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THE MISSISSIPPI KITE IN SPRING

WITH EIGHT ILLUSTRATIONS

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The Mississippi Kite (*Ictinia mississippiensis*) is a well known summer resident in parts of western Oklahoma. While not found in the Panhandle (save at the extreme eastern end) it is widely distributed throughout the western half of the main body of the State, in some sections being downright abundant.

Eager to become acquainted with this beautiful bird, I went to Oklahoma in the spring of 1936, establishing headquarters at Arnett, Ellis County, on May 7. Here I remained almost continuously for the following six weeks, devoting a large part of my time to observing Kites. I used an automobile, driving from fifteen to fifty miles a day in reaching various parts of the County. Nests were not difficult to locate as a rule, owing to the fact that trees were scarce.

In 1937, Messrs. John B. Semple, Karl Haller, Leo A. Luttringer, Jr., and myself again visited western Oklahoma, encountering the Kites in the vicinity of Indianola, Comanche County, on May 7 and 8; near Cheyenne, Roger Mills County, from May 9 to 15; in eastern Beaver County from May 16 to 18; and again (from May 26 to 31) in the vicinity of Arnett, Ellis County.

The following paper deals, then, with the earlier part of the Kite's nesting season—the return from the south, the selection and defense of the nesting-territory, the building of the nest, the laying and incubating of the eggs. During the course of our work several adult Kites were collected. From these specimens interesting data concerning food, weight, and internal and external parasites were obtained.

Kite Habitat in Oklahoma.—Scattered tree-growth is characteristic of Oklahoma's Mississippi Kite country. Most of the trees growing in the immediate vicinity of Arnett are small—locusts, bois d'arc, soapberries, hackberries, elms and introduced catalpas. From six to ten miles south of Arnett, along the South Fork of the Canadian River, there are well wooded sections, however, with huge willows and cottonwoods lining the tributary streams, and persimmons and walnuts growing here and there. In the vicinity of Gate the Kite is to be found in clumps of cottonwoods in the open plains country. Near Cheyenne, Roger Mills County, the thinner woodlands are preferred by the bird. The country to the south and east of Arnett is known as "shinnery country." Here grows a small scrubby oak, much of it only a foot or so high, the largest trees not more than fifteen or eighteen feet high, that is called the "shinnery" oak (*Quercus mohriana*). Here the Kite is abundant. Here, in the gray-green sea of low scrub are "islands" of older trees that have the general appearance of "hammocks" in the Everglades. Too, there are occasional fine cottonwoods, or thin stands of locust. Arnett is in the midst of a vast wheat-growing district, but the "shinnery country" is cattle range and much of it is semi-arid. The Mississippi Kite country that received our especial attention in 1936 and 1937 is at the eastern edge of the notorious Dust Bowl.

Return from the South.—On May 7, 1937, we witnessed the return of the Kite from the south. Six miles north of Indianola, Comanche County, we saw a flock of six birds circling slowly northward over the Wichita Mountains. On the following day more flocks appeared, all of them moving northward. Two specimens collected on this date were females. On May 9 the migration was at its height. A flock of over twenty birds was seen high in air not far from Sayre, in Beckham County. On May 10, in the vicinity of Cheyenne, Roger Mills County, we continued to see flocks moving northward. After May 10 we noted no further evidence of migration.

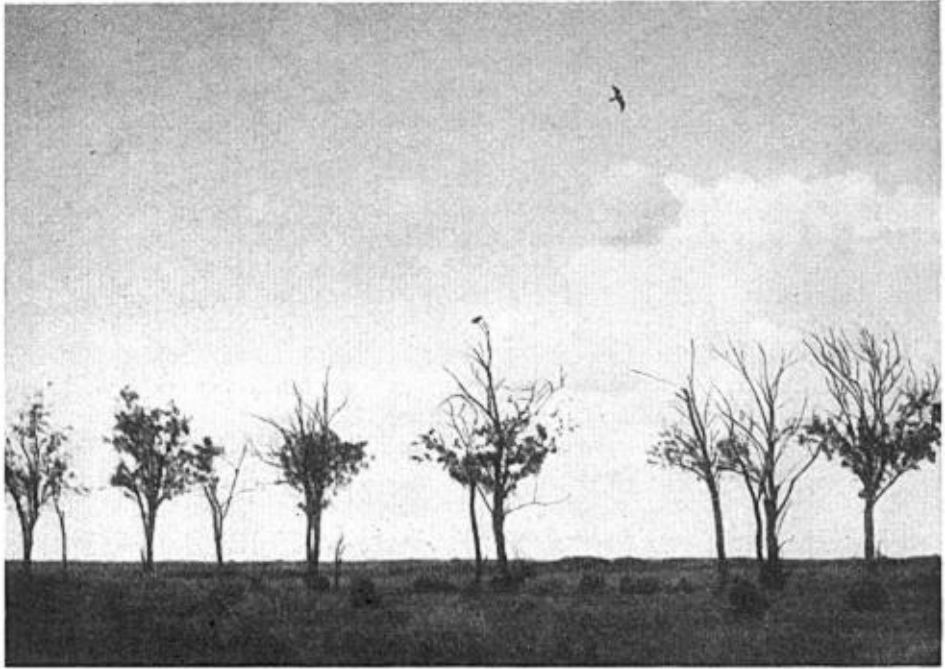


Fig. 17. A pair of Mississippi Kites on their nesting grounds; Ellis County, Oklahoma.
The photographs with this article, figs. 17 to 22 inclusive, were taken by Leo A. Luttringer, Jr.

In 1936 the Kite was present in some numbers at Arnett on May 7, though circling flocks and pairs continued to pass northward that day and the next. May 7, 1936, was a memorably disagreeable day, the trees thrashing wildly in a hot wind, thick dust shutting farmhouses and windmills and telegraph poles from sight.

The Kite may mate before it starts northward in spring. It may mate as it migrates. Certainly many of the birds *appear* to be mated when they arrive in Oklahoma. Many of the northward moving companies are composed of four, six or eight birds. My belief is that the sexes move northward together. Though my experience with the bird is limited, I have yet to see a migratory flock composed entirely of males or entirely of females. Male and female birds are much alike to be sure. Males are recognizable, however, by the *clear* white of their heads and (if females be close by) by their smaller size.

Spring Behavior.—From the first day of my work I was struck with the gentle, almost demure bearing of these birds of prey. During their morning and evening feeding periods they were active enough, but throughout the middle of the day they perched in a shady part of some tree quite literally by the hour, often scarcely turning their heads

for periods of fifteen minutes or more. Observation work at this time was likely to be a little dull, for the birds did not preen, nor chase each other about, nor watch for prey. They simply sat. Occasionally they stuck out a wing or stubby foot and yawned. If, from time to time, they moved uneasily or stretched forward their heads, they presently "coughed up" a neat, damp pellet of reddish brown cricket legs, and settled back into a position of complete repose.

On May 9, 1936, not far from Arnett, I came upon a mated pair that apparently had just chosen (or returned to) their nesting territory. They were sitting side by side in a dead willow that stood by a small stream. One bird, then the other, left its perch as I approached, to circle low above me. Now I heard sharp cries that reminded me of the squeals of an Osprey, and a high, thin *phew-phew! phew-phew!*—a phrase of alarm that I was to hear repeatedly during the ensuing days, that usually was imitated by all Mockingbirds singing within hearing distance, and that may be imitated by a human being better with a shrill whistle than with spoken syllables.

Neither in 1936 nor in 1937 did I see what I would call "courtship antics." This I regard as evidence of early mating, and perhaps of mating for life. To be sure male birds (females, too, for that matter) sometimes "displayed" by cutting capers in air, pursuing the other bird with thin squeals and chipperings, or plunging from a height to swoop upward effortlessly.



Fig. 18. Mississippi Kite on favorite perch near its nest; Arnett, Ellis County, Oklahoma.

On the wing the Kite is graceful, buoyant, usually deliberate. The wings are held horizontally during soaring flight, the short outermost primary (and sometimes also the alula) breaking the line of the front of the wing, the tips of the primaries curving upward but little. The square-tipped tail tilts this way and that as the bird directs its course with precision. So frequently does the Kite hang in air as if suspended, or soar as if there were nothing in the world to do but soar, that we are surprised when we see it stoop at a White-necked Raven, or descend with a roar of wings upon its prey.

So ably does the bird handle itself a-wing that it has little difficulty in catching flying grasshoppers, cicadas, and even dragon-flies. Watching the flower-covered prairies from the clouds it suddenly spreads its tail wide, changes its course, hangs in midair an instant, then shuts its tail and coasts giddily downward, intent upon a killing. It catches the grasshopper with its feet, so easily that we think it has missed until we note that it is on its way upward to the clouds once more, head downward, feet forward, picking the insect to pieces with its beak!

It is not surprising that the Oklahoma cattlemen are fond of the Mississippi Kite. Since their childhood days they have watched these "Blue Darters" or "Locust Hawks" snatching large-sized insects from the air. "They're jes' as noss (nice) as they can be, them Locust Hawks," an old-timer said to me one day. "Why, Ah can remember when Ah used to drahve bunches of yearlin's over Cheyenne way to be branded, an' Ah'd see a whole flock of them hawks flying aroun' jes' waitin' fer us to scare locustas up from the grass. They'd catch 'em, too; swoop down on 'em an' grab 'em outen the air, an' pull offen their heads and eat 'em while they was still flyin'. Once Ah thought Ah'd jes' see what it was one of 'em dropped after he'd got a locust. So Ah went over an' picked whatever it was up, an' it was the locusta's head!" [Note: "Locustas"=locusts=cicadas; locusta's"=locust's=cicada's.]

The Kite usually discards certain tough parts of the insect it captures. On more than one occasion I have run to pick up cricket legs that a feeding bird thirty or forty feet in air had dropped. On the other hand, much tough material is swallowed, as is evidenced by the stomach contents themselves and by the pellets that are cast up.

Physical Condition of Birds in Spring.—On May 9, 1936, I collected the male of a mated pair not far from Arnett. Lifting the bird from the ground, I noted the rich redness of the irides; the delicate chalk-dust bloom that suffused the plumage; the short, stubby feet with their rough, gray-edged scales; and the hint of red-orange that showed high on the inner sides of the tarsi.

In the middle of the under tail coverts I encountered a phenomenon that puzzled me for a time—a roundish area about an inch in diameter throughout which the feather tips were discolored and slightly sticky. Watching the birds closely during their feeding hours gave me an explanation of this phenomenon. Half-eaten grasshoppers frequently were carried a long distance in the talons, tucked into the plumage under the tail. The peculiar, though not offensive, sweetish odor of a living or freshly killed Kite possibly is caused to some extent by this soiling of plumage by half-eaten insects.

The male specimen in question proved to be fat. The testes were much enlarged, being about 20 mm. in length. In preparing the skin I noticed that the inner surface of the dermis was heavily marked with dusky spots. These were the blood-quills of small incoming feathers, perhaps of down. Such spotting on the inner surface of the skin was observed in all of the ten adult specimens taken in 1936, though it was less noticeable in birds collected later in the season.

All 16 specimens collected in 1936 and 1937 were fat, some of them decidedly so. Males weighed from 216 grams (stomach not particularly full) to 269 grams (stomach full), averaging 245 grams. Females weighed from 278 grams (stomach well filled) to 339 grams (stomach contents 6.1 grams), averaging 311 grams. A male bird measured May 28, 1936, had a wing-spread of 35½ inches. A female measured the same day had a wing-spread of 38 inches.

All female specimens had paired ovaries. Aside from the minute blood quills referred to above, no evidence of prenuptial molt of body plumage was observable in either males or females. One specimen, however (a female taken near Indianahoma, Co-

manche County, on May 8, 1937), was completing what appeared to be an abnormal molt of the rectrices.

The irides of both male and female adult birds were clear, deep red; the cere dusky, sometimes with a hint of yellowish brown about the nostrils; the bill blackish; the corners of the mouth dull orange yellow; the feet grayish brown, yellowish on the under sides of the toes, and red-orange on the proximal third of the tarsus.

Nest-building.—The Kite is deliberate about nest-building. From May 7 to 17, in 1936, I wondered whether the birds were going to select territories, or build nests, or lay eggs at all. With the assistance of Mr. R. L. Gray, a Game Ranger, I found two flimsy nests on May 10; but the birds that "owned" these nests appeared to have no special interest in them. When I climbed their "home tree," they flew at me half-heartedly or screamed from a respectful distance. When I watched from a few rods off they sat on dead branches among the leaves, eyeing me complacently.

At that time I did not know that it is customary for the Kites of western Oklahoma to return to their old nest, to linger about their established nesting-territory for days without so much as adding a twig to the ramshackle structure, and to go at their re-



Fig. 19. Mississippi Kite on favorite perch near nest; Arnett, Ellis County, Oklahoma.

modelling work in a leisurely manner—sometimes bringing only two or three twigs, or a few green leaves for the lining, during the course of an entire morning.

One of the two nests found May 10 was in a fair-sized willow tree fifteen feet from the ground, near Packsaddle Lake (seventeen miles southeast of Arnett). When, on

May 17, I returned to examine this nest, I found it destroyed, presumably by fox squirrels that had a nest of their own not far away. By this time the Kites had chosen another site a few rods off, again in a willow tree. I watched one of the birds fly to the new nest with a green willow frond in its feet. While flying, it put its head down, grasped the twig for an instant with its beak, and took fresh hold with its toes.

On the morning of May 19 I chanced to see a Kite perched in a locust tree not far from the highway. Thinking that it might be in search of food I stopped the automobile and watched. It was a male, this I knew from the clear whiteness of its head. As I watched, the bird moved awkwardly out the branch, leaned forward, nipped off a leaf-covered twig, and flew across the highway with the green sprig in its bill. Leaving the car quietly I made my way through the shinnery oak and locust scrub to a tangle whence I could watch the tree toward which the Kite had flown. Soon I saw the female, perched on a dead bough. Not far from her the male stood on the partly finished nest, fussing with his green frond, picking it up, shaking it, dropping it. The female flew to the ground, grasped a small twig with one foot, and flew to the nest. I saw no more nest-building that day, though I watched the completely unfrightened birds for another hour.



Fig. 20. Mississippi Kite on nest in locust tree; Arnett, Ellis County, Oklahoma.

Nest and Nest-site.—During my 1936 sojourn at Arnett, I found forty occupied Kite nests. All of these were in locust, elm, hackberry, willow, or cottonwood trees, save two which were in shinnery oak. At least twenty of the forty had been used in preceding years. Most of them were surprisingly low, from ten to fifteen feet from the

ground. The two highest, perhaps thirty feet up, were in cottonwoods. One nest, situated at the edge of a clump of shinnery, was less than six feet from the ground. Thrilling it was to be able to look *down* at the incubating bird from horseback, to admire the soft breadth of the gray back, to catch the gleam of suspicion from the red eye. Mr. Jake Gross, a cattleman who was good enough to help me locate Kite nests, and who was my gracious host on several occasions, told me that he had found many nests only five or six feet from the ground, out in the shinnery range.

The nests were flimsy affairs, made of twigs from two to fourteen inches long, and lined with green leaves. An average nest (collected near Cheyenne, Roger Mills County, in 1937) measured $13\frac{1}{2}$ by 9 inches, was 5 inches deep, and had a cup about $1\frac{1}{2}$ inches deep. This nest was made entirely of cottonwood twigs and lined exclusively with cottonwood leaves. Most of the nests found in 1936 and 1937 were situated in crotches close to the main trunks of small or middle-sized trees. Some, however, were placed far out on long branches of large trees. Others were built into the bushy tops of small locusts or hackberries. In two instances *new* nests were constructed in poorly chosen sites. The first of these, built ten feet from the ground in a slender locust, fell with the tree in a gale; the second, built on a branch overhanging a much used road, was abandoned before the eggs were laid.

Many a last year's nest is put into shape for use with the addition of a small handful of twigs and a lining of fresh leaves. These leaves often are gathered from the very tree



Fig. 21. Mississippi Kite near its nest; Arnett, Ellis County, Oklahoma.

in which the nest is situated, but sometimes they are brought from afar. Not infrequently a green twig six or eight inches long is brought to the nest to be plucked of its leaves and shoved off to one side.

The nest-tree usually stands in the open. If the Kites elect a woodland for their nesting-territory, they almost invariably place their nest somewhere along the outer edge. At Arnett they showed no special preference for trees growing near water, though several pairs nested along a tributary to the South Canadian that flowed through the Grady Word Ranch ten miles south of town.

Oviposition and Incubation.—It is not easy to determine *exactly* when a bird's egg is laid. Especially difficult is it with large-sized, tree-nesting species where a climb is necessary each time the nest is examined and where there is danger of causing the birds to desert. By mid-May, 1936, I had located a score of Kite nests near Arnett. But at that time I was not sure which of these were actually in use. On May 19, early in the morning, there was an egg in one of the "old" nests that I had found several days before. Since I had not watched this nest constantly I do not know when this first egg was laid. I do know, however, that the second egg was laid more than 24 hours later. And by visiting the nest at least twice a day for the following eleven days, then again from June 7 to 18, I determined that the male shared the duties of incubation with the female; that one bird or the other was always on or close to the nest during the day; that the bird not actually on the eggs at night slept in a tree close by; and that the period of incubation was at least twenty-nine and probably not more than thirty-one days.

It is customary for male and female Mississippi Kites to share the duties of incubation. On May 28, 1936, however, I collected a set of eggs with both parent birds, finding a well-defined brood-patch on the belly of the female, *no brood patch whatever* on the belly of the male. I can offer one explanation of this: The male may have been a new mate, replacing one that had recently been killed.

Eggs.—In 38 of the 40 Kite nests under observation in 1936 there were two eggs. In two nests the complete set was one egg. All nests (14) found in 1937 contained two eggs. We did not find a nest with three eggs, though such sets were reported. The eggs were bluish white, wholly unmarked as a rule, though nest-staining sometimes gave them a clouded, blotched, or marbled appearance.

Newly Hatched Young.—Early on the morning of June 18, 1936, I saw my first newly-hatched Mississippi Kite. It was a lovely creature, its down pure white with a small, faint area of buffy brown on the nape and a wash of the same pale brown over the back and upper surface of the wings. The region in front of and about the eyes was dull gray, the marking occupying almost precisely the same position as the black facial mask of the adult. The bill was dull blue-gray, the cere dull brownish-orange, the corners of the mouth light orange. The feet were pale, clear yellow-orange with gray claws. The eyes were dull gray-brown, with bluish pupils; the eyelids dull gray. In an attitude of repose the baby bird rested on the *outer* part of its feet (tarsus as well as toes). Its only cry was a thin, feeble squeal, a hair-thin sound.

I examined the nestling at about seven o'clock that morning. At that time there were no egg shells in the nest and the other egg was not pipped.

Behavior at Nest.—So gentle a bird is the Mississippi Kite that it has few quarrels with its bird-neighbors. Throughout much of its Oklahoma breeding-range, trees are so few that many tree-nesting species of birds are obliged to live in close proximity to one another—White-necked Ravens, Scissor-tailed Flycatchers, Mourning Doves, Mockingbirds, Swainson Hawks, Lark Sparrows, Baltimore Orioles, White-rumped Shrikes, Kingbirds—all these nesting almost side by side. In a cottonwood tree on the Davison Ranch (near Peek, Ellis County) we found a Mockingbird nest in one of the lower branches, a Kite nest on one of the long half-way-up branches, and a Baltimore Oriole nest containing five eggs *not more than four feet from the Kite nest*. Without difficulty

I could put my hands on both the Kite and Oriole nests at the same time. The Orioles did not scold or fly at the Kites, though the Mockingbirds sometimes did.

In another tree, a cottonwood that stood along the South Canadian River, we found a Kite nest with two eggs, a Mockingbird nest with four eggs, a Mourning Dove nest



Fig. 22. Mississippi Kite's nest in "shinnery" oak about six feet from ground; near Peek, Ellis County, Oklahoma.

with two young, and a two-storied Scissor-tailed Flycatcher nest with five eggs, all within a comparatively short distance of one another. When not disturbed, these several species got on admirably. When disturbed, the Scissor-tails and Mockers gave vent to their anger or excitement in attacks upon the Kites.

Now and then, even out in the open country, we saw a Scissor-tail in hot pursuit of a Kite. And one fine morning—one of those clear, windless mornings that linger in the memory—we saw a Kite dashing at a White-necked Raven while in turn being pursued by a Scissor-tail!

However gentle the Kite may be inherently, he puts up a fight on occasion. At nests holding eggs we were invariably scolded, sometimes by both parent birds, sometimes by a veritable *flock* of Kites. Now the trim birds dived at us repeatedly, screaming *phew-phew! phew-phew!* in our very faces. They did not, however, strike us. If we imitated the cawing of a Crow, they usually doubled their attacks, and not infrequently more Kites came from afar to join in the fray. Fresh eggs were not so vehemently defended as were much-incubated ones. Observing this phenomenon, I comprehended at last the mild fight put up by birds that were relining last year's nests.

Food.—In 1936 ten, and in 1937 six, adult Kite specimens were collected. The stomachs of all these were preserved and sent to Dr. Clarence Cottam of the United States Department of Agriculture's Bureau of Biological Survey. Dr. Cottam and his associates have furnished me with a detailed report on their examination of these specimens, assisting me further by preparing a list of common names of the insects found.



Fig. 23. Mississippi Kite, seven hours old. Drawn by author at Arnett, Oklahoma, June 18, 1936.

The ten 1936 specimens were examined by Mr. A. L. Nelson, the six 1937 specimens by Mr. L. W. Saylor. To these gentlemen and to Dr. Cottam we extend sincere thanks.

Since entomologists as well as ornithologists will be interested in the food habits of the Kite, we present the detailed report of Messrs. Nelson and Saylor below. From this we learn that the Mississippi Kite in western Oklahoma feeds practically exclusively on insects during May and June. Among these insects are grasshoppers and crickets of many sorts; ground, wood-boring, scrub, skin or larder, tiger, carrion, dung, diving, water scavenger, and May beetles; weevils, bill-bugs; mud-dauber, spider, paper, and solitary wasps, and other Hymenoptera; stink-bugs; hawk moths and other Lepidoptera; and a few Diptera (flies). Among these insects the most frequently preyed upon obviously are the camel or cave cricket, *Daihinia brevipes* (remains of which were found in almost every stomach examined), and various "common" grasshoppers such as *Melanoplus*. In not one of the stomachs was found trace of bird, mammal, or reptile. In one was the vertebra of an "undetermined fish." This is not the place, perhaps, for a discussion of the economic status of the insects consumed by the Kite. Some of them

no doubt are "good," some "bad." Game officials who in the past have sanctioned the killing of these so-called "Blue Darters" on the supposition that they feed on baby quail may well take note and revise their opinions. The Mississippi Kite is a harmless if not decidedly beneficial bird during the Quail's and Lesser Prairie Chicken's nesting season.

DETAILED REPORT ON STOMACH CONTENTS

1. Male, May 28, 1936: Fragments of 6 camel crickets, *Daihinia brevipipes*.
2. Female, May 28, 1936: Fragments of at least 3 *Daihinia brevipipes*; 1 Carabidae; vertebra of undetermined fish.
3. Male, June 10, 1936: 3 Acrididae; 2 dung beetles, *Phanaeus difformis*; 1 tumble bug; 1 *Canthon* sp.
4. Female, June 10, 1936: Fragments of Locustidae; 1 *Phanaeus difformis*.
5. Male, May 9, 1936: 4 *Daihinia brevipipes*; 2 undetermined Acrididae; 1 *Phanaeus difformis*; 1 *Canthon* sp.; 1 Carabidae (trace); 1 Pentatomidae; 1 undetermined Hymenoptera (trace).
6. Male, May 24, 1936: Fragments of 9 *Daihinia brevipipes*.
7. Male, June 12, 1936: 2 *Daihinia brevipipes*; 1 Acrididae; 1 water scavenger beetle, *Tropisternus lateralis*; 1 Cerambycidae; 1 ground beetle, *Geopinus incrassatus*; 1 *Phanaeus difformis*; 1 Psammocharidae; 1 solitary wasp, *Odynerus* sp.
8. Male, May 14, 1936: 4 *Daihinia brevipipes*; 1 *Phanaeus difformis*; 1 *Geopinus incrassatus*; 1 chinch bug, *Geocoris* sp.; 1 Sphingidae (adult); 1 undetermined Lepidoptera (adult).
9. Male, May 16, 1936: 7 *Daihinia brevipipes*; 1 band-winged grasshopper, *Hippiscus* sp.; 1 carrion beetle, *Necrophorus* sp.; 1 May beetle, *Phyllophaga* sp.; 1 tiger beetle, *Cicindela* sp.; 1 *Canthon* sp.; 13 ground beetles, *Selenophorus* sp.; 9 ground beetles, *Triplextrus* sp.; 1 Staphylinidae; 1 Cerambycidae; 1 stink-bug, *Euschistus variolarius*; 1 plant bug, *Thyanta custator*; 3 assassin flies, *Dasyllus* sp.; 2 solitary wasps, *Stizus uncinatus*; 1 Sphingidae (adult).
10. Female, June 12, 1936: Fragments of 2 *Hippiscus* sp.; 2 short-horned grasshoppers, *Trimerotropis* sp.; 2 grasshoppers, *Melanoplus* sp. (different species); 3 Acrididae; 1 stink-bug, *Chlorochroa ligata*; 1 *Thyanta custator*; 1 stink-bug, *Peribalus limbolarius*; 3 *Necrophorus* sp.; 1 *Cicindela* sp.; 1 skin beetle, *Dermestes* sp.; 1 ground beetle, *Calosoma* sp.; 1 weevil, *Lixus* sp.; 1 bill-bug, *Rhodoabaenus tridecimpunctatus*; 2 wasps, *Elis quinquecincta*.
11. Female, May 8, 1937: 12 leaf-legged bugs, *Leptoglossus* sp.; 2 *Euschistus* sp.; 3 Carabidae; 1 Hymenoptera; 1 Diptera; 1 Sphecidae; 73 *Melanoplus* (64 of them females!).
12. Female, May 8, 1937: 10 *Daihinia brevipipes* (8 females), all in fair condition save that heads were well digested.
13. Male, May 14, 1937; 9 *Leptoglossus* sp.; 3 *Euschistus* sp.; 5 ground beetles, *Platynus* sp.; 1 painted-winged grasshopper, Oedipodinae; 2 Hymenoptera (of two genera); 1 Dytiscidae; 1 Pentatomidae; 45 *Melanoplus* sp. (at least 41 of them females).
14. Male, May 27, 1937: 1 *Cicindela* sp.; 5 *Daihinia brevipipes*; 1 Oedipodinae; 1 Scarabaeidae; 1 Pentatomidae; 1 Formicidae.
15. Male, May 27, 1937: 1 *Cicindela* sp.; 2 *Euschistus* sp.; 4 stink-bugs, *Nezara* sp.; 2 *Calosoma* sp.; 1 Coreidae; 4 *Daihinia brevipipes*; 1 robber fly, Asilidae; 7 *Melanoplus*; 1 Oedipodinae; 2 ground beetles, *Harpalus* sp.; 1 Curculionidae; 1 Vespidae.
16. Male, May 27, 1937: 1 Dytiscidae; 1 paper wasp, *Polistes* sp.; 2 bees (probably *Andrena* sp.); 1 Sphecidae; 1 dung scarab beetle, *Copris* sp.; 1 Asilidae; 2 *Nezara* sp.; 2 *Calosoma obsoletum*; 1 ground beetle; 1 *Amara* sp.; 1 scavenger beetle, *Hister* sp.; 1 bee, Halictidae; 1 *Melanoplus*; 6 *Daihinia brevipipes*; 2 Oedipodinae; 2 *Euschistus* sp.

Ectoparasites.—Though I have handled and carefully examined sixteen adult specimens of Mississippi Kite I have yet to find upon one of them a hippoboscid fly, any sort of eye-worm, or any sort of mite.

Mallophaga, on the other hand, are sometimes present in considerable numbers. These I collected whenever possible, sending them to Dr. F. C. Bishopp, Entomologist in charge of Insects Affecting Man and Animals, of the Bureau of Entomology and Plant Quarantine of the United States Department of Agriculture. Dr. H. E. Ewing, of the Taxonomic Division of the above-named Bureau, has identified the specimens as follows: *Laemobothrion* sp., *Degeeriella fusca*, *Phlopterus* sp., and *Kurodaia* sp.

Endoparasites.—The only endoparasites found in the alimentary tracts of specimens examined were tapeworms. These were identified by Messrs. E. Q. Price and Allen McIntosh of the Zoological Division of the Bureau of Animal Industry of the United States Department of Agriculture as *Choanotaenia* sp.

Future of the Mississippi Kite in Oklahoma.—In some parts of Oklahoma the Mississippi Kite is common today. Persons who live in Ellis County find it difficult to believe that throughout most of the United States the "Locust Hawk" is an all but unheard-of bird. No one in western Oklahoma therefore is disturbed at hearing that some zealous game warden has killed two or three hundred Kites, or that some egg collector from the East has taken dozens of sets of eggs in a single season.

Personally, I am not alarmed about destruction of the Kites or their nests by cattlemen, gunners, and Game Commission officials. Even the sportsmen, who are interested in saving baby Bob-whites and Prairie Chickens, know fairly well by this time that the Kite is not an enemy of game birds. *But about the professional egg collector I am alarmed.* Mississippi Kite eggs are known to be "good" eggs. They may be dirt-



Fig. 24. Mississippi Kite; drawn by author at Arnett, Oklahoma, May 16, 1936.

common in some parts of Oklahoma but they are rare and desirable elsewhere. They can be collected easily. Gathering them is an almost stupid business. So long as present-day methods of egg-hoarding and egg-exchanging continue, the Mississippi Kite is in

grave danger in Oklahoma. We read of Mississippi Kite nests found in other southern States, a hundred or more feet up in gum trees. Eggs in such nests are fairly safe from molestation. But eggs which can be taken from the little trees about Arnett are safe from no one.

I repeat, for emphasis: The Mississippi Kite is common today in many sections of western Oklahoma. The publication of this paper may cause many an enthusiastic eastern ornithologist to direct his steps westward in the hope of seeing a lovely bird of prey that has become all too rare throughout most of its range; at the same time it will expose the very birds I watched from day to day at Arnett to the unscrupulous egg collector. With an automobile, a light-weight step ladder and a boxful of cotton, any egg collector can go to Arnett today and gather in dozens of Mississippi Kite eggs without even scratching his hands on locust thorns! He can gather them in, hoard them, exchange them, have a great time gloating over them. With a dime here and a dime there he can put the farm lads to scouring the countryside for nests. For him, the rarer the Kite becomes, the better. For him, the sooner the Kite becomes extinct the sooner will he be able to command "fancy prices," the sooner a set of Kite eggs will bring a Crowned Eagle set in exchange, the sooner his fame as an "oölogist" will circle the globe.

The shinnery country of Ellis County is the Kites' happy hunting ground. Too, it is a stronghold of the rare Lesser Prairie Chicken, *Tympanuchus pallidicinctus*. Some measure of protection is afforded both these fine birds near Arnett today because a large part of the Davison Ranch is a State Game Refuge. But *no* Game Refuge is safe from an egg-hog. Silently he goes about his business of extermination, bland words on his tongue, an expression of innocence on his face.

Let this plea be a boomerang if it must, for I have collected many a set of eggs, among them those of the Mississippi Kite. But all sincere ornithologists want living birds to see and study, not stuffed skins and egg shells. How dismal to visit the shinnery country of Oklahoma in spring, feeling the morning sun on one's hands and face, but hearing no Prairie Chicken gobbling from a distant rise, and seeing no Kite at play among the clouds!

Cornell University, Ithaca, New York, January 10, 1939.