly to this manipulation than the male who was quite fearless or more adaptable than she. They both were feeding budworms and the male brought dragonflies from time to time, 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, which as

Kendeigh had observed in Canada was probably a factor in influencing breeding in this area. As the infestation is brought under control by the birds and dies down nreeding 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 development of food supplies elsewhere, and if this fails to take place they should become more widely distributed or even diminish in numbers.

As the Cape Mays approached their nest they both would fly in low to a nearby tree, climb up beside the trunk to the higher branches, and walk outonto the branch tips for a better view of the situation and a more convenient taking off place. From these lookout points they dropped down directly to the nest in its new lowered position, but after feeding, as a continuation of their habit when we first found the nest, dive towards the ground before flying away. As they became accustomed first to the new position of their nest and later to all the photographic paraphernalia they were not difficult to photograph . 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 unpromising ly 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 not photographed

for the first time, and with the discovery that Connecticut, Bay-breasted, and Mourning Warblers were also not uncommon breeding species in this and other surrounding areas which we had not had time to explore, we determined to return the following year.

This time we agreed to meet in Ely instead of Jackson to shorten by more than a thousand miles the driving distance for me. I arrived on June 15th and by the time the Cottrilles came on the 17th, I had already found a Tennessee's and a Canada's nest. In two more days we had found four more Tennessee Warbler nests, two of them in the same sites as the year before, presumptive evidence that they were the same pairs. This year we found more nests than in 1961 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 on, such as the Yellow-bellied and Least Flycatchers. But still our primary quests of the year, for the Bay-breasted and Connecticut warblers, remained unrewarded. 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~~ life. 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. In almost

every black-spruce-tamarack bog we visited after mid-June we would hear its characteristic song, which in some respects, as loudness and throatiness, is not unlike the song of its sympatric relative the Morning Warbler. The apparent preferred habitat of the Connecticut in Minnesota is quite different from the kind of terrain where we found the bird two years ago near Marquette, Michigan, or from the dry poplar ridges on which in southwestern Alberta Traverner in 1926 found them to be a 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 in the year before, trying to delimit the territory of a Connecticut which we had heard singing intermittently last year and again this year, when our attention was drawn to the high sybilant buzz of a Bay-breasted. The bird was not far from where I stood and we all saw him. 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 already found one of the two birds we sought and only had to worry about predators destroying the nest before the eggs hatched and we could get our photographs.

The Connecticut remained now our top priority bird. In the meantime however we had become almost as anxious to find and photograph the other equally furtive, but less rare, member of the oporornis genus the Mourning Warbler. Mourning Warblers have a disquieting habit of deserting their nests if they are disturbed during the building stage or before the eggs are laid. We had already found two nests under construction and both were subsequently deserted, so when Betty found a third, just finished, we stayed 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 place 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 whip or whik scolding note that we had become familiar with 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 as with the Mourning Warbler. An unbroken white eye-ring is the characteristic mark of the Connecticut, ~~whereas~~ not present on the Mourning Warbler, although the female mourning I later photographed did have a faint but distinct eye-ring. ~~only the male Morning Warbler has white on his eye lids but no ring.~~

As we watched the birds one or the other carrying a caterpillar would fly to a small larch, of which several were growing about widely spaced. Sometimes a bird would

appear unexpectedly simply because we were unable constantly to keep track of them both. 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 vanished into the bog vegetation, or with an apparent change of mind fly to another perch and repeat the performance. After the bird had disappeared on the ground we never saw it again until ultimately it reappeared in one of the trees scolding or with more food. We searched carefully all the places -- they were many -- and for several yards around in all directions where the bird had alighted in the bog, and found nothing.

We knew very well a nest or fledgelings were hidden somewhere in the vacinity, and were beginning to suspect that the peculiar behavior of the birds of disappearing in different places indicated more strongly young birds scattered through the bog 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 and we were cold. 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 each on his own hummock to eat. Hardly had we started when Powell stood up without saying a word, walked about fifty feet over to another hummock, separated the leaves and grass covering it and with calculated 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 site. The nest contained four well feathered-out young. They looked as though they might jump out any minute. When we stood back to observe how the adults could approach their nest unseen, we saw them creep through the tangled plants for a distance of many yards from the place where they dropped to the ground, and after feeding their young walk stealthily away again, sometimes as far as to one of the tamaracks into which they would then climb.

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 sedge and marsh grass hung down on the other. From under the nest a mound of mixed sphagnum and cranebill moss curved out in front to afford further protection and concealment, and through the moss laced tiny flat-leaved vines of snowberry and the long tough stems of lycopodium. More grasses 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~~ factor 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 Connecticuts 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 componants 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 unforseen 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, Phoebes, Yellow-bellied Flycatchers, Veerys, and Swainson's Thrushes; and finally, after Betty and Powell had gone back to Jackson, the last Mourning 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.

Nineteen sixty two was the last of the 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 1963 ~~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 in collaboration with the superintendent Ronald Austing, the well-known rapture photographer. We did find the Hooded and Kentucky Warblers, but failed on the Worm-eating although the birds were not 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 warbler rankled so much that we tried again in 1965, (in 1964 I was in the Galapagos Islands) 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 during the second week in June. Since we had plans to go north to the Connecticut Lakes region of New Hampshire for Black Poll Warblers we could not wait for the Worm-eaters. Black Polls are abundant nesters in the seedling spruces on the logged-over land of the St. Regis Paper Company. Betty and Powell each found several nests but the loss rate 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 the more typical site in

a spruce seedling.

The Connecticut Lakes where the Connecticut River rises just under the Canadian border is a region of clear trout streams, 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, Lincoln, and Savannah Sparrows are common in their respective habitats, as are Olive-sided, Alder, and Yellow-bellied Flycatchers. 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, locally common and generally much more abundant than the other northern vireo species the Blue-headed. We found about a half dozen nests all too high in poplars to photograph; then we were ~~put on to~~ told about one much more conveniently located by an itinerant bird watcher, and by building a platform were able to get all the pictures we wanted.

The final sequel to our Worm-eating Warbler search came for me in 1971. In the two preceeding years while I was in Europe + Africa the Cottrilles had hunted for 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 found only fledgelings and no nests. Benefiting by their experience I visited the Kanawha State Park in late May of 1971 and found two nests before the beginning of June at both of which I photographed the birds.