

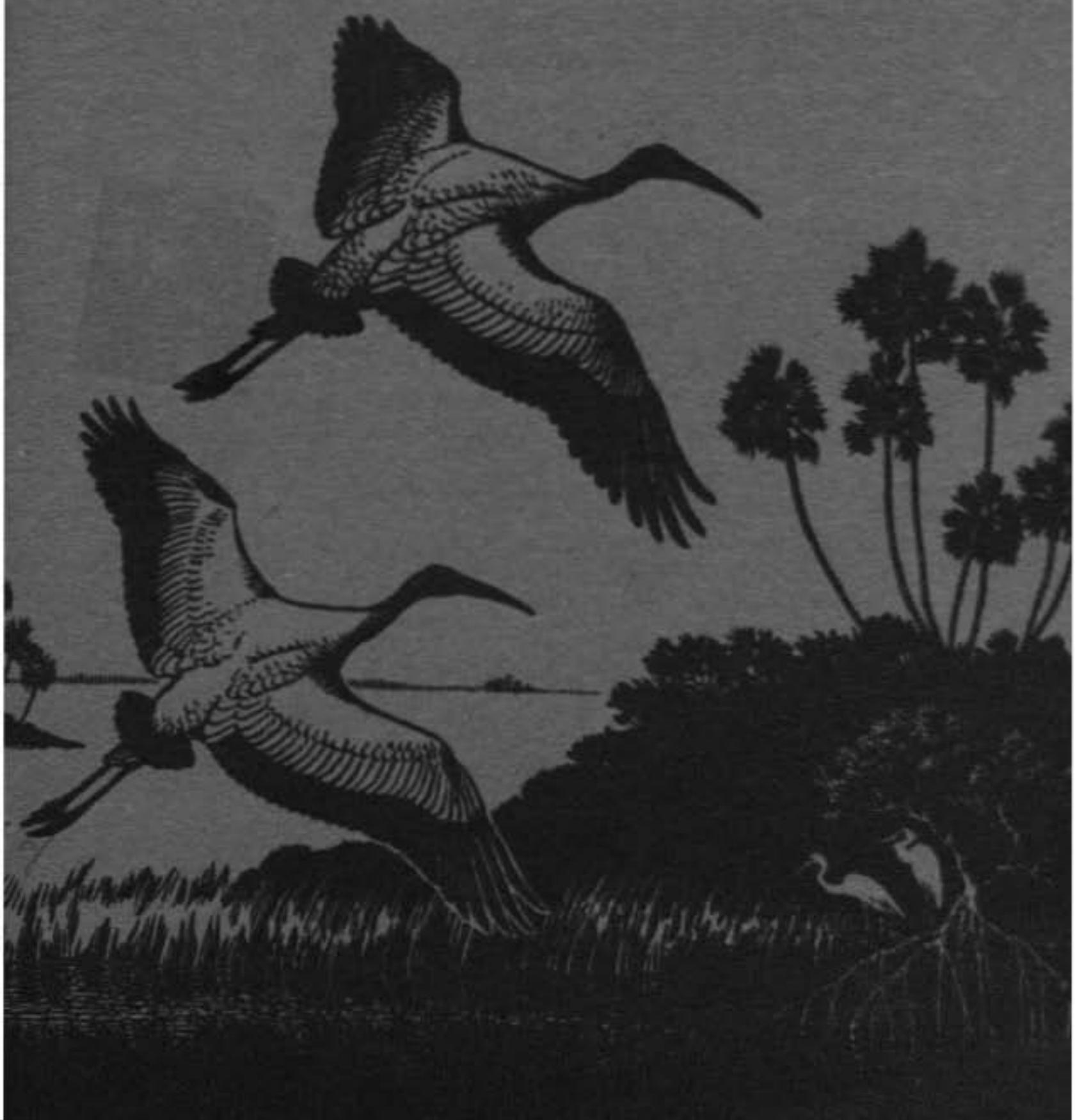
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Everglades Natural History

MARCH, 1954

A FIRE ISSUE

VOL. 2, NO. 1



Everglades Natural History

A MAGAZINE OF NATURAL HISTORY OF SOUTH FLORIDA
For the information of
VISITORS to the EVERGLADES NATIONAL PARK and anyone in-
terested in natural south Florida.

Edited by JOSEPH C. MOORE, Ph.D.

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EVERGLADES NATURAL HISTORY is published in March, June, September, and December of each year by the Everglades Natural History Association, 205 North Krome Avenue (mailing address P.O. Box 1751), Homestead, Florida. Individual copies are 50c each post paid; subscription is \$2.00 a year. Application for entry as second-class matter pending at the Post Office at Homestead, Florida, under Act of March 3, 1897. Circulation should be made out to the Association and mailed to Executive Secretary Willard E. Dilley.

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March 1964

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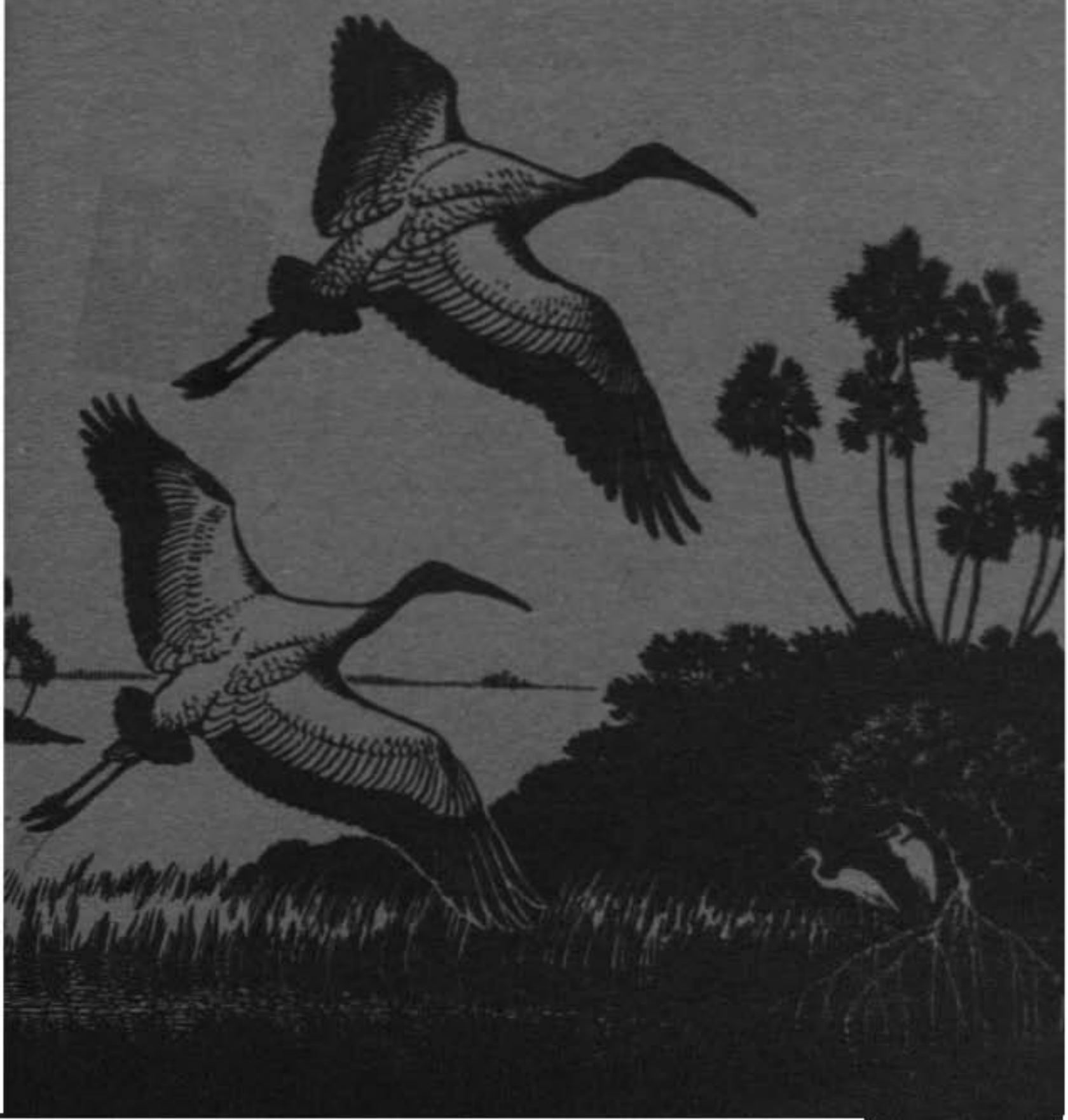
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Let 'er Burn?

by DANIEL B. BEARD

illustration by the author

SEVERAL YEARS before the outbreak of World War II, forester Fred Arnold of the National Park Service dropped in at my home in Coral Gables to join me in a trip through Everglades National Park (proposed). We had been corresponding back and forth about some of the problems that might arise if and when a national park was created in the southern Everglades. One of the things that Arnold particularly wanted to see on the ground was the suggested location for an east boundary fire break. The whole question of fire control was, we knew, well worth learning about before the park was even established.

We decided to stop in first to see Ernest F. Coe. Maybe he would have some thoughts on the matter. Coe knew more about the proposed park than anyone else, for, in one capacity or another, he had been promoting the park idea since 1928.

We found Coe in his little office on a side street in Miami. It was as cluttered as an office could be with all the records, maps, newspaper clippings, and files of ten busy years. As was his custom, Coe was serene, unhurried, and delighted to see anyone who wanted to talk about the Everglades National Park project—or listen while he extolled its virtues.

Dressed as usual in a white linen suit that almost matched his unruly shock of silver hair, Ernest Coe had the answer on the tip of his tongue when I asked him what he thought about fire control. "Fires are a natural phenomenon," he said. "They have always swept the Everglades and they are going to continue to do it. It is because of fires that we have pinelands. It is because of fires that the Everglades remain open with grasses and sedges. The Everglades National Park will be a place where the public can be shown how natural fires have shaped and influenced the landscape." This was an old argument between us, and Coe knew it. He twisted a characteristic smile as he waited for me to take the bait.

Now, anyone trained in the National Park Service knows that there is only one thing to do when a fire starts. Put it out. The policy is plain and the reasons for it well justified. So, I roundly accused friend Coe of trying to whitewash a situation because it was at present impossible to remedy it. Both of us knew that during the dry season one could not drive over the Tamiami Trail or down the Ingraham Highway to Flamingo at any time without seeing at least one smoke.

Coe patiently heard me through, then leaned over his drafting board in the forester's direction. For almost an hour he developed his thesis on fires, their natural occurrence, effects of fires, and the need to approach the problem without prejudice. When he had finished, my only rebuttal was that all fires were man caused, hence unnatural in origin. "Dry" lightning, I suggested, did not occur in this country because electrical storms came during the rain season and torrential cloudbursts would put the fires out.

Coe smiled indulgently and said that he understood that Middle Cape Sable had burned off recently because of a lightning strike. Well, maybe, I thought, but I doubted it, because all my experience in the country (less than a year) indicated otherwise.

Just ten years later, I drove down Long Pine Key road with Ernest Coe. The park had been created in the meantime and was just beginning to function. Fires had been kept out of a section of pinelands for several years and I could not help pointing out with pride how a strong, hammock understory was beginning to show.

"Yes, we used to discuss this," he said. "Now you are keeping the fires out. In another generation, if you and your successors can keep it up, Long Pine Key will be a vast hammock. Is that natural? Even the earliest known maps show it as pinelands. Are you not going directly against National Park policy by fostering an unnatural situation?"

By that time, we were all actively engaged in preaching fire protection. The park rangers were experimenting with fire suppression equipment and techniques. We had participated in the start of the "Keep Florida Green" campaign when a prominent state official accused Floridians of "being a backward people living in a backward state as far as fire is concerned." Warning signs had been placed in the park and nearby with Smoky, the bear, signs appearing for the first time in southern Florida. Local residents and park visitors were being told, by Smoky and the park rangers, that,

henceforth, fires in the Everglades were taboo. The idea took a lot of selling because nobody had ever thought of preventing fires in this country before, much less putting them out. In the first place, it was impossible to suppress a glade fire. In the second place, what difference did it make?

Sportsmen were persuaded to go along with us by being a little more

"... fire fighting crews ... had already proven they could suppress glades fire."



careful not to start fires casually (or for fire hunting) near park boundaries. Some Seminoles thought it was a fine idea. Older members of the tribe told how they had to abandon camp and village sites when big hammocks burned off around 1920 and never had a chance to grow back again. Farmers near the park tried to cooperate, but many of their brush fires got away



those first years because the farmers had no previous experience trying to hold them to the fields being cleared.

Around Homestead we heard again and again about bottles setting fires. The theory was that a bottle filled with rain water would act like a magnifying glass. People had set upholstery in their cars ablaze that way. One fellow almost burned up his boat when he left a jug of water aboard where the sun could hit it. How else, they argued, would glades fires start in places where it could be proven nobody had been for some time. It seemed logical all right because before the park was started, generations of hunters had worked through the area. And hunters do sometimes leave a bottle or two behind!

In time, we installed Long Pine Key Fire Tower, then we put one up in the heart of the glades country near the Tamiami Trail which we called Seven Mile Tower. Now for the first time, observers could look out over the Everglades to spot and report smokes. With radio communications, they could alert fire fighting crews who had already proven they could suppress glades fire. The fire towers provided a means for giving earlier warning so that crews could reach the fires before they blew up big.

One day before very long, a tower lookout was idly watching a small shower moving half a mile or so away across the endless sweep of the glades. All at once a bolt of lightning struck out from it. A few moments later, there came a puff of smoke and a fire began to burn briskly outside the path of the little shower. A glades fire had been seen to start by lightning! As if to belabor the point, fire after fire started the same way that year. Sometimes there was rain to extinguish them. Sometimes there was not.

Many acres of Everglades National Park burned off that year, including, incidentally, the section of Long Pine Key with its understory of hammock growth I had so proudly shown to Ernest Coe. It was not hunters who started the fires. Farmers did not let them loose. It was not even 'gator poachers in the back country who still plied their nefarious trade. Nor was it water-filled bottles in-so-far as could be determined. The late Ernest F. Coe had been right all along about Everglades fires starting from lightning strikes.

Lawrence Cook, who is now chief forester for the National Park Service, flew down from Washington to see how we were handling a certain big fire

the following year. After a rather rugged ride over flat areas of pinnacle rock in a fire buggy, he came upon a begrimed and besooted fire fighter named Robertson. Cook was a little surprised to find that the young man was a graduate student from the University of Illinois working for his doctor's degree upon a phase of the ecology of the park.

During a rest period, Cook and Robertson got into an animated discussion of fires in relation to vegetation of the park. It took little prompting later to get Cook's cooperation in asking Robertson to engage in a research problem upon the subject. Elsewhere in the pages of this issue Robertson gives a summary of one aspect of the extensive investigation he managed to cram into seven or eight months of field work and several more months searching out old records.

It is interesting to note that Robertson's findings showed Coe had been right again. Apparently the whole look of the country has been shaped by fire. Robertson demonstrates that this could not have happened in the few years that either the white man or Seminole has been here, or even a thousand years before.

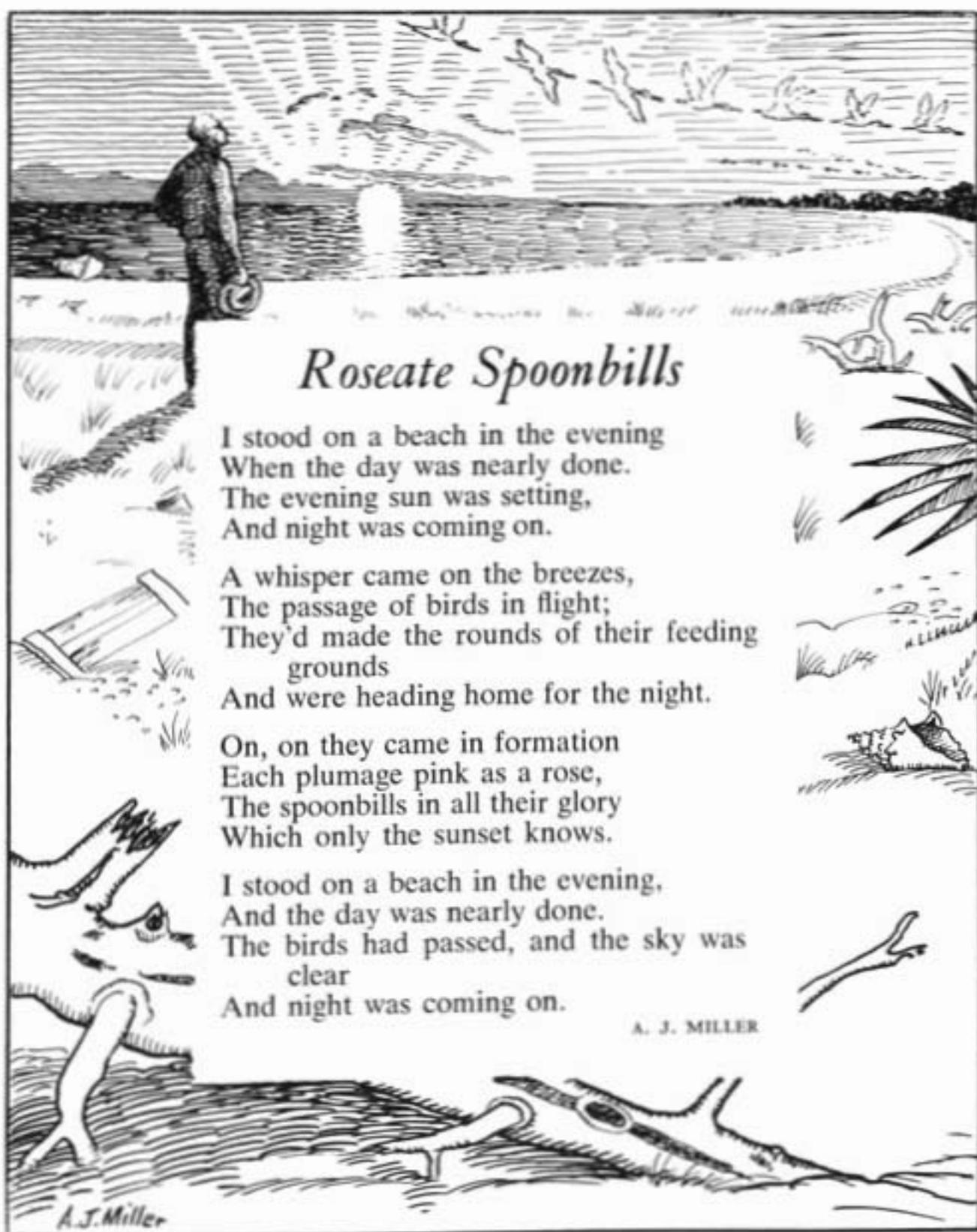
Although Everglades National Park has presented some new problems in national park management and planning, this one is not at all unique. Natural fires from lightning strikes are an old problem in many other national parks. Within the National Park System are areas which, put together, would be equal to about the southern half of the Florida peninsula which are particularly vulnerable to fire. They could all burn. In fact, they *would* all burn were it not for the constant vigilance of the park rangers, fire lookouts, and fire control aids. These combustible areas, large and small, contain almost every important type of natural vegetation in the United States. Anyone who would suggest that these carefully guarded remnants of our natural heritage should be allowed to burn off at will, deserves to have his head examined. There is already too little left. Nevertheless, strict adherence to the theory that nature should take its course regardless of the consequences in national parks would mean that wildfire should have its way.

From the beginning, the National Park Service has found itself in a dilemma. Congress directed that the parks and monuments should be preserved in a completely natural state. Well, that was not too hard to do. But, then it added that the reason for doing it was to provide for the enjoyment

of these natural areas—while still keeping them natural—by this and future generations. They should remain “unimpaired,” but the visiting public who were to get around in them, required comfort stations and other facilities. Could anyone put in a road or even a trail and not intrude upon naturalness? The National Park Service has had to compromise upon every thing it has done. Like Mother Nature striving for a balance, the National Park Service can never achieve its objective. But the measure of our success is how closely we can approach this ideal.

Wildfire in the Everglades *under certain conditions* may be natural; but under the unnatural conditions created by man's drainage would be more severe. We would not, I am sure, let fires burn off certain areas even if they were natural fires. It was certainly not a natural situation, and far from a desirable one, when a man-caused fire destroyed so much of the age old hammock growth of Paradise Key in 1945, as reported elsewhere in these pages by Dr. Alexander. It hardly seems natural for fires, lightning caused or otherwise, to burn out muck and peat deposited over a period of a thousand years or so, when water levels, now lowered by drainage canals, formerly protected the grassroots.

Perhaps, when those natural conditions are more fully known, when the park has recovered from the irresponsible ravages of man, and when the necessary compromises have been adjusted between use and protection, the question can be re-examined. Might it not be possible that there will be circumstances when the most intelligent policy will be to follow Ernest Coe's advice, and let 'er burn? Who knows today? One thing is certain, though. Under present circumstances in this great public preserve where natural conditions are slowly being restored or approximated, fires of all kinds must be prevented, or extinguished if they start.



Roseate Spoonbills

I stood on a beach in the evening
 When the day was nearly done.
 The evening sun was setting,
 And night was coming on.

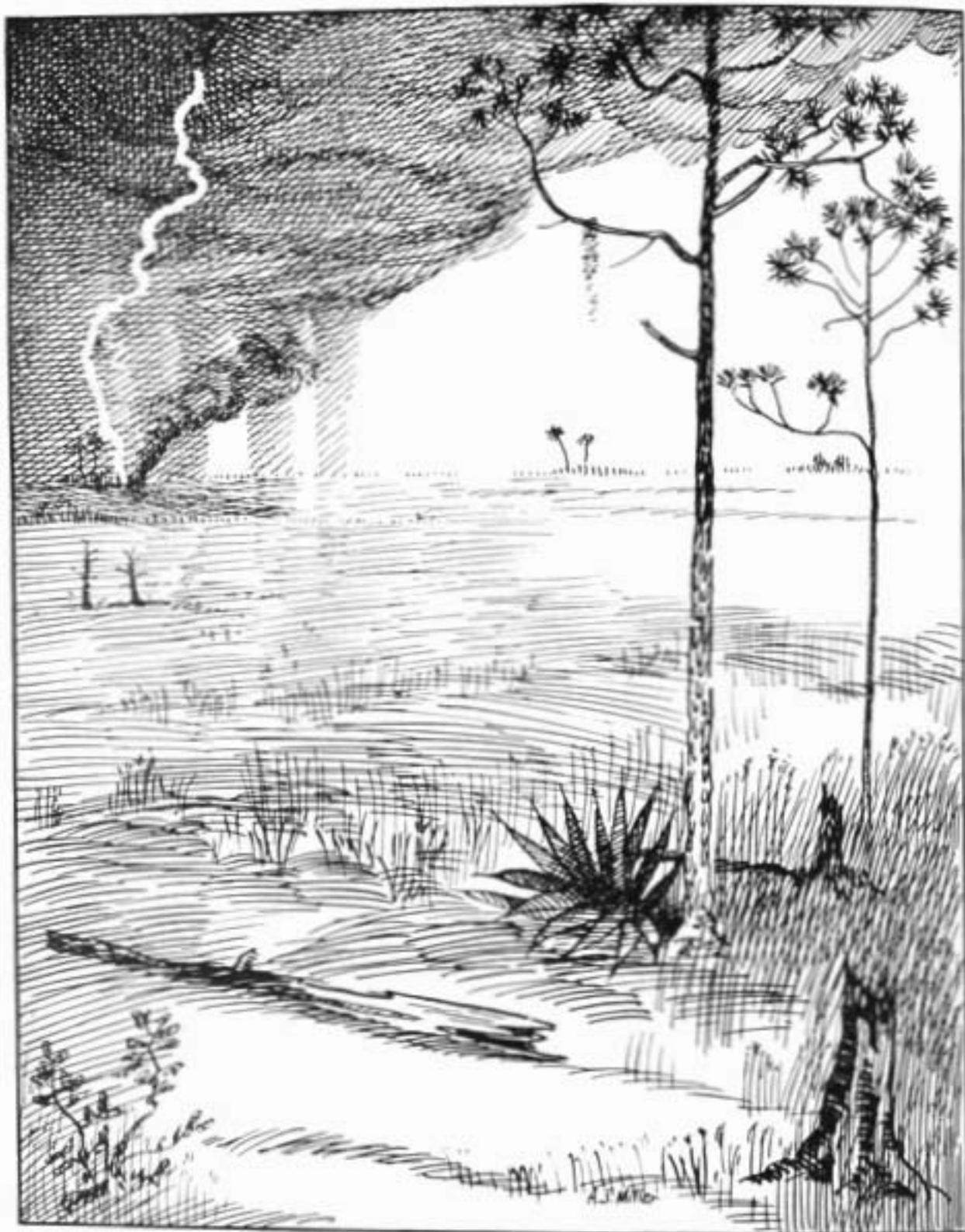
A whisper came on the breezes,
 The passage of birds in flight;
 They'd made the rounds of their feeding
 grounds
 And were heading home for the night.

On, on they came in formation
 Each plumage pink as a rose,
 The spoonbills in all their glory
 Which only the sunset knows.

I stood on a beach in the evening,
 And the day was nearly done.
 The birds had passed, and the sky was
 clear
 And night was coming on.

A. J. MILLER

A.J. Miller



"... fires were seen to start from lightning strikes in sawgrass ..."

Everglades Fires - Past, Present and Future

by WILLIAM B. ROBERTSON *illustrated by A. J. Miller*

SOUTH FLORIDA is perhaps unique in that it has had more fires and kept less account of them than any other section of the country. The belief is widespread that wildfire is an intimate, perhaps a necessary, part of the natural order rather than a deplorable event. Over and over one hears such statements as "This country has always burned and always will," and "Fires don't hurt anything here."

There is much to account for this view. Within a few weeks after fire the glades are green with sawgrass shoots, and the pine woods full of flowering herbs and new grasses. The scars of burned-out hammocks are soon hidden by a rank growth of fireweed shrubs and vines. To the casual observer it must seem inconceivable in many cases that the fire can have done any significant damage.

These local conditions—frequent and widespread fire, fire that often had little obvious effect, and a vast wilderness area where fires might burn undiscovered for days without threat to any works of man—have long retarded serious consideration of fire effects in south Florida. The succession of severe fire years within the last decade brought the matter forcibly to general attention. A realization has dawned that, whatever its previous ecological role, wildfire has gained a new and menacing importance under the radically altered conditions of the present day. It is of interest then to survey what is known about fire in the Everglades and attempt to estimate what is to be expected in the future.

The keystone of the policy of our national parks is the maintenance or restoration of natural conditions. It is thus important to an understanding of the region to ask, was wildfire a factor in south Florida under original conditions before any disturbance by man? The time in question is so remote that a definite "answer" is scarcely within reach. However, character-



istics of the present environment and vegetation provide a few clues that permit us to draw certain reasonable inferences.

The present plant cover of south Florida is a mosaic of bewildering variety in which some vegetation types appear capable of replacing others if undisturbed. On the slightly elevated rocklands tropical hardwood forest rapidly occupies pineland areas. Bay, and mangrove swamp forests tend to invade the sawgrass prairies of the glades. It seems quite clear that the *status quo* could not be long maintained unless some ecological force operated to check the establishment of hardwoods in the pine woods and gladelands. It also seems obvious that fire is at present such a factor. Most of the present fires, however, are man-caused. Let us see what the available evidence indicates concerning the occurrence of fire in times before any human occupancy of south Florida.

Before 1951 the answer to the question "Is natural fire important in south Florida?" would have been "No." Absence of any direct evidence of lightning fires had led to the strong belief that they were too rare to be of consequence.

With the establishment in 1951 of two fire towers overlooking large sawgrass areas in the Everglades National Park it soon became evident that natural fires caused by lightning do occur frequently. Several fires were seen to start from lightning strikes in sawgrass and in tree islands of the Everglades. In all, lightning was the reported cause of 12 fires in 1951 and of 11 in 1952 (up to July 1). Some of these fires were extinguished by rain accompanying the electrical storm, but among them were also several of the major fires in the history of the Everglades National Park. With the establishment of the present importance of lightning-caused fires it becomes reasonable to assume that they have been a continuing factor throughout the geological existence of south Florida and that the fire-maintained cover types have consequently been a continuing feature of the south Florida vegetation.

Indirect evidence of the long persistence of presently fire-maintained vegetation types, especially the pine woods, may be found in a study of their plants. The flora of south Florida contains a sizable number of plant species which appear to have originated in the region. Interpretations by different botanists vary, but the total number of these endemics is around 100 species, most of them herbaceous plants or low shrubs. Examination of

that the habitats of these species provides us with additional evidence of a long history of natural fire in south Florida. Well over half of them are limited to pine forests and in all 70% occur in vegetation types that today are maintained by fire.

Differentiation of new species requires geographic isolation of populations under new ecological conditions to which they become adjusted through a long period of natural selection. Almost all of the endemic pine-woods species are shaded out by invading hardwoods in pine forest areas that are free of fire for as little as five years. It is quite clear that they could not have evolved if natural fire had been absent, or even of irregular and infrequent occurrence in the region. Their existence as distinct species is inescapable proof of long ages of regularly recurring natural fire sufficient to maintain large areas of sub-climax vegetation.

This conclusion is quite in line with those indicated by studies elsewhere in the southeastern U.S. Of Louisiana marshes, some of which are sawgrass areas similar to the Everglades, John J. Lynch states flatly, "Fire has always been a factor in the ecology of Gulf coast marshes.

With the arrival of early Indians in south Florida the frequency of fire must have increased. Frank Egler has considered the probable effects of

"... Indian fires were probably frequent ..."



Indian fires in detail concluding that they resulted in modification of the continuous hardwood forests existing before the arrival of the aboriginal population and the establishment of the mosaic of vegetation types seen today. Compelling evidence has been presented to show that natural fires must have been sufficiently frequent in south Florida from the earliest times to maintain large areas of sub-climax vegetation. I do not therefore, see the need to invoke Indian fires as a major factor in the *origin* of these fire-maintained types. I agree, however, that Indians were probably free and careless in using fire; that Indians fires were probably frequent; and that they probably tended to occur as early in the dry season as sawgrass would burn.

White man's incendiary activities in south Florida have beggared those of his dusky brothers. I believe that the frequency of man-caused fires probably increased sharply as whites replaced aborigines in the area. White man in south Florida burned freely for every reason that the Indian did and for some all his own. Fire was used to drive out game, to create new pasture for cattle, to keep down mosquitos, to kill rattlesnakes. Even today burning to locate gator holes in sawgrass areas is a common practice of commercial hide-hunters. Add to these frankly incendiary fires, those which spread more or less accidentally from farming and lumbering operations on the eastern rim of the glades, and an imposing picture of fire occurrence for the white man's half century in south Florida is obtained.

Prior to the establishment of Everglades National Park little or no attempt was made to control fires on wild lands. Fire protection activities of local and state agencies were confined for the most part to guarding developed lands against wildfire.

As white occupation became established, the drainage of the glades began, and with lowering water levels the increasingly frequent fires did increasingly severe damage. Everglades water levels were lowered both by local direct drainage at various points along the length of the Everglades, and by the diking of Lake Okeechobee (complete about 1935) which cut off the slop-over that had formerly drained off to the south and may have provided an important source of water for the glades. Engineer Lamar Johnson wrote me of the drainage, "The arterial canal system of the Everglades was begun about 1905. The beginning of the construction was along the coast working toward Lake Okeechobee. Connection with Lake Okeechobee was made between 1916 and 1920 for the various canals. I believe



"... the increasingly frequent fires did increasingly severe damage."

that you could say that drainage was partially effective about 1918."

Since drainage began to be effective a pattern of increasingly severe fire has developed. More than one-third of the winter dry seasons since 1920 have been marked by extensive Everglades fires. Before drainage severe drought years in the south end of the Everglades were probably less frequent since some water entered the area from the north. Now the lower glades of the Everglades National Park area are dependent almost entirely on the rainfall of the immediate area and may be completely dry for months in dry years. Previously a sort of balance must have existed, with the generally higher water levels acting to restrict the frequency, extent, and severity of fires. Dry years with severe fires undoubtedly occurred, but it can be safely assumed these were rare.

Fires in the altered situation established by drainage have been notable in two respects:

1. Destruction of organic soils has decreased the water-holding capacity of the glades due to the loss of the peat and marl seal over the highly permeable underlying limestone.
2. Destruction of hardwood forest vegetation, both rock ridge hammocks and tree islands, has been widespread.

In considering what the future may hold we may be guided by a summary of what appears to be true of past and present conditions.

First, there can be little doubt that fire is a natural ecological factor in south Florida, and that complete elimination of fire would eventually result in disappearance of the pinelands and the sawgrass glades. The Everglades would no longer be the Everglades.

But, there can be equally little doubt that under present conditions fire is potentially capable of eliminating the inland hardwood forest vegetation types, and of causing floristic impoverishment, and other degenerative changes in the vegetations that are fire-maintained. Again the result would be an area much different from that we have known.

Perhaps the most important suggestion that can be emphasized for the future is that we need to think of fire as it is in south Florida rather than as it may be elsewhere. As almost any glades cat would tell you, "Fire is a part of the glades and always will be." We need to find out in detail what the effects of fire are and to use the information in proceeding against fires. Present knowledge, though sketchy at best, provides a few pointers. For example it makes sense ecologically to protect a hammock or bayhead even at the expense of considerable acreage of pine or sawgrass. The pineland will look much the same within two years, but no man living will see the complete restoration of the burned-out hammock.

Under present water conditions there is no question that fire suppression must be increasingly efficient if the present aspect of the Everglades is to be maintained. If means of restoring glades water levels are found, vigilance against fires can be gradually relaxed. It is well, also, to be aware that one year's successful fire prevention in areas of flash fuels such as sawgrass may merely set the stage for a more destructive fire a year or two later. The possibilities of the use of controlled burning techniques such as those pioneered by Herbert L. Stoddard in north Florida and Lynch in Louisiana marshes should at least be explored. Avoidance of fixed attitudes and a willingness to learn and to apply what is learned are important here.

Egler summed his consideration of fire in south Florida in the striking words " . . . they can survive only with fires . . . they are dying today because of fires." It would be difficult to state more neatly the dilemma of those who must manage fire in the Everglades. Egler's sentence " . . . the herbaceous Everglades and the surrounding pinelands

Fighting Everglades Fire In '53

by GEORGE WASHINGTON FRY

DURING THE FIRE SEASON in the Everglades National Park, from November through June, fire lookouts in the Long Pine Key and Seven Mile Lookout Towers scan the horizon for smokes, and smokechaser trucks patrol routes along the critical eastern fire boundary. Seasonal fire control aids stand by at the fire equipment cache at Pine Island and the Tamiami Ranger Station. A fire dispatcher sits at the controls in the chief ranger's office at park headquarters in Homestead. When wild fire threatens the park, the dispatcher launches the attack of the park's fire fighters and coordinates their movements, replacements and supplies.

One day, as the dispatcher worked at a routine report, the master radio before him broke the silence with a nasal metallic voice calling, "KIE-780, Long Pine Key lookout to KIE-775, Park Headquarters."

The dispatcher depressed the transmitter key with his index finger and replied, "This is KIE-775. Go ahead."

The harsh voice responded, "One smoke at 228 degrees; estimated distance nine miles; smoke white. Over."

The dispatcher's eyes fixed on the wall map, as he pressed the button again and ordered, "KIE-775 to 780. Stand by." Reaching to the map he pulled a string from the Long Pine Key Tower locality to a point nine miles out on the bearing 228 degrees, and pinned a red marker there. Frowning, he pressed the button, "KIE-775 to 780. Watch this one. It looks bad. Over."

The lookout's voice returned, "Roger. KIE-780 ten-five."

The dispatcher's finger was back down on the button at once. "KIE-775 clear with 780 and calling smokechaser 24."

A moment of silence, a buzz of static, then a new voice responded, "This is 24. Go ahead, 775."

"24, we have one item southeast of Concrete Bridge. Over."

"24 to 775. Roger. I'm on my way. 24 ten-five."

"KIE-775 clearing with 24 and calling KIE-784, the Fire Cache."

The response was instantaneous here. "784, Fire Cache. Go ahead, 775."

"We have a smoke southeast of Concrete Bridge. Alert the crew and advise the district ranger."

"Roger, 775. Will comply. Fire Cache ten-five."

"KIE-775 ten-five." The dispatcher pulled a log sheet in front of him and busied himself recording these events in it for several minutes. After a time the smoke chaser's voice grated over the radio, "24 to KIE-775. Over."

"This is 775. Over."

"The fire is 6.2 miles west of the Jog and about 1½ miles south of the road. A pretty strong wind is pushing it from the southeast, and it's building up fast. Over."

"Roger. Six point two miles west of the Jog. KIE-775 clear with 24 and calling Fire Cache. Over."

"This is Fire Cache. Go ahead, 775. Over."

"One fox south of Ingraham Highway six point two miles west of the jog. HOT-FOOT SCRAMBLE. Over."

"Roger. Six point two miles west of the Jog. Hot-foot is shoving off with Shilts, Pappy and Wally. The time is now 12:10. The district ranger is in car three. Over."

"Roger. KIE-775 clearing with Fire Cache and calling 21. Did you get all that, Mac? Over."

"This is 21. Yes, I heard that. I'm on my way, and I'll pick up Adeside at Royal Palm. Notify the Chief Ranger. 21 ten-five."

"KIE-775 clearing with 21 and calling 63. Over."

"This is 63, go ahead, 775. Over."

"Chief, we have one fox southeast of Concrete Bridge with a strong southwest wind. Hot-foot is on the way with three men. Mac is on the way with one more in his pickup. Better alert a second crew, hadn't I? Over."

"63 back. Yes, also get hold of Ralph Miele and dispatch a plane immediately. Send the scouting buggy from Pine Island. I'm heading directly for the fire. Notify Mac that he is Fire Boss. 63 ten-five."

"775. Will do. Clearing with 63 and calling 64, what is your location?"



Fire crew unhooking tractor and trailer-pumper unit from Hot-foot.

After a pause a voice responded, "64 back, I am at the parking area at Station 3 of the Self Guiding Tour. Over."

"We have one fox southeast of Concrete Bridge building up fast. The hot-foot should be passing you now on the way. Is your road crew there? Over."

"Yes, I have five men here. Over."

"Alert your crew and stand by there to go on the fire if we need you. Over."

"Roger. Will do. 64 ten-five."

"KIE-775, ten-five."

The dispatcher picked up the telephone and asked for a number from the dispatcher's manual. "This you, Ralph? We have one fox southeast of Concrete Bridge. How quick can you get to the airport to scout it by plane? O. K. Call me by handy-talkie when you are airborne."

The dispatcher now checked his log of the events that had taken place.

The first unit of men and equipment has been dispatched, the fire boss and fire chief are on their way to the fire, and he has alerted the second crew, and would soon have a scout in a plane over the fire. He has a feeling of satisfaction. After many months of routine, the fire training conference and on-the-job training has started to pay off.

Again the silence is broken. "Handy-Talkie 10 to Fire Boss."

"This is 21. Go ahead."

"We have flown around the fire, and I saw no glades buggy tracks, nor any person walking in the area. I suggest you have it scouted on the ground for evidence of how it got started. The fire is spreading in a northwest direction rapidly, and is about a mile long, and less than half as wide. Over."

"21 to Handy-Talkie 10. Which flank is the hottest? Over."

"Handy-Talkie 10 to 21. The northeast flank is running fast, Mac, and may require several crews to hold it at the highway. You wouldn't think it could jump the highway and canal both, but I don't know. The southwest flank is spotty and easily handled by one crew. Anything else? Over."

"21 to Handy-Talkie 10. Negative. Return to airport and stand by at headquarters. Over."

"Handy-Talkie 10 to 21. Roger. Ten-seven."

The fire boss now put his plans into action. "21 to 775, over."

"775. Go ahead, 21. Over."

"Send me two more glades tractors and pumper units. Hot-foot left here 15 minutes ago for the Fire Cache. Liles just reported here with his crew, but we will need the third crew to hold the fire here at the highway. Over."

"775 clearing with 21, and calling 784 Fire Cache. When Hot-foot arrives there, send him back with another unit, and start the third unit on the lowboy now with the four men standing by there. Over."

"784 back. They are ready to leave immediately. 784 ten-five."

"This is 775 calling 21. Your equipment and crew are on their way. Mr. Hanks just left headquarters to be your timekeeper. Request Liles to stand by for transporting supplies. Over."

At this point there appeared to be quite a bit of static on the air, usually caused by a handy-talkie from an airplane. The message finally came through clearly, "Handy-Talkie 10 to 21, the fire just jumped about 150

feet across the road and canal, and has started for Long Pine Key. Looks bad. Over."

"21 to 775, did you hear that?"

"Roger. Over." There were several minutes of radio silence.

"21 back to 775. The chief and I have decided that as soon as the two units arrive we'll cross at the Concrete Bridge and strike out along both flanks. Dispatch the jeep to the Concrete Bridge to scout out the head of the fire along the old road. Ask Mr. Beard if he will come down and scout for us. Get a D-8 bulldozer lined up to keep it out of the pinelands. The chief says to pull the plug on everything you got. We are going out in the scouting buggy and will be on the air in Buggy 12, over."

"775 to 21. All requests will be complied with. Headquarters, ten-five."

The entire park organization was now operating on an emergency basis. In a matter of three hours the fire had burned approximately 1000 acres. The crews are working on the flanks of the fire, putting it out at the rate of three miles an hour when the going was good. The real problem now, though, is to keep the fire out of the pinelands and hammocks of Long Pine Key. The dispatcher noticed that an hour has passed since the last entry on the log, when the silence was broken by a voice calling, "This is Beard in Car 10 to Buggy 12, over."

"Buggy 12. Over."

"Bogey and I are out on the buggy trail about two miles northwest of the bridge. The fire can be stopped here at the edge of the pineland if we can get a D-8 Cat here by six o'clock. How is it over on the northeast flank? Over."

"This is Buggy 12. It looks O. K. We won't need a tractor here. Let Bogey scout a line location, and I'll have the D-8 come right down. We'll meet you at the Bridge in 30 minutes. Over."

"Car 10. Roger. Ten-five."

"Buggy 12 clearing with Car 10 and calling KIE-775. Over."

"Headquarters. Go ahead, 12."

"Al, tell that D-8 on standby to report to the Concrete Bridge immediately. Tell Winte to bring his crew and equipment there too. Alert the Navy Pumping Station for eight men for duty at midnight. Request Bean and Mrazek to report as crew bosses at midnight. Tell Cowboy to bring the chuck wagon and be prepared to feed the men at 11:30 tonight. Over."

"775 to Buggy 12. Roger on that."

"Buggy 15 to Buggy 12. Over."

"Go ahead 15. Over."

"We have the fire under control on the south flank, and we are out of water. Our gas supply is low. Where to next? Over."

"12 back to 15. Report Concrete Bridge for further instructions. Clearing with 15, calling 775, Dispatcher. Over."

"775. Go ahead, Mac."

"Al, tell the Navy just to send those men down to Concrete Bridge by midnight. Beard is going in with the D-8 now. I am sending the crew from the south to the west flank. When Winte arrives, his crew will follow the D-8. The two crews on the northeast flank can hold the line where they are. The chief and I are going to follow Winte. Over."

"775 Roger. Any special instructions for the rest of the night? Over."

"Let Ralph relieve you at midnight. You can report back by 8:00 A.M. Be prepared to scout by air if necessary. Tell Paul Heaton we won't need him any more tonight there at headquarters. However, we want the storekeeper to stand by at the warehouse. Over."

"Headquarters ten-five."

Out on the fire line the sky is all ablaze, with flames occasionally leaping forty feet high before a strong southeast wind. The fire has already burned over 2000 acres. The south flank is under control, but the northwest flank is running fast. Another two hours will tell the story. If the D-8 gets a line established and a pumper crew can keep the fire from getting into the pineland, the situation will be under control. Otherwise, the fire will blow up again.

By midnight the wind had died, the line had been held, and the fire boss had placed the two fresh crews from the Navy Pumping Station on the northwest flank. All crews were fed, and every section of the line was under control or patrol status. The fire boss completed the entries in his notebook, and reported to the dispatcher from the base camp. "21 to 775. Over."

"775. Go ahead."

"I have released the first two crews at 12:15 A.M., and they are on their way to the bunkhouse at Pine Island with instructions to report back by 8:30 in the morning. At 2:30 we will release two more crews. The

crews remaining on the fire will patrol and mop up the rest of the night. By 4:00 A.M. we should know what the situation is. The only flames visible now are from hammocks which have not completely burned out, and isolated pine snags. Over."

"Roger. Headquarters ten-five."

At the first light of dawn, about 5:30 A.M. the glades were a scene of quiet and serenity, the heavy smoke odors alternating with sweet pockets of fresh air floating in from the unburned glades. An occasional egret was seen flying to the feeding grounds to the north, and a full grown buck was seen coming out of the hammock south of the base camp.

Activity stepped up around six o'clock when the crews came in to service their equipment and to eat breakfast. After a brief conference the fire boss and chief ranger decided to keep the buggies on patrol status all day. Two fresh crews would be out on the line by the time the critical burning period began for the day, about nine o'clock. Mop up work in the hammocks and along the pinelands would continue until the fire was declared out.

The day dragged along. There was very little activity in the dispatcher's office, and except for routine messages, there was no traffic on the air. Finally, at four o'clock in the afternoon, the message came which we were all expecting to hear. "21 calling KIE-775. Over."

"775. Go ahead."

"The fire is out. I have released all crews and equipment, except Pappy and Gray who are staying here until dark. Mr. Hanks has all the equipment and personnel time sheets figured out. Deane and Vince have surveyed the fire and prepared a map. The fire burned 2765 acres. Pappy will stand by here tomorrow with the scouting buggy. I'll be at Pine Island working up the fire report, and will bring it in Monday morning. Do you have any traffic for me? Over."

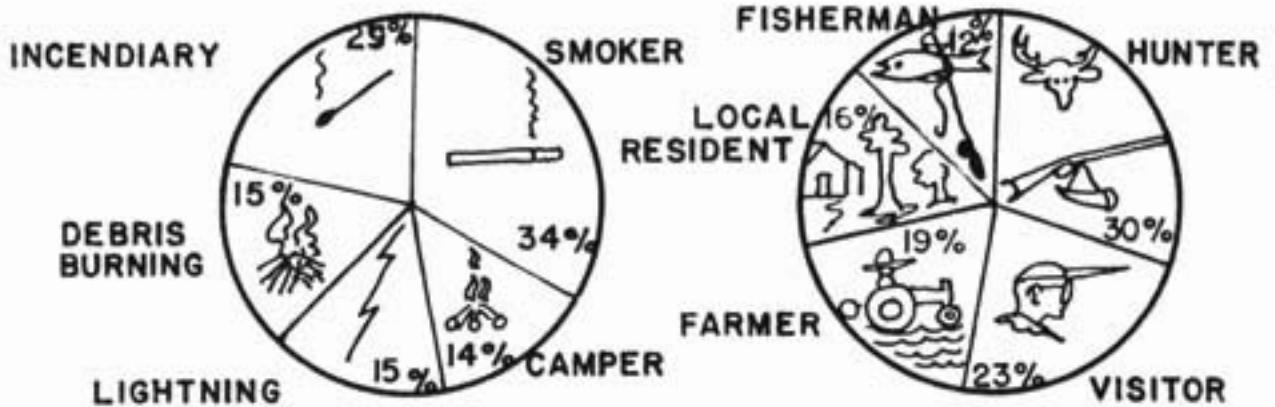
"775 back. I have no traffic for you. I'll send the fire log down to you at the fire cache. I'll release all men, and stand by here until quitting time. See you at the party tonight. Over."

"This is 21 off the air."

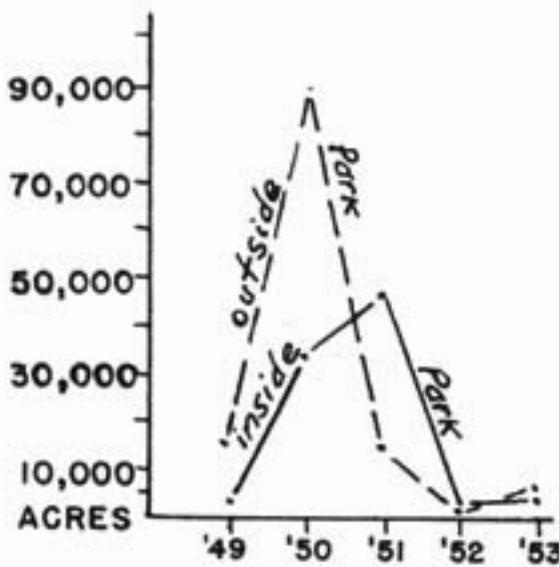
SUMMARY OF FIRE STATISTICS 1949-1953 EVERGLADES NATIONAL PARK

CAUSES OF FIRES

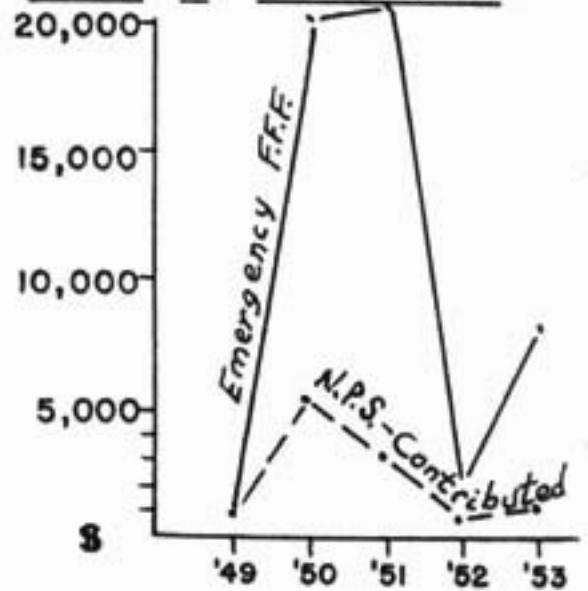
CLASSES OF PERSONS RESPONSIBLE



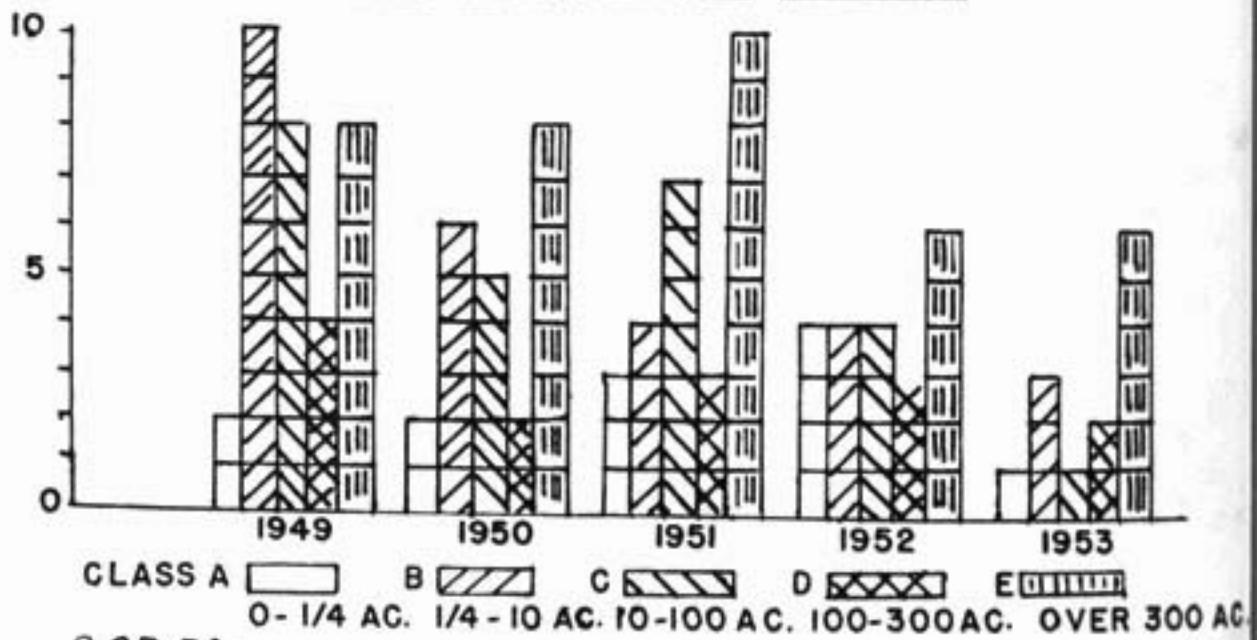
ACREAGE BURNED



COSTS OF SUPPRESSION



NUMBER OF FIRES EACH YEAR BY CLASSES



2-25-54

G.W.F.

Fire In The Glades

by FRANK N. YOUNG

EVERY NOW AND THEN, too often to be contemplated calmly, the Everglades catch fire and burn over vast areas. At night the sky glows red, and great clouds of acrid smoke blanket the coastal cities. Often when the fires at last burn out, the grass, the trees, the wild animals, and even in places the deep organic soil built up so slowly over long ages, are gone. When drainage of the Everglades was first begun, the danger of fire was grossly underestimated. The result has been the loss of many thousands of acres of valuable muckland which could to-day be producing food in abundance. We cannot accept these fires as inevitable. It is nearly always a carelessly dropped match, an untended campfire, or a deliberately set blaze that sends the flames racing across the sawgrass. No more senseless and needless abuse of natural resources can be found anywhere in the United States.

The Everglades National Park has had to carry on at great expense a never-ending battle against being burned down to the bare rock. The park rangers have fought the fires valiantly, even to the point of grave personal injury and risk of death, but they are only a handful against an almost unbeatable combination of over-drainage, insufficient barriers, and indifference on the part of the general public. And they are guardians of perhaps only a fifth of the total area of the Everglades. To judge from the attitude of some of the hunters, campers, and even some permanent inhabitants of the region, it would seem that nothing could be finer than reducing the Everglades to a ruin of blackened prairies, pinelands, and hammocks. John Gifford, in his book *Billy Bowlegs*, says that when: ". . . the fires have reduced the land to a useless scrub, and . . . the agricultural crop consists mainly of cane to produce syrup for the manufacture of liquor, white, negro, and Indian are all on the same plane. They easily revert to a very primitive state, all freely mingle, all 'tote' guns

and are all naturally vindictive toward anything that stands in their way. The white is of course the worst. He falls hardest because he falls farthest."

While the fires in the 'glades to-day are a product of modern man's lack of foresight in tampering with nature, some wild fire has been with us for many thousands of years. When the first whites came to the eastern Rim of the Everglades, the whole area was largely covered with pine forest intermingled with patches of hardwoods—the hammocks. The Seminoles called the ridge from Miami south, the "Coontie ground" and came there to prepare starch from the roots of the cycad which then grew in unbelievable abundance. This was their staple food, a storable starch without which, as Alfred Russell Wallace pointed out many years ago, no primitive culture can flourish. The "Coontie grounds" were the "heartlands" of Indian culture in the eastern Everglades, and they were already a product of recurrent fire.

Before the Seminoles, the Tequestas, and before them still more ancient people, lived on the ridge and built mounds around its edge. Their culture was dependent upon the cypress canoe with which they crossed the Everglades and the transverse 'glades to reach the Keys and perhaps even into the Caribbean. The earliest Indians were apparently dependent upon shell fish from the remains of which they built up great mounds still found scattered over parts of the region, but the Tequestas made pottery and probably practiced a primitive agriculture. They must have taken an active hand in the burning of the ridge which has continued right down to the present.

We know that open pine forest, not only in southern Florida but over vast areas of the southern United States, is a product of fire. Nowhere does the pine reproduce itself in the face of competition from the hardwoods, except where periodical fires sweep through the understory and cut down the broadleaved evergreens. On the Rim of the Everglades when fires are kept out, the broadleaved trees smother the young pines and quickly replace the piney woods with hammock. Within my lifetime, I have seen Brickell Hammock in Miami recapture more than an acre of pineland where it was protected from fire. Then, of course, it yielded itself to the bulldozers of landscape "artists" who replaced the natural vegetation with showy tropicopolitan "weeds." I have seen a hundred burned and fire-gutted hammocks, but never one indication that the fires started within the

hammocks. The fires always came from the pinelands into the hammocks, and the hardwoods advanced again until a new fire threw them back. Nor did the fires come in from the 'glades in the old days because it is only along the edges of the 'glades, the watercourses, and the bays that the hammocks held their own where fires are unrestricted.

Before the coming of the Tequestas, the hardwood hammocks of the Rim may have been much more extensive. We might picture the edges, like the old descriptions of the island of St. Helena, dripping with great forest trees bedecked with ferns and orchids. The rainfall averages from about 55 to over 65 inches a year, and under these conditions the tropical hardwoods are definitely favored where fire is restricted. It seems probable that the fire-sticks of the Tequestas, applied at the right time in the right place, may have further reduced the hammocks and extended the pinelands. Once a plot of hardwoods was burned out, either to be used as a field or a campsite, the pines and palmettos were ready to move in upon the impoverished soil. With time, natural and man-made fires became so frequent that the hammocks were reduced to scattered patches separated by expanses of pineland through which fire could rage uncontrolled.

The Seminoles, who were obliged to be and still remain largely a nomadic hunting people, continued the burning of the pinelands where the Tequestas left off. As pointed out by Gordon M. Day in a recent issue of *Ecology*, there were many reasons why they should. Fires could be used to drive game, to improve visibility for hunting, to facilitate travel, to kill noxious reptiles and insects, and even as a means of offense or defense in war. Fires also favored the growth of the Coontie, and could have been used, as they are now by the Seminoles in the "deep 'glades," to clear patches of hammock for the cultivation of pumpkin, maize, and sugarcane.

Even if the Tequestas and Seminoles had used fire only for "smudging" insects and cooking, the chances of firing the vegetation were very great. We are befuddled about the economy of the Indians by the old saw: "White man heap big fool. Build big fire. Sit way back. Indian build little fire. Sit right over." Actually, the Indians were often prodigal in their use of firewood. The great fires of the Iroquois and Delawares were shocking to the early white settlers. The Seminoles still often build a convenient, but unruly campfire by arranging large tree-trunks like the spokes of a wheel. Such a fire will burn on almost indefinitely as one log after another is

pushed toward the center. With a supply of good fat "literw'd" at hand from the dead pines, the fires must have blazed merrily and have been almost uncontrollable even on a calm day.

Regardless of how Rim fires began, the resistance of the pineland plants to fire is a subject which would repay much study. Not only are the common devices used, such as underground storage roots, bulbs, and corms, but some of the species show remarkably novel techniques for avoiding cremation or for recovering from its effect. In the sandy pinelands the cabbage palm, *Sabal palmetto*, almost seems to demonstrate intelligence in escaping fire, because although it begins to grow up as a seedling in the normal way, it soon turns and grows back down, thus hiding its "head" beneath the sand, and only sending up its leaves and flowering branches. If protected from fire, however, apparently the same plants poke up the bud and grow into sizeable and normal cabbage palms. In the edges of the hammocks one can often find a graded series from the sand ridge pineland form with the bud completely buried, through semi-prostrate, to fully erect specimens identical in every respect except the way they grow. In the rocky pinelands of the southern part of the Rim, the underground form is largely absent, and the cabbage palm grows naturally only around sinkholes or in the edges of the hammocks.

Many of the plants of the pinelands adjust by simply letting their parts above ground burn up. Thus some, which are trees when protected, remain small prostrate shrubs because of the recurring fires of the Rim. The saw palmetto, which has the bud wrapped in a fire-resistant sheath resembling the *tapa* cloth of the Hawaiians, is prostrate with the stem half-buried in the frequently fired pinelands, but rears up to be an erect, tall palm in the shelter of rarely burned hammocks or along the water-protected edges of the deeper 'glades. Besides its big underground root from which leaves can regrow, the coontie has a specialized cone which contracts on being exposed to heat and thus better protects the immature fruit within.

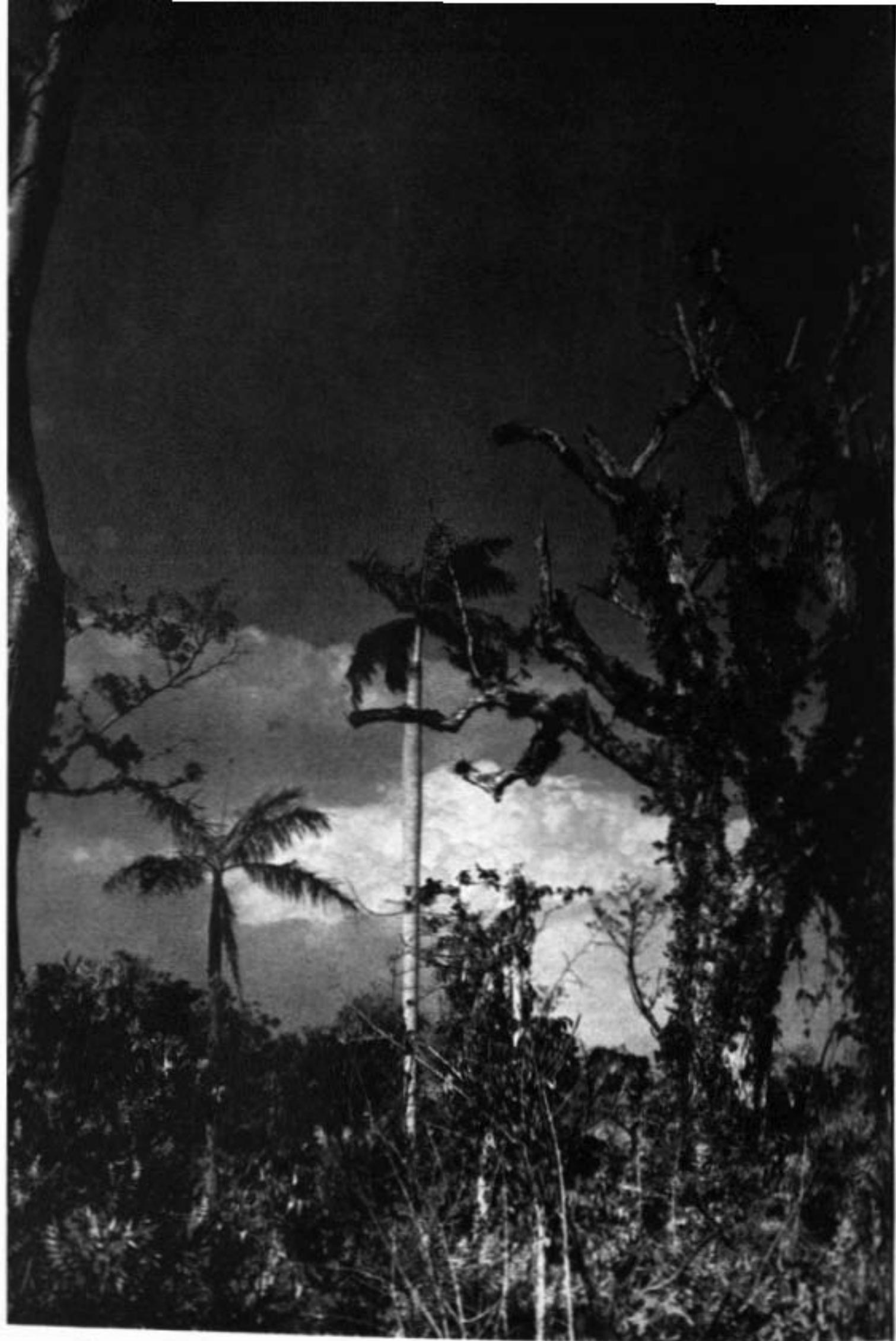
The Caribbean pine itself is remarkably resistant to fire. Its living bark will hardly burn at all, and although the needles may be killed by heat they are quickly replaced. Even the young pines often revive remarkably well after a fire, the bud being protected by the mass of long needles. The seedlings of both the Caribbean and the yellow pine of farther north keep the bud close to the ground for several years so that they resemble small

clumps of grass more than pine trees. The true slash pine on the other hand quickly grows up into a small tree which may account for its failure to occupy higher areas where the burning may occur every year.

Charles Torrey Simpson, Miami's beloved naturalist after whom its Simpson Park is named, takes these evidences of fire-resistance to indicate that piney woods were the first to come to the ridge. He points to the many adaptations of the vegetation to fire—the underground roots and stems, the fire-resistance of the pines, and the quick recovery of nearly all the typical pineland plants from the effects of even severe burns. He points further to the composition of the hammock edge with its forefront of fire-fighters, such as the live oak, the poison wood, and the turn-coat cabbage palm. Such correlated adaptation of two different plant associations must have required a very long time for its perfection. The pinelands and the hammocks fight each other over the ridge like living creatures, and in historic times the balance of power has been with the piney woods.

Was it the red man who turned the balance in favor of the pinelands by introducing fire, or was it always thus, down from the time when the first seeds of the Caribbean pine and those of the hammock trees dropped upon the newly emerged Rim of the Everglades? Whichever is the case, white man has certainly produced new conditions in the Everglades region and the result now threatens to reduce the only really subtropical region in the United States to a desert.

The problem of the conservation of the Everglades is not insolvable, but it is complicated. Protection of the Everglades National Park area by blocking the drainage canals and thus raising the water table has been suggested and will surely help. Recently the larger cities along the east coast have become concerned about their water supplies, and are pushing the construction of great dikes to block up the northern portion of Everglades so that the vast seasonal water supply now allowed to run off to the sea can be held on the land until it sinks into the underlying rock and supplies the city well fields. The problem thus becomes not merely one of preserving a wilderness region of rare beauty, but also an advanced exercise in human ecology. If man can bring himself into adjustment with his environment in subtropical Florida, it may point the way to even greater adjustments elsewhere in the world. Someday the whole world's tropics may be man's, not to destroy, but to live with, in peace and incredible beauty.



"Today one sees what is left . . . and wonders why so much has been said of the beauty of Paradise Key."

Paradise Key On Fire

by TAYLOR R. ALEXANDER

IN MARCH 1945 large sections of southern Florida were ablaze. Smoke was so thick at times that the noon-day sun would scarcely make a shadow. One day a report was received that a biological landmark was afire and the writer joined another ecologist to visit the area to make first hand observations. The landmark was a hammock known from early local writings as Paradise Key or Royal Palm State Park and is now the hammock at which the Royal Palm Ranger Station of the Everglades National Park is located.

When we arrived at the eastern edge of the Taylor Slough area, we saw smoke rising from a great part of Paradise Key south of the highway. Close about us the pinewoods and glades were blackened in all directions by the passing of the same fire the day before. It was likely that this fire would be as destructive as the fire in 1929 that burned in from the north and consumed a major portion of the hammock north of the highway. In this earlier fire the section of the key north of the road was involved and only a portion of the hammock around the old park lodge was saved.

It looked as if this new fire involving the section south of the road would spell the finish of Paradise Key as an outstanding example of subtropical hammock. At the time, one could not help remember field trips of previous years through the hammock and the vivid accounts of the biologists who were fortunate to see the Key before 1920.

We drove on into the smoke-filled hammock and parked the car on the lodge lawn, where it was safe from fire. Across the road, leaf litter was exploding into flame. We skirted this flame and started walking down the narrow road that ran in a southerly direction from the lodge. It was very hot and yet very little flame could be seen. We soon found we could not stand still, for the earth was so hot our feet could not stand the heat. An earlier fire had passed and burned the leaf litter. Now the deep pockets of

organic soil were afire. This accounted for the heat and lack of smoke and flame. Suddenly a loud crash occurred ahead. We worked toward it and found its source. A royal palm over a hundred feet tall had fallen. We got on the trunk near the top and walked to the butt end. To our surprise the trunk had not burned. The soil and roots that supported it had burned away, and only a smouldering hole was left. We were to hear many such crashes that day, and every one heralded the fall of a big palm or tree. At times whole segments of the tree canopy would sink down and finally rest on the ash-covered surface. When we pushed at a small, standing tree trunk we found it to be burned off at the bottom. Slowly but surely it was burning without flame and sinking into the burning soil and embers. It looked as if the whole of the vegetation were going to disappear into the ground.

Fortunately this did not occur over the entire hammock. A part of the southern end and edges of the hammock did not burn. Apparently there was enough moisture in the soil there to prevent its burning. Today one sees what is left, and the stranger and recent-comer probably wonders why so much has been said of the beauty of Paradise Key.

Only general accounts of the virgin nature of this hammock are available. The writer has seen an aerial photograph apparently taken in the early thirties in connection with the Civilian Conservation Corps work. This photograph showed clearly that large hammock trees originally extended considerably northward beyond their present limits, as there were many large dead trees still standing in the area burned in 1929. These dead trees were cut down by the C.C.C. Today, their stumps are still in evidence.

Photographic illustrations in the published reports on this hammock were taken for the most part before 1920. In them one notes many large royal palms in all areas of the hammock and a very dense growth of trees and shrubs and many ferns on the hammock floor. Also the trees, especially the oaks, were covered with Spanish moss. Today the dense unburned parts of the hammock are relatively open, only about a dozen naturally occurring royal palms are evident above the other trees, and Spanish moss is almost non-existent. Study of the flora of the hammock before it burned indicated that it is fairly typical of the sub-tropical evergreen hammocks of southern Florida. A similar hammock has been described as having 128 species of vascular plants. Sixty-two per cent of these are found in the United States only in southern Florida, only twenty-two per cent occur north of the state

line, five per cent are endemic to south Florida, and 82 per cent are also found in the West Indies. It should be remembered that Paradise Key hammock was considered so unique an example of sub-tropical growth in the United States, that by 1915 steps had been taken to preserve it. Unfortunately, today it stands as a relic of its virgin condition, the victim of the past twenty years of excessive drainage, hurricane damage, and fires.

Here, then, was a challenge to learn something of scientific value from disaster. Very little is known of the rate of recovery of the method whereby this type of vegetation responds to fire. Such information is needed in all types of land habitat management. I decided on that day in March 1945 to initiate a long range study of this burned area and to make the area a teaching laboratory for the ecology classes of the University of Miami.

As many visits had been made by the writer over a period of five years prior to the fire, it was obvious that this was an excellent opportunity to initiate an ecological study that might extend beyond several life spans. Photographs were made in the fire area and the nature of the damage to vegetation and soil was carefully noted. Owing to the facts that the soil was essentially nothing more than organic matter accumulated on top of oolitic limestone, and that the extended period of drought had reduced the moisture content to the wilting point for some of the plants, the fire actually consumed vegetation and soil. After the ground fire had passed, most of the surface was rock with a thin layer of ash, charcoal, and unburned trunks, limbs and leaves. In some pockets sand and marly muck were exposed. No plants were alive. With the severity of the burn in mind, the first report date was set at five years and the first detailed study of vegetation was made in March, 1950.

In the first years following the burn, the area was covered with a dense growth of light-loving pioneer plants, *Carica papaya*, wild papaya; and vines, mostly *Calonyction*, moonvine; and *Ipomea carthartica*. Gradually a shrub, *Trema floridana*, became abundant. It should be noted that the *Carica* growth was as short-lived as it was spectacular, and after five years it was of only rare occurrence. The distribution of so much seed of this plant in a burned area must be by animals, probably the opossum and the raccoon, both of which are abundant. *Trema* has a fruit eaten by birds and abundant distribution is to be expected.

It can be seen now, with the second report period still two years distant.

that great strides have been made by nature in healing this burn. The *Trema* has passed its peak and is nearly all dead. This plant cannot tolerate the competition that is arising from the seedling hammock trees that have seeded into the area and are rapidly growing. It is fortunate that seed trees of the hammock species were spared in the nearby unburned area. Gradually a new layer of organic soil is accumulating from the litter of plants.

This study will yield accurate data in the rate of recovery from fire and a clearer picture of hammock succession to climax form. Since the area is within the park, it will most likely be successfully protected from future fire. Actually, this protection is a necessity before ecological work of this sort can be planned with reasonable expectancy of success.

It is reasonable to expect Paradise Key to regain its original beauty with a speed impossible in a less tropical climate. It is encouraging to see what has happened in the short span of eight years.

Saw palmettoes while the soil was still burning.

Author Photo





“... we were putting out a lot of fire.”

Crash In The Everglades

by JOSEPH CURTIS MOORE *illustrated by A. J. Miller*

THEY FOUGHT WELL. I still do not understand how they did so under the fire-fighting conditions back in 1950. That third day of the big fire as I watched my crew moving steadily along the fire-line, I wondered silently at our success. Men with back-pack pumps knocked down the flames; others swatted out the remaining spots of fire with long-handled fiber flaps. The subtropical sun depressed us like a thirty-pound yoke, and the grizzled old man who had eagerly reached for our canteens for the job of water-boy, was flagging. The wind was not so bad right now, though, and we were putting out a lot of fire.

A truck driver and I had picked them up in their part of town at seven in the morning, anyone who was on the street and would go. That first day there was one querulous, spindly little man who assumed the job of

rounding up others, cajoling, joshing, and berating groups on street corners until our stake-bodied truck was closely lined on three sides with dangling legs of seated labor, willing captives for the day, off to "faht de fiah" in the Everglades National Park. They came in street shoes or whatever shoes, often almost no shoes, and any kind of worn and tattered clothing. For ten hours that first day, and for eleven hours the second day they fought fire. This was the third day. The little man had been on hand again and others were back who had already been with me a day or two.

We were putting out a long line of fire, but were we making any progress? Each evening after the wind dropped, it seemed as though we had the fire well under control. Then, each morning when the wind arose about ten, the fire broke loose somewhere and blossomed out into a racing, roaring "head" and two long flanks of relatively slow fire with a widening black area between. This blow-up demanded another day of dedicated labor swatting out long miles of the fiery flanks, packing water for sweating miles with wary step among the solution pinnacles and pits of this astonishingly rough pine rockland, and depending on a road or some natural feature to stop the head of the fire.

We turned in twelve hours of work on that third day, and at the end of it I heard that the fire boss was pulling me off the fireline to give me a break. I was to spend the next day at headquarters and perhaps fly the fires about ten in the morning to map the extent of the burns and to warn fire fighting parties of potential danger spots. A second and third fire had broken out along the critical eastern boundary. One of them, however, was thought to have been brought under control.

I stood at the edge of the Homestead flying field the next morning and watched the little yellow Luscombe come taxiing in and swing smartly around to park like a goldfinch among crows against the crop dusters' big biplanes. "That's your Lieutenant Berry," offered a mechanic behind me, and I watched with interest as a tall figure unfolded from the little plane. He approached with swift bouyant strides, so erect that it seemed appropriate to use his military title. "Are you Lt. Berry?" I asked, stepping forward. He flashed me a happy smile which drew attention to his carefully clipped moustache, and shook hands in a friendly, vigorous fashion.

There were almost no misgivings about this undertaking as I shuffled my maps about and hoisted myself into the right-hand seat. Superintendent

Beard had truculently told the fire boss, "I want you to send the biologist out to scout the fire this morning. He needs to see the Park from the air as much as possible." And I did, but at the take-off my mind was preoccupied with the immediate objective of how to approach each of the two fires from the air and sketch their outline on the airplane photographs, which I had already spread on my lap as much as the plane's dual controls permitted. After cranking up, Berry folded himself into the space of the pilot's seat beside me, and we were off. I glanced at my watch and wrote in the log, "Airborne at 11:03." We were late, but if the fires were going to blow up and get out of hand again today, we would be able to see it by now and drop maps to the fire-fighting parties to show them the problem.

The landscape below moved like someone was pulling a rug beneath us. Homestead soon disappeared behind. We picked out Mowry Street and followed it out to the nearest fire. Here the black burn spread from the pinelands into the dry sawgrass marsh of the Everglades to the west. There was no fire on its edges, and only a couple of the tree-islands within the burn were still smoking. Working rapidly I sketched a map of the burn onto the airplane photographs of the area while Berry maneuvered us in a circle around it. Then we swung the plane's nose west toward the big fire, and the carpet of the Everglades moved steadily beneath us. I could pick out the royal palms of Paradise Key on the horizon to the south and the greater mass of Long Pine Key ahead. The Everglades National Park was under us now. Edging south a little, we sighted Long Pine Key Road and followed it west to the burn of the big fire. Berry put the plane over the inside of the burn and followed its edge around counter-clockwise while I sketched. We passed over park ranger Winte's glades tractor and pumper rig moving toy-like far beneath us toward a hammock which had a smoke. There was no blow-up so far. All of the edges were out. The only fire was in hammocks and other tree-islands within the burn.

"How much gas have we got?" I asked, looking at the pilot.

"Oh, about four hours," Berry responded.

"Well, let's find the fire fighting parties, and drop them sketch maps of the burn, and see if they are all o.k.," I suggested.

Before I could get a message scribbled and a sketch map made, the pilot had found one party encamped in a cypress and willow head. As I finished and rammed the paper into a yellow, balsa wood container, he

cut the motor and started to glide down toward the fire-fighters. Berry reached for the message container. "I'll have to drop it," he shouted above the screaming of the air. "Your window won't open." I glanced at my window. He was right. He nudged me and shouted, "When I say 'now,' you push on this and this." He touched a knob on the instrument panel and pointed toward the stick. His command rubbed me the wrong way, but this was no place to temporize. I touched the knob and shouted, "All the way in?" He nodded decisively. My reaction to this was that he was cowboying the act a little too much and wanted my help on the stick to pull out of the glide. I did not like it, but poised myself to do the job well. We were near the tops of the cypress trees.

"Now!" shouted Berry.

Smoothly I slammed home the knob with my left hand, and with my right bore forward on the stick.

"No, no, no!" screamed Berry. I relaxed my pressure instantly. I had felt his counter pull on the stick as he screamed. There was no starting roar of the motor. The air shrieked past our windows. Sawgrass and scattered dwarf cypress raced clearly beneath us, closer and closer.

CRASH!

The front, top, back and bottom of the cockpit hit me crushing blows in lightning succession. I knew, with a little surprise, that it had not killed me. The plane stopped upside down and poured me out on the ground. Two things came to my mind at once: I was much too shaken to tell where I might be hurt, and the plane was probably about to burst into flame with all that four hours of gas. Finding I could get to my hands and knees, I crawled doggedly about thirty feet before giving out and sagging to the ground. Cushioning my forehead on one arm, I noted indifferently that the arm immediately became very bloody. The warm, dry ground felt very good under my whole length.

Footsteps of one of the fire fighters thudded rapidly up and stopped near me in shocked silence. Without moving, I called, "Get the pilot out before the plane burns." The words came surprisingly loud and clear, but the fire fighter made no move. Raising my head and voice, I punctuated the order this time with a curse. His footsteps retreated toward the plane, and I heard other steps thudding up to join him, and voices.

My sun glasses lay covered with blood at my elbow. The ground felt



"Footsteps of one of the fire fighters thudded rapidly up and stopped . . ."

warm and good. I put my head back down. My whole body seemed charged with a terrific voltage of shock which blotted out any localized pain, and anxiety sent a train of thoughts racing through my mind. This party had been out of radio contact since early morning. They only had a handy-talkie and that would probably make no contact so far across land in the heat of the day. We had four hours of gasoline and would not be missed at headquarters for hours yet. I couldn't possibly just lie here for four hours! Headquarters could send a Coast Guard helicopter if they just knew. We were only about six miles out from the west end of Long Pine Key Road. A vehicle could never take us through that low relief, solution pitted lime rock. No one knew that better than my firefighters and I. Berry and I, (damn him!) had noted the glades tractor's trail through Long Pine Key to Concrete Bridge. It had looked fairly straight, but who could find it from here?

Then I heard chief ranger Semingsen's voice near, hushed and distressed. He recognized me, "Joe! God, I hate to see you like this fellow! Are you hurt much, Joe?" I told him that I didn't think so, that I had crawled away from the plane all right. The big fellow crouched over me and kept asking me, though, in a most compassionate voice, and meanwhile gently felt my arms, then ribs, then neck and backbone. When he got to my legs, he fell silent. After a moment I asked him how they were. He warned me not to move them and said they would be all right. With the utmost gentleness and care he removed my shoes, taking a long time at it. Then warning me again not to move my legs, he went to look at the pilot. The wild race of anxious thoughts slacked now, and I relished the warm sun on my back. It was good this happened where Semingsen was, anyway.

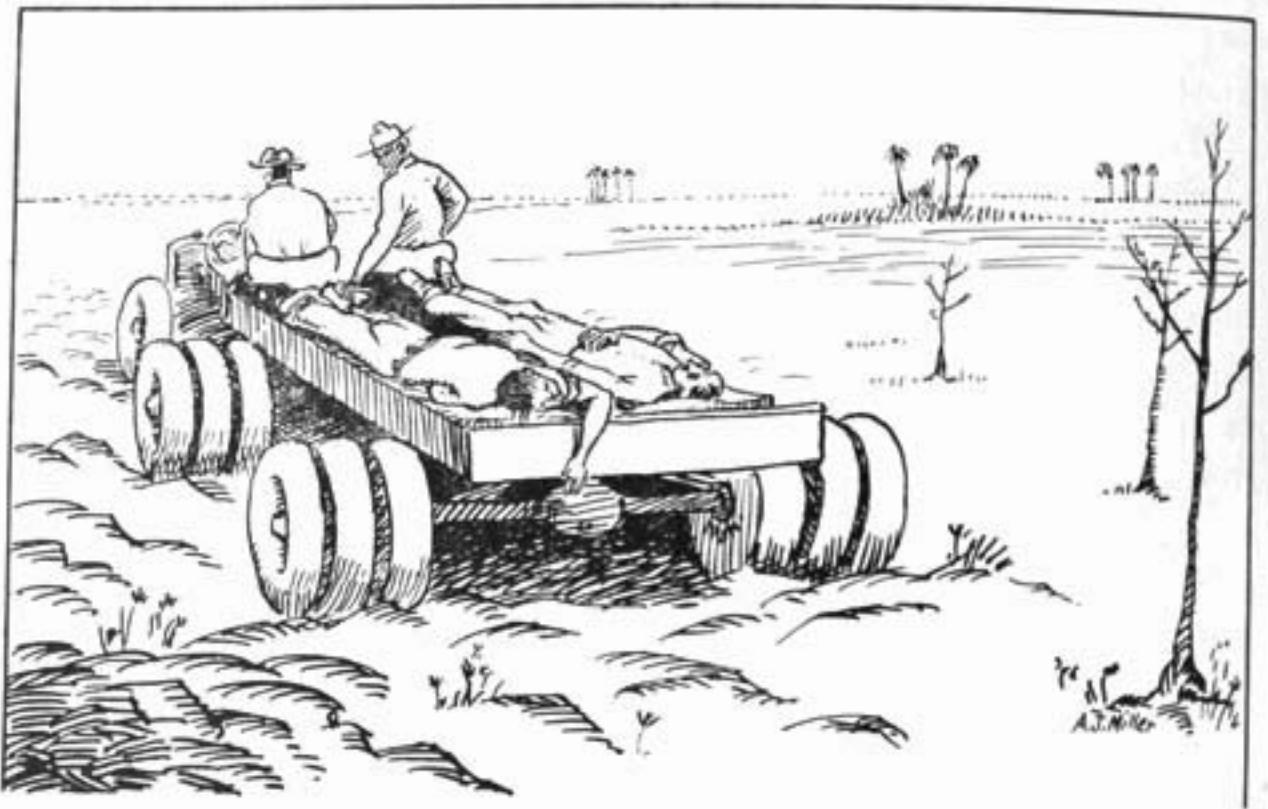
The big chief ranger was bending over me again. The pilot had apparently been knocked out in the crash but was conscious now. We had both broken our safety belts. Berry had a good many cuts about the head, one particularly bad one which closed one eye. The pilot was asking about me. Upon hearing this I was somewhat touched, and mustering my manners a little reluctantly, managed to shout a jocular greeting to Berry without stirring where I lay. After this I told Semingsen how the crash came about, and he called Slim Popenhager over and made me repeat it all with Slim to witness. Then we discussed the lack of communication with the outside and the several ways out. After considering the several possibilities, we

all three agreed that the long route to the Tamiami Trail would be best. Slim knew that route as few living men do, and he could not be sure of getting us to either of the other roads. I had never before met Slim, although I had often heard of him and had hoped to be able to make a glades buggy trip with sometime.

They went into action on our plan. Two fire fighters were to stay here, camped in the cypress head until they could be picked up some days later. The ten-wheeler buggy was re-rigged with a platform of some kind behind the driver's seat and air mattresses on that. We casualties were carefully lifted and laid on this high platform, heads to the rear of the machine and side by side, I face down and Berry face up. His left eye was hidden by partly dried blood from an ugly cut. He asked for a cigarette and smoked it while we half-heartedly exchanged apologies for getting each other into this mess, and attempted jocose remarks about our condition. Slim cranked up, Semingsen issued final instructions to the abandoned fire-fighters, and we moved slowly off.

Semingsen opened up again with the handy-talkie and tried over and over with heart-breaking persistence to get a call through. Once we heard headquarters on the air quite clearly, and hope rocketed skyward, but they evidently got no sound from us. Out of the rock area onto the smooth slough bottoms of the main drainage of the Everglades, Slim put his glades buggy into high gear, and we spun along at eight miles per hour. Two or three times he stopped at long intervals and stepped away from the buggy some distance to read his pocket compass. Slim said little. Lt. Berry or I occasionally offered some jocose comment to distract ourselves from the gathering pain. Semingsen watched over us like a mother. Berry closed his eyes for long stretches and looked pale. My hand happened to be in a position where I could hold his cap so that it shaded his face from the hot sun, and I did.

Stopping the buggy at last, Slim reluctantly warned us that it was now necessary to leave the smooth slough bottoms and strike straight north through the rock country. The rock would be smooth, he said, not pinnacles, but even though he would proceed slowly, the buggy would wobble and sway. We had been traveling nearly three hours, now, and the anasthetic effect of the shock of the crash was long gone. The rest of the trip over rock wasn't easy. Semingsen held my right leg to try to keep it from wob-



"The rest of the trip over rock wasn't easy."

bling, and Berry clutched my arm as if to help keep the rest of me from sliding around as the buggy pitched. We earned every foot of that mile.

Close to the Tamiami Trail we passed near another of our fire crews doggedly fighting the third fire. They watched us go by in shocked silence. A ranger patrol car on the Trail quickly put through a radio call to headquarters for ambulance service and soon got back a report that ambulances and Dr. Smith were on the way. Waiting did not bother us for a while. We relished being still.

It was a good many days later when the doctor finally permitted me to get up with both legs in plaster casts and navigate the big hospital ward in a wheel chair. With this degree of freedom I soon discovered a sunning porch at the end of our sixth floor ward where wheel chair patients could trundle themselves out into the sun and sit looking down at the beautiful golf links and contemplating the delightful watercourse that meandered through it. Many evenings after supper I trundled myself out there and sat looking reflectively out over the distant Everglades. All too often when the sun had gone, there was a reddish glow out there at the horizon showing the location of another fire burning up the Everglades. And I sat there and wondered when people would begin to care.

Natural History Notes

HAIR GRASS TAKES OVER. Those who were fortunate enough to visit the Everglades National Park during the latter part of last October could not fail to notice the pink expanse of hair grass, *Muhlenbergia capillaris*, on either side of the road in the Concrete Bridge area twelve and thirteen miles beyond Paradise Key. There was revealed the beauty of grass. Whether the drooping panicles were drenched in the condensation of the morning vapor, or illumined by the sunset glow, the spectacle commanded notice. This native grass grows commonly throughout the Glades, its thin-spiked clumps normally found sparsely scattered, and hence lost in the crowding of larger plant forms. In this part of the Park, however, the dread scourge of fire had wrought a change, and this hardy form promptly sprang up before its competitors could recover from the effects of the burn. The lifeless acres, black and bare since the fire of the 14th of last May, had been transformed into a sea of living mobile pink, and all this with such accuracy that the boundaries of the burned area could be readily established by the most casual eye. The minute flowers of each plume, rarely to be noticed and insignificant in their smallness, now multiplied countless times over, had produced this superior attraction and claimed a place of their own.

This grass should not be confused with the natal grass, *Tricholaena rosea*, the inflorescence of which produces a similar color and grows commonly along our streets and highways.

WILLIAM G. ATWATER, *Miami, Florida*

THE STATUS OF THE SYCAMORE WARBLER AS A FLORIDA BIRD. Although the yellow-throated warbler, *Dendroica dominica dominica*, is a common and well known bird in Florida, Howell (*Florida Bird Life*, New York, 1932) did not list the sycamore warbler, *D. d. albilora*. According to the distribution files of the Fish and Wildlife Service, eight Florida specimens have been identified as *albilora*. One of these, collected at Pass-A-Grille on March 11, 1926, was reported by Fargo (*Wilson Bulletin*, 33: 154, 1926). The other seven specimens are listed as being in the Museum of Comparative Zoology, Harvard University. These specimens

(Key West, 1; Tortugas, 3; Tarpon Springs, 3) are said to have been examined by A. H. Howell in October, 1923. Howell apparently changed his mind as to the identification of these specimens, or *albilora* is omitted from his book unintentionally.

In addition to these specimens, the files include three Florida sight records. In view of the rarity of this subspecies in Florida, it seems probable that the Pensacola records of Evermann (*Ornithologist and Oologist*, 11: 97, 1886) were based on misidentification. Evermann gave the status of the sycamore warbler as "Not common, but seen everywhere. First noted March 21st. In addition to this report there are sight records from Pass-A-Grille (March 16, 1926) and Pensacola (September 13, 1931). I have indicated in another paper (*Kingbird*, 3:6, 1953) my reasons for believing that sight identifications of the subspecies of *Dendroica dominica* are not to be relied upon.

An additional Florida specimen of the sycamore warbler may be placed on record here. The bird was found dying on a lawn on Pigeon Key, a small island about 40 miles east of Key West, by Miss Patricia M. Nutt on March 20, 1952. Miss Nutt prepared the specimen as a flat skin and brought it to Cornell University, where I remade it as a study skin. Miss Nutt was unable to determine the sex of the bird; from the color of its plumage I should judge it probably was a female. The specimen is now No. 23388 in the Louis Agassiz Fuertes Memorial Collection at Cornell.

KENNETH C. PARKES, *Carnegie Museum, Pittsburgh 13, Pennsylvania.*

ANHINGA COURTSHIP AT ANHINGA TRAIL. At 8:00 in the morning, January 6, 1954, my wife and I were out on Anhinga Trail. We noted the usual birdlife, including several coots, a pied billed grebe, a Louisiana heron, four or five gallinules, three little green herons, and five anhingas. We probably wouldn't have even noticed one of the anhingas, which was well camouflaged behind the willows, but our attention was drawn to an unusual movement of some willow branches about 75 yards across the largest pond from us. We could see one anhinga in plain view and the faint outline of another, so I focused the binoculars on the area. I could then see both quite clearly. They were sitting in a small group of willows which project into the water beyond the largest pond apple tree. I recognized one as a male and the other, sitting on a lower branch, as

a female. The male was shaking a willow branch which he eventually broke off. As he turned and lowered his head to offer the branch to the female, I was surprised to see a vivid blue skin patch around his eye. It was brilliant and had an iridescent sheen. The feathers around his head and neck were ruffled as he extended the branch. He ducked his head several times and appeared to be bowing. After more bowing and branch waving, he flew across the pond to a perch near us where we watched him easily snap off a willow branch about a foot and a half long and, after a moment of hesitation, carry it back to the female. He offered this to her and soon plucked another near him. At this point he became more ardent, and she, likewise, appeared to show more interest by extending her head towards him and intermittently preening herself. Then he worked his way down the willow tree and hopped over beside her. They began a rite of extending their necks and crossing necks and bills. This soon culminated in mating, after which the male hopped back to his perch above the female.

Just as we were about to leave, another male flew into the picture. He also had a blue patch around his eye and very ruffled feathers around his head and neck. Apparently he wasn't bold enough to try to break up the pair and chase the other male away, but he perched fairly close and did his best to attract attention. We could watch him easily, for he was in the open, and his actions were even more demonstrative than those of the first. He arched his neck, bowed deeply forward, hoisted his tail feathers straight up in the air, and raised and lowered his wings slowly and rhythmically. We watched for some time, but he apparently didn't dare approach any closer than 10 feet to the other pair. As the heat of the day seemed to settle in, they quieted down, and we left the trio to solve their problems by themselves.

My wife and I have learned never to underestimate potentialities of Anhinga Trail. It is a scene of nature's best actors and one can always be sure to see some unusual drama if one watches with patience. The newcomer sees new birds and animals. They open a different world to him. The old-timer has an opportunity to see these birds and animals in new roles. This is an unusual place where nature accepts man as part of the environment and no longer fears his presence.

C. TYLER HOTCHKISS, *Seasonal Ranger, Everglades National Park.*

THE RACCOON PREYED UPON BY PANTHER AND RATTLE-SNAKE. Two questions were raised in a recent issue of *Everglades Natural History*. Is the raccoon preyed upon by the panther? By the eastern diamondback rattlesnake? We are able to answer both questions in the affirmative.

In latter April, 1946, the senior author was making movies of wildlife in Fathahatchee (Fakahatchee) Swamp, Collier County, Florida. Special effort was made to photograph the capture of a panther, *Felis concolor coryi*. After several days in the field, one of the cats was finally located and treed by a pack of dogs belonging to a local resident. Regrettably, a member of the party shot the panther when it leaped upon one of the dogs.

The panther proved to be a female. It measured five feet, nine inches from nose to tip of tail, and weighed ninety-four pounds. Its stomach contained the remains of a raccoon, which had been bolted in large chunks. Local hunters claimed that in summer panthers frequently preyed upon raccoons.

The eastern diamondback rattlesnake, *Crotalus adamanteus*, is surely not a frequent predator on the raccoon. Each year about two thousand diamondbacks, most of them adults, are brought to the Reptile Institute at Silver Springs, Florida. When disturbed, these snakes often disgorge any large, recently swallowed prey. Commonest food items thus noted include cottontail rabbit, marsh rabbit, gray squirrel, fox squirrel, rice rat, cotton rat, round-tailed water rat, and bob-white (not necessarily in that order of frequency). In one case a young raccoon was disgorged by a very large diamondback from Little Talbot Island, Duval County, Florida.

ROSS ALLEN and WILFRED T. NEILL, *Ross Allen Reptile Institute, Silver Springs, Florida.*

NOTE ON DICKINSON'S CROCODILE STORY. Years ago while doing paleontological work in the Pleistocene peat bogs of northern Indiana, I regret that I made no use of a steel rod as a means of probing for and locating buried mammoth skeletons. I had heard the method was certain to be successful if there were bones to be encountered in the soft, deep peat. At the time, however, I had on hand all of the material I could possibly handle without locating the temptation of more skeletons, and the opportunity passed.

Later I was discussing the method with my brother, archaeologist Junius Bird, who was just back from a year of digging in Peru, where he had employed a similar rod technique to locate mummy burials. These burials were discovered in a dry area where the cloth wrappings still remained in good condition at the end of a couple of thousand years. Due, however, to the hard nature of the soil containing the burials, there was no means of detecting a mummy below by feel of the penetrating rod striking a solid or peculiar object. He indicated in pantomime how the slender rod was withdrawn from the ground and grinned broadly as he next placed the withdrawn tip to his nose and sniffed deeply. The method must have been successful, for he brought back more samples of mummy wrappings than you could shake a stick at. "These Peruvian mummies had a very distinctive smell," he said.

Now comes W. E. Dickinson's remarkable story in the December issue of *Everglades Natural History* of using a steel rod driven into the ground to locate a crocodile by *sound*. This is truly one for the book. His description of W. Argyle Hendry, with his throat pressed against the driven rod, carrying on a grunting conversation with the great reptile in his burrow, was marvelous. It has a touch of something that puts all other such devices, even those bearing mummy odors, to shame.

ROLAND T. BIRD, *Homestead, Florida*

AN EGRET FALLS FROM THE SKY. An American Egret flew slowly at an altitude of about 250 feet above the Ingraham Highway Entrance Station of the Everglades National Park. It was flying slowly and appeared to be looking for a thermal to soar on, much in the way a vulture does. Everything about the bird appeared normal for about 15 seconds. It held its legs straight back, held its neck crooked with head pulled back, and flapped its wings with ordinary rhythm. Suddenly the bird appeared stricken and stopped its wing motion. It started sinking with wings extended. First one leg came down and was pulled back in line, then both dropped and dangled loosely. By this time the bird was going through numerous and odd gyrations, and seemed to have no control except to hold the wings partially extended. Twice during the struggle the bird attained an upright position much as it would just before landing, with head held high, and neck and legs extended. Finally it went into an almost flat spin like an autumn leaf,

with head and legs dangling, and crashed into a hammock 200 yards away. No sound was heard and no other birds were in the area at the time.

RALPH E. MIELE, *Seasonal Ranger, Everglades National Park*

[This was on January 16, 1954, when American Egrets were nesting at Cuthbert Rookery, East River Rookery, and Dildo Key Rookery. The summer and fall rains this year were especially heavy, and the fall ones continued into the winter, providing for an unusually large build-up of food-fish populations in the freshwater glades, but also keeping the fish fairly well dispersed.—Editor]

INDIGO SNAKE VERSUS FLAT-TAILED WATER SNAKE. On December 12, 1953, Ranger-naturalist Karraker and I were making an inspection in the Bear Lake Road area to discuss which natural history features could conveniently be presented to the visitors who stop there. While examining some trees and shrubs, we heard a rustling among the dead leaves which littered the ground. Peering into the brush, we could see a large indigo snake holding in its mouth a flat-tailed water snake, the latter thrashing around violently in its attempt to break the vise-like grip. The indigo was easily the master of the situation, being about six feet long, while its prey was not over two feet in length. The indigo snake made no effort to coil about its victim, nor to shift it for swallowing head first. After a short pause, the process of engulfing began. First one side of the indigo's lower jaw moved forward and then the other, and the water snake disappeared into the victor's mouth with surprising speed. Soon the episode was over, and all was peace and quiet again.

WILLARD E. DILLEY, *Park Naturalist, Everglades National Park*

BOBCAT FAMILY AT PARK ENTRANCE STATION. On December 5, 1953 about 5:00 P.M., a large bobcat came out of the hammock, 300 feet west of the Ingraham Highway Entrance Station of Everglades National Park, and sat on the edge of the road. I was able to walk within 150 feet of it before a car approached and scared it into the hammock. In about 10 minutes after I had returned to the entrance station, it reappeared and stayed in the middle of the road until a second and smaller cat appeared. Then both moved across to the hammock on the south side.

Twenty-five minutes after five o'clock two bobcats, to all appearances

the same two, reappeared in the same sequence and leisurely re-crossed the road, stopping however, before reaching the small roadside canal. Then, a third and very much smaller cat started across behind them and had almost reached them when a fourth one, equally small, followed. Then all went on into the hammock. This evidently was the whole family, with the largest presumably being the tom. He was, I would estimate, about 2 feet long and about 18 inches high, and of heavy build. His mate was about 15 inches high and about 18 inches long and she looked quite thin with loose flanks. The two kittens were each about a foot long. Their height was difficult to estimate because they crouched as they crossed the road. The tails of the larger cats appeared to be about four or five inches long. All four were a dirty brown color with the largest being quite shaggy and the smallest quite sleek, or almost shiny.

These road crossings make it look as though the parent cats had left the kittens in hiding while they themselves scouted or hunted on ahead, then returned and escorted the kittens to a new location or possibly supper. I found a well defined game trail where these cats had crossed, and one or more of them have been seen at other times: About December 3, by park superintendent D. B. Beard; December 6 and 7 by seasonal ranger Joe Bryant, and by the author on December 2, 3, 4, 5, 6, 12 and 13.

The time of day when the bobcats appeared, varied from 9:30 A.M. to 5:30 P.M., which by northern standards seems to be an unusual amount of daylight activity for wildcats. Perhaps the demands of the kittens made it necessary to hunt in daylight, but seeing wildcats by daylight is not unusual in the park.

RALPH E. MIELE, *Seasonal Park Ranger, Everglades National Park.*

VULTURES MOVING EN MASSE. On December 3, 1953, I saw what first appeared to be a smoke column on the horizon northwest of Seven-Mile Tower. The use of field glasses, however, revealed that the dark mass was an approaching flock of large birds. These were soon recognized as turkey vultures (*Cathartes aura*), soaring and wobbling unsteadily as they proceeded southeast, angling into a very strong east wind at an elevation of about two-hundred feet.

As the flock passed the tower it was rather clearly divided into three spatial groupings. The leading wave was composed of approximately eighty

birds in a tight circular formation whose individuals soared in concentric circles and seldom beat their wings. The second group trailed at a distance of about one-fourth mile; it was composed of some sixty birds whose wing beats were much more frequent. There was no apparent flight organization within this group as it changed shape constantly and individual birds often altered course suddenly to avoid collision with a neighbor. The leaders of the third wave occasionally intermingled with the middle group, while thirty or more followers strung back to form an irregular line half a mile long. Apparently these were either the weaker birds or the less skilled fliers, for they beat their wings and struggled almost constantly to maintain the pace.

The overhead parade lasted somewhat more than one-half hour and disappeared to the southeast. Turkey vultures are often seen in small groups or large feeding aggregations here, but such an aggregation moving in a rather organized fashion is probably rare.

JAMES W. CASLICK, *Fire Control Aid, Everglades National Park.*

MALLARD IN THE EVERGLADES NATIONAL PARK. On January 10, 1954, at the duck pond in Cape Sable Prairie about two miles west of Flamingo with a large group of Dade Ornithologists, I saw seven common mallards (*Anas platyrhynchos*). We first saw a male and three females fly past under perfect light conditions. A few minutes later the male flew back accompanied by six females. I believe that one male mallard was reported on the January 2, 1954, Christmas Bird Count in this area from Bear Lake. Arthur H. Howell in his *Florida bird life* states that a few mallard visit the Royal Palm Hammock (Paradise Key) every spring and fall, but at the same time he gives the status of the species as uncommon in southern Florida. As an indication of how uncommon it appears to be, it may be of interest that on numerous birding visits since 1925 I had never found the species either at Paradise Key or in the rest of the area now comprising the Everglades National Park.

LOUIS A. STIMSON, *Miami.*

Book Reviews

HIGH JUNGLES AND LOW by Archie Carr, 226 pp., 40 photographs, four other illustrations, and two maps. University of Florida Press, Gainesville. 1954. \$4.50.

The reader might wonder if there is some connection between Dr. Archie Carr being a Consulting Editor of this magazine and a review in it of his new book which has nothing to do with the Everglades. These things stem from your editor's high regard for Dr. Carr as a person, a scientist, and a naturalist. People who read and enjoy *Everglades Natural History* will obviously enjoy Archie Carr's "High Jungles and Low." This review is only a means which I may take to introduce to readers who are not already acquainted with him, one of Florida's most outstanding and most interesting naturalists.

Not many of us can visit foreign lands to adventure among their people, to explore their wilderness, and to marvel over the strange creatures to be found there in forest and stream. Most of us like to do a good bit of this vicariously, especially when we can be sure we have found the proper sort of guide. I give you Archie Carr. Go with him to Honduras and Nicaragua. See with his eyes the destitution of the hill people, wonder with him at their feats of endurance, join him in admiration of their spirit, in savoring the extravagance of their hill fables, and in pitying the rationalizations in which they seek comfort from the debasement circumstances have forced upon them. His chapter of "Sketches of the hill people" is especially delightful.

In writing this review I find myself restrained from saying anything further about the earlier parts of the book by the allure that the last two-fifths

of it holds for me, the part where the reader is out in the rain forest jungle for thirty-one days with Archie Carr in "The halls of the mountain cow." In the earlier parts of the book he leads us into the cloud forests of the high mountains to see with the eyes of a naturalist the wonders there. He brings one to look simply at the sociological problems within these countries, to reflect upon our fumbings as a big neighbor country, and entertainingly enough relates the history of the intervention of outsiders in the area of the "Sweet Sea." But it is in the "Halls of the mountain cow" where he is purely the adventuring naturalist, where you will feel that in addition to having learned much about some of our neighbors in Honduras and Nicaragua, and about the fascinating things that live wild in those lands, you will have also acquired a valued acquaintance with a very live, learned, and interesting person, Archie Carr.

His "Halls of the mountain cow" section consists of a thirty-one day diary of an expedition into Nicaraguan jungle with a timber cruising party in search of stands of mahogany. Here one escapes fully from the general to the particular, and sees in vivid detail the creatures encountered in the great forest, learns how they taste prepared by a jungle camp cook, discovers the niceties of sleeping in a jungle hammock, and acquires an understanding of the nature of tropical jungle, its strange, interesting and beautiful inhabitants and the hardships and character of the people who wrest their living from it. It's a good trip.—*Editor*

Background Notes on Authors

by R. BRUCE LEDIN

☐ DANIEL B. BEARD, the Superintendent of the Everglades National Park, is represented in this issue by an article on fire and its ecological significance (page 2). As much as we hate to see fire destroying the vegetation, perhaps it does have its place in the scheme of things. The author presents both sides of this important problem and explains the position the Everglades National Park finds itself in to determine just how far it can go in maintaining an area in its natural state and yet at the same time establish convenient and comfortable facilities for tourists.

Daniel B. Beard, was born in Flushing, New York, December 28, 1906. His father was the famous Daniel C. Beard, artist, naturalist and writer and well known as one of the founders of the Boy Scout movement. His mother was Beatrice A. Jackson, whose house formerly stood where La Guardia airport is now. Daniel B. Beard attended the New York Military Academy, was a political science major at Syracuse University, and took a special course in city planning at Columbia University. He married Betty O. LeMessurier, and they have two sons, Daniel D. and Albert L.

Daniel B. Beard was appointed Superintendent of the Everglades National Park in 1947 when it was created. He had long been interested in this area, for he came here in 1937 to make the first general reconnaissance for the National Park Service of the then proposed park. His report on this area later guided the planning and administrative decisions in helping to create the park. He came back here in October, 1945, as manager of the Everglades National Wildlife Refuge for the U. S. Fish and Wildlife Service. He has had many years in the National Park Service; was for a time wildlife technician for the northeastern states and associated with the Trailside Museum in Bear Mountain, New York. He spent about two years in Washington in the Wildlife Division. While there he became senior author of a book entitled *FADING TRAILS* (MacMillan, 1942). During the

war he was a regional biologist in Omaha, Nebraska, and his territory extended from Isle Royal in Michigan to the Rocky Mountains; later he was superintendent of Dinosaur National Monument in Utah and Colorado; then he served in the army in anti-aircraft in San Diego and El Paso.

ALBERT J. MILLER is represented in this issue by a poem (page 9) entitled "Roseate Spoonbills" accompanied by illustration, plus the six illustrations for the articles by Joseph C. Moore and William B. Robertson. A. J. Miller's career has been long and varied. At the present he is living on the Florida Keys at Tavernier where, he states, he hopes to "spend and end his days." Born in England in 1889, he came to this country as a boy and was soon orphaned. He attended the Eric Pope school of art in Boston, studying pen and ink drawing, and later attended the Art Institute of Chicago where he took up oil painting. But he states that he became impatient drawing busts and ancient statues and escaped. Years later he attended the Art Institute of Dayton, Ohio, where he studied water color under John King. In between his study of art, Miller states that he was a soldier in World War I, a farmer, waiter, cartoonist, art instructor, tool maker, as well as working at "other jobs too numerous to mention." Judging from his verse in this issue, one feels that Albert J. Miller has found his Shangri-La at last on the Florida Keys.

WILLIAM B. ROBERTSON's article "EVERGLADES FIRES—PAST, PRESENT, AND FUTURE" (page 11), constitute a summary of part of the work that he did for the National Park Service in 1951 in his survey of the effects of fire in the Everglades National Park. As explained in the notes on page 194 of the December issue of *Everglades Natural History*, Robertson has spent considerable time in south Florida studying not only fire but the birds and plant communities. In his previous article, "Scenery in the Everglades National Park," he described the different types of vegetation in the park and some of the factors responsible for maintaining these communities. In the present article he describes the effects of fire on the vegetation in the past and in the present, as well as what might happen in the future if fire is not controlled. He describes fire brought on by lightning and by Indians, both of which (but probably more so the former) were responsible for maintaining the types of vegetation. With the advent of white man in south Florida, draining of the glades, and diking of Lake Okeechobee, fires became more frequent and more destructive.

Therefore, today as well as in the future we must look upon fire as a menace and a force which will no longer serve to maintain but rather will destroy the plant communities.

☐ GEORGE W. FRY came to the Everglades National Park in August of 1951 as chief ranger. His article "FIGHTING EVERGLADES FIRE IN '53" (page 17) emphasizes the careful and thorough work that is performed by the rangers of our National Parks in checking, preventing, and fighting fires. George W. Fry was born March 9, 1911, in Denver, Pennsylvania. He attended the Pennsylvania State College and obtained his degree in professional forestry in 1933. He has had considerable experience in forestry and National Park work. He served with the U. S. Forestry Service in Monongahela National Forest in West Virginia (1933-36), and then became associated with the National Park Service in the following capacities: park ranger for Crater Lake National Park in Colorado (1936-38), assistant chief ranger for Rocky Mountain National Park in Colorado (1938-1944), chief park ranger at the Lake Texoma Recreational Area in Texas-Oklahoma (1946-49), chief park ranger in Mammoth Cave National Park in Kentucky (1949-51), and then becoming chief ranger for the Everglades National Park. During the war he was with the U. S. Forest Service War Production Board as Project Forester on the Timber Production War Project in West Virginia and Virginia. He married Mary Flanagan of West Virginia, and they have four children, two girls aged 14 and 9, and two boys aged 7 and 2. The youngest was born in Homestead.

☐ This is FRANK N. YOUNG's third article in *Everglades Natural History*, "FIRE IN THE GLADES" (page 25). His first, in the June issue, was on the lubberly locust and the second, in the September issue, was an instructive article on the geology, flora and fauna of the rocky pineland "Rim of the Everglades." In this present article he deals with various aspects of fire in the glades and pinelands and especially with the ability of certain plants not only to tolerate but to live in harmony with the natural phenomenon of ever recurring forest fires.

Frank N. Young's writings reveal a strong interest in many phases of natural history of south Florida. Although now a resident of the Hoosier state, he visits south Florida as often as he can, especially in the summer months when he brings graduate students in zoology on a field trip.

¶ TAYLOR R. ALEXANDER describes the fire that swept through Paradise Key in 1945 (page 31). This fire was so destructive, and the author describes it so vividly, that it awakens us anew to the devastation that a severe fire can wreak upon our vegetation. However, as much as we deplore the destruction of this remarkable hammock, we welcome the opportunity it furnished Taylor R. Alexander to instigate a study of plant succession on a long term basis. What are the first plants to invade an area that has been laid bare by fires? How long will these pioneer plants live? What plants follow after them, take over and crowd them out? And what plants eventually become the dominant and, therefore, the permanent, self-perpetuating plants of the tropical hammock forming the climax vegetation? How long will it take for Paradise Key to become again what it once was—a tropical jungle with numerous West Indian trees and palms, with many species of ferns carpeting the hammock floor, and with orchids, airplants and Spanish moss growing on the trunks and limbs of the trees? Author Alexander hopes that this study, begun the day he witnessed the fire in 1945, and to continue for as many years as possible, will make it possible to answer these questions. His first five-year report of the recovery of the hammock was given at the 1950 meeting of the Florida Academy of Sciences. This column would like to see an occasional popular article appear in *Everglades Natural History* describing the more exciting results of this continuing investigation.

¶ This past summer JOSEPH C. MOORE (page 35) deserted south Florida for a more congenial climate in the mountains of New England. Accompanied by his charming wife and three well-behaved daughters, he spent several months exploring national and state parks and forests throughout the New England area. This survey was done as a National Park cooperative service with the New England-New York Interagency Committee to study the natural resources of this area. Besides having a very enjoyable summer, he assembled a mass of critical information on the recreational facilities of the wilderness areas of New England, some of which may even aid him and his co-workers in developing our own Everglades National Park.

FINANCIAL STATEMENT OF
EVERGLADES NATURAL HISTORY ASSOCIATION
FOR 1953

Receipts

Sale of Books and Publications	\$1,016.06	
Sale of Other Items	1,953.94	
Donations	220.00	
Memberships and Subscriptions	799.00	
Miscellaneous	65.40	
Total		\$4,054.40

Disbursements

Publication of EVERGLADES NATURAL HISTORY	\$1,136.64	
Cost of Sales Publications	664.23	
Cost of Other Sales Items	853.10	
Photographic Equipment	493.14	
Purchases for Park Library	221.72	
Printing (Cards, Posters, Etc.)	176.65	
Freight, Express, Postage	117.58	
Miscellaneous	284.26	
Total		\$3,947.32

Assets

Cash on Hand	\$ 821.03	
Library Additions	394.42	
EVERGLADES NATURAL HISTORY on Hand	300.00	
Inventory of Books for Sale	388.50	
Inventory of Other Sales Items	51.12	
Equipment	955.09	
Total		\$2,910.16

Liabilities

Accounts payable	\$ 715.55	
Total		\$ 715.55

<i>Net Worth</i>		\$2,194.61
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Respectively submitted

WILLARD E. DILLEY
Executive Secretary

Information for Authors

EVERGLADES NATURAL HISTORY accepts articles and notes prepared as described below on south Florida natural history. These are published if the editor, or a consulting editor, recognizes them as authentic and of a nature which will be interesting and informative to the lay public of south Florida and to visitors to the Everglades National Park. Manuscripts of feature articles should range between 600 and 1200 words, and those for the Notes section should range between about 50 and 200 words. Manuscripts which include original experience or observation by the author are preferred. While care will be given to handling manuscripts and illustrations, neither the editor nor the Association can accept responsibility for their safety.

SUBMITTING MANUSCRIPT. Articles and notes submitted for publication should be typewritten, preferably on standard size and weight typing paper. All written material should be typed double spaced. Photographs for illustration should be glossy prints of good contrast, and with no markings on the back. Drawings should be in India ink on sheets of good paper separate from the manuscript. Photographs and drawings submitted as full page illustrations should preferably be about eight by twelve inches. Galley proof will be submitted if requested, and authors must arrange in advance if reprints are to be made. Articles or notes to be submitted for publication should be addressed to the Editor, *Everglades Natural History*, Box 275, Homestead, Florida.

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