WEIRD FISH

FROM THE DEPTHS
OF THE OCEAN

GREAT SWALLOWER
6 INCHES

MELANOCETUS
2 INCHES

PHOTOSTOMIAS
7 INCHES

FISHES THAT LIVE IN THE DEEP
SEA, BELOW 2000 FEET, ARE GOD-
SHAPED CREATURES SPECIALLY
ADAPTED TO THEIR ENVIRONMENT. 
BECAUSE WATER PRESSURE AND FOOD
SCARCELY LIMIT THEIR SIZE MOST
OF THEM ARE LESS THAN 3 FEET LONG
+ THEY ARE CARCIVOUS: FEEDING ON
OTHER FISHES OR ON DEAD OR
DYING ANIMAL LIFE THAT SETTLES
DOWN FROM ABOVE. MOST SPECIES
HAVE HUGE MOUTH AND SHARP
TEETH FOR CATCHING AND HOLDING
THEIR PREY. FISHES ARE EQUIPPED
WITH LARGE STOMACHS ENABLING
THEM TO SWALLOW FISH LARGER
THAN THEMSELVES, LIVING OR
DEAD. SOME HAVE "BUILT-IN LIGHTS"

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Probably the most widely used live bait by big bass hunters, the Golden Shiner is a
colorful, fast-moving minnow that will reach a length of 12-inches or more. See page 13.

From A Pointing By Wallace Hughes

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Barbour’s Map Turtle

Barbour’s Map Turtle is a rare reptile of limited distribution—principally the Apalachicola and Chipola Rivers and the Escambia River, all in northwest Florida.

Although there is presently insufficient evidence to support a growing fear that the species, Graptemys barbouri, is actually in danger of extinction, efforts are being made to find out more about the tiny turtle and to protect it. Possibly, its addition to our growing list of vanishing species can be avoided.

David S. Lee of Florida Southern College, Lakeland, became concerned about the fate of the rare creature while gathering specimens for his college museum.

After an investigation, he reported, “I became aware of the strong possibility that our native map turtle is presently in danger of extinction. Although there is insufficient data to support this belief, I think the problem facing this unique turtle should be exposed.”

It is not certain whether or not the turtle is in serious danger because so little is known of its reproductive potential, its rate of growth, or even of its distribution. Its habitat needs within a river, its feeding habits, and its behavior are poorly understood, too.

However, Lee said, the fact that this reptile is geographically and ecologically confined to a small area, and because what is known of its living habits seems to indicate that it is especially vulnerable—these factors show the situation deserves immediate attention.

Barbour’s map turtle, also called the “sawback turtle,” is easily identified because of its small size and colorful markings. Adult females, which are considered fine eating by residents of the river areas, are from 7 to 10½ inches long. The male is a dwarf compared to its mate, reaching a final growth of 3½ to 5 inches. The name “sawback” comes from the humped back of the male. The third and fourth dorsal scutes, or scales, are raised. The first is more slanted toward the rear. Adult females lose their dorsal ridge entirely.

The “map” in its name comes from lines on the backs of some specimens that resemble a map or chart—particularly visible on young turtles.

Batie, of course, is for the herpetologist for whom it was named, Harvard’s Thomas Barbour.

Graptemys barbouri, or top shell, females, whose adults, lose this mark of the species—and grow larger than their mates.

Lee questioned others who supplied information and, he said, “made it obvious that their knowledge of barbouri enabled them to focus their collecting in areas where the species reached its greatest abundance.”

He also became aware of the absence of adult female map turtles, deducing that the smaller males are not as heavily taken. He wrote, “Only in remote pools bordered by shallow rapids did I find normal ratios of male and female turtles. In several places I found empty, bullet-riddled shells. Whether these represented individuals shot for ‘sport’ or empty shells discarded as they were cleaned of their flesh is not known.”

At the 1968 convention of the Florida Audubon Society, Peter Pritchard, a graduate student at the University of Florida, raised the matter of the map turtle in his area this summer.

Lee, Pritchard, and others believe the map turtle's uniqueness to park visitors for study and photographing. He has been pointing out the map turtle’s uniqueness to park visitors for years, and has encouraged interest by state agencies and conservation groups for its protection. (Incidentally, Ranger Neumith reports an encouraging increase in the map turtle population in his area this summer.)

During the next few years the status of this turtle should be carefully watched. An accurate systematic study of the species should be conducted and the population checked annually. The extent of turtle collecting and the precise distribution and life history of this unique creature need to be determined—before it is too late.
Hunting with bow and arrow continues to grow in popularity each year in Florida. In a single season, the number of participants more than doubled, according to archery permit sales records. In 1968-69 there were 3,500 permits sold; in the 1969-70 season, 7,900.

"This increase was not exactly a surprise," says Gordon Spratt, assistant chief of the Management Division, Tallahassee. "When the Commission liberalized the archery hunting regulations, allowing bowhunters to hunt statewide in 1967-68 and to take deer of either sex during the 1969-70 statewide archery season, it more than doubled the sportsman's chances of bagging a deer. We expect another increase in the number of archery hunters for the 1970-71 season."

The growing interest and participation in archery hunting the past three seasons in Florida indicated a need to measure hunting pressure and harvest—basic information needed to help biologists determine management practices and to aid the Commission in setting annual hunting regulations.

With those objectives in mind, a mail survey of Florida bowhunters was undertaken following the 1969-70 archery season. It was the first Commission survey of archery hunters.

The sample consisted of slightly over 4,000 of the known 7,900 archery permit buyers. Each recipient was sent a survey to get the required information and to return the form—in a postage-paid envelope—to the Game and Fresh Water Fish Commission. Sixty percent (2,567) were completed and returned. (Nine percent were returned by the post office, undelivered.)

Of the sampled deer hunters returning their questionnaires, 10.3% indicated they bagged a deer—239 whitetails for 2,312 archers. Wild hog rate, and they did it in roughly a third of the hunting pressure and harvest—basic information needed to help biologists determine management practices and to aid the Commission in setting annual hunting regulations.

According to James A. Powell, division chief, Tallahassee, the test is intended to encourage self-improvement through study and to recognize and reward general job knowledge and proficiency among game wardens.

According to the test scores, the average estimated annual road kill of big game in Florida.

Robert W. "Bob" Phillips of Interlachen was high scorer on the third annual Florida Game Managers Test, administered in April.

The comprehensive written test is for the employees of the Game Management Division who aid wildlife biologists in research and management programs. Powell said Phillips is assured of a trip to the October meeting of the SouthEastern Association of Game and Fish Commissioners, which will be held in Atlanta this year, and that he has been recommended for a 1-step pay raise. He also received a cash award of $20.00 from the division chief.

Second high scorer was William L. Lane of Lake Worth, who won top honors in 1969. C. T. "Truby" Lee of O'Brien and Tommy Jackson of Sneads tied for third.

The test covers such subjects as wildlife identification, life history, and biology; plant and seed identification and classification; state and federal hunting regulations; and Commission administrative procedures.

The first Game Managers Test competition, in 1968, was won by Gary L. Weber, Tallahassee.

Bowing hunting continues to increase on a field sport in Florida. About 700 deer were bagged the "hard way" last archery season.

"In future years the Commission will undoubtedly make periodic checks of the continuing growth of the sport of bowhunting," Spratt says, adding that while the harvest of game by archers has finally become measurable—and, therefore, significant in resource management—"it is still below the average estimated annual road kill of big game in Florida."

I'm talking now about extremes. The ups and downs, within reason, will expose larger areas of the shallows to the air and will then cover vegetation that provides good cover and produces food. The exposed shallows will displace the harmful products of pollution, and everybody's happier when the water comes back. High water, of course, moves pollution to the sea, where it may not be welcome but will be more diluted than while it's in a river. Last spring the high water didn't hurt my personal bass fishing much. When I went roaring out in late January to fish over my favorite flats on the St. Johns I found they were in pretty deep water—deeper than I've usually been successful in.

"The water stayed pretty high through most of the bass spawning period."

I then went down to Holiday Park in some of the Flood Control District waters and found that what wasn't what it used to be. My companions were six-footers who kept some six inches of freeboard on their waders, even in the deepest spots. I had about two inches between my wader tops and cold water, which added little to my relaxation. When the breeze blew up, a little water would slosh over my waders. When I tried to get back into the airboat I shipped a pint and this sort of thing went on for two full days. My friends kept complaining that the water was too deep for good fishing, but they caught fish right on. I couldn't catch anything, a sure sign that mental attitude has something to do with success. At the end of a second day, having caught only a couple of very small bass, I was all alone with a popping bug, sawgrass, and the deep water when a pretty good fish grabbed my weedless thing and dived down into the thick stuff. I couldn't move him and it was deeper over where he was. I couldn't wade over there so I said aloud, "My, isn't this an unpleasant situation?"—or something like that.

Just as I was about to slash in over my waders (Continued on next page)

By CHARLES WATERMAN

FRONTIER WARS, which linked with the author in an FCD conservation area south of Lake Olverneloune, is six inches taller than Waterman. He lost test about that much freeboard on his waders employing the high water.

FLORIDA WILDLIFE

JULY, 1970

Water Levels

High and low water conditions often control fishing success and, when the rating is "flooded," anglers must change techniques—and work harder.
The bait tail is a rather modest appearing type of jig, end the subject is full scale. handbound instruction book written by Al Reinfelder, one of its developers.

The Bait Tail is a jig-type lure with a metal head and a body of fleshly-looking and feeling plastic. It is fished much like any other jig and has been successful in both fresh and salt water. I am not saying to it that it is the best jig made because I am a very poor jig fisherman. I do know that it is very, very good.

Al Reinfelder, one of the developers of the Bait Tail, hauled off and wrote a whole handbound book called Bait Tail Fishing. It's published by A.S. Barnes and Company and lists for $6.05. My first thought was that the cost of Bait Tails is high enough without having to buy a book to read about how to run one. Most lure manufacturers give the instructions on a little slip of paper—free.

But then I got to thinking that Reinfelder has actually done a complete and thorough work on how to fish jigs, going into more detail than you'll find elsewhere, even though you read a five-foot shelf of fishing lore. Of special interest to Floridians is a treatise on fishing for flounder, a thoughtful section that would be good for almost anyone.

So I'll recommend Bait Tail Fishing. If you have any aversion to Bait Tails you can use the same methods with other jigs. But Bait Tails, which I covered earlier in this column, rate some thorough trials.

I am afraid that today's fishermen are much better than fishermen used to be, much as I would like to say that the experts of the good old days left bigger tracks.

Today's fishermen are lazier, can't row very well, and aren't very accurate casting. For the most part, but they are catching lots of fish in waters which, in most case, don't have as many fish as they once did.

Now I'm going to list the developments of the past 20 years that have made better fresh water fishermen. Most of these things simply weren't used in this country until about 25 years ago.

First is the spinning outfit, the thing that made it possible to cast with little practice. The spinning outfit with its monofilament line became the ideal tool for fishing deep in both fresh and salt water. It has its shortcomings, but has a lot of good qualities to offset them.

Then, there were the jigs as applied to light tackle, and especially fresh water. For a while they had local names but they were applications of the old salt water jig, nevertheless. They were called by brand names such as "Doll Fly" and "No-All" in various parts of the country, but they were jigs and still are. With the spinning tackle, fishermen learned to work them. I can't see anything revo-

The Bait Tail is in fact a very simple fly, and any of the standard fly lures would work just as well. The most common are the Wooly Bugger, the Leech, and the Pheasant Tail. All of these are effective in both fresh and salt water. I have used them successfully in both environments, and have never had a problem with them.

Finally, there are the fish-finding gadgets—fathometers really—that have cut a swath in deep waters especially.

And more leisure time contributes, too.

I recently had a letter from a man who wanted to use a 10-foot glass fly rod. I couldn't steer him to one as those extra-long sticks are in disfavor lately. Most heavy salt water fly rods are nine feet long. Fresh water rods for bass and large trout are generally extra-long or 81/2 feet long. Rods for panfish and smaller trout are frequently even shorter.

My correspondent didn't say what he wanted to use the long one for. Atlantic salmon fishermen used long rods until recent years and some of them are still employed by the English and Canadians in particular. In most waters they are inferior to our shorter rods, but they do have special uses.

For example, when fishing in an extremely fast river the fishermen may want to hold his line high to keep as much of it as possible out of the water. With a short rod the line is swept down so fast that he doesn't get much chance to fish his fly. That long rod business, I understand, is the way they do it on some of the bigger Norwegian rivers. I never fished there. Long rods are also used for distance fly casting in tournaments.

There are some anglers who use very long fly rods as they would cane poles or telescoping glass poles except that they have a reel fastened behind them. I have often called this method "flop casting" because it allows the fly to simply float, the lure or lure out as they would with a cane pole. They might even use monofilament or braided line instead of true fly line. Such outfits are sometimes used in "strip cast-

crably, deep-going things. Bait manufacturers had been trying to build them for 20 years but they used the wrong materials. They didn't have the lithofish plastics until recently.

Then, of course, there's the reliable outboard motor and more recently the electric motor for bass fishing. There were electric motors for a long time but they caught on very slowly, their recent popularity bolstered by human laziness and their silence. Electric motors are quieter than oars and paddles.

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"You use a heavy lure or bait and simply throw it as you would in spinning, except that you coil the line in your hand or on the deck instead of paying it directly from the reel. It's a good way to throw soft baits that can come off the hook easily. I haven't seen it done lately. Spinning tackle is more efficient, unless you were brought up with strip casting.

A smooth brake on any kind of reel is a big help in playing really big fish, but the thing most fishermen don't understand or consider is the matter of quick jerks against a drag. For example, once a run is under way the reel turns hard enough to give the desired braking action, and goes very smoothly. No rough spots to cause line or leader breakages.

But then the fish stops and you start working him in. Let's say the reel drag is set for five pounds, but when the fish makes a sudden rush at the last moment it may take eight or 10 pounds to start the drag moving again. So, your nice smooth payoff of line doesn't mean anything if you've already broken it on the fish's first rush.

A competition fishermen was telling me the other day that his biggest problem is getting a smooth start from some types of reels. He was studying different methods of lubricating the drag. One drag, he had decided, worked best with graphite on it. I have always had a mistrust for the drag on any reel. Consequently, I have had bone-fish bounding and long, long runs to tighten it a little once the fish had things going, thus avoiding a hard jerk. Of course it's hard to tighten the drag exactly the right amount under those circumstances.

When working a big fish very close to a boat many breaks occur because the reel drag "freezes up" just a little, just enough that a sudden jerk will break the line. A drag is a simple device but its use is very complex. Almost every manufacturer claims a smooth drag. Most of them are pretty good at certain tensions, uneven at others. Most fishermen never hook fish that are large enough or fast enough to give drag troubles.

A B O U T T H I S  A R T I C L E

FLORIDA WILDLIFE

JULY, 1970
they live by their teeth

If you want to know an animal’s most intimate secrets, the best key is its teeth.

Just a casual review of teeth reveals much of the drama of animal life. They furnish the most reliable clues to the creature’s personality, its sex life, and its place in the whole scheme of things.

Animals depend on teeth for defending themselves, for catching prey and eating it, and for building homes. Some animal babies would die if their mothers didn’t have proper teeth with which to clasp in copulation the wives he has won. It seems a cruel and unjust law. With the fires of procreation still burning, his family life is gone. The guy with the teeth takes over!

At least, nature has assured by this arrangement that those males who perpetuate the clan are stocked of good teeth.

Many mouths are spectacular chopping and grinding factories, but some are superb maintenance shops.

The beaver probably best—and most commonly—illustrates the varied specialized uses to which a creature can put its teeth. His mouth contains saws, knives, grinders, rippers, rams, and choppers! With these special “tools” he works adeptly as a lumberjack, carpenter, engineer, and maintenance man. He can gnaw through a 3-inch aspen tree in about 12 minutes. He can fell a 6-inch aspen, cut it into 6-foot length cordwood, and haul it all to the pond in a single night. Until the invention of the chain saw, no creature singlehandedly ever cut timber more efficiently than the beaver.

Some teeth have strange uses. The pike has them set flexibly in its palate. They easily bend backward, allowing prey to go in, but will not bend forward. Frogs and fishes thus trapped are then easily swallowed whole.

Some dental equipment is custom made for special jobs. The fangs of the trap-door spider point downward like those of a walrus. It obviously uses them to tear down trees and to gouge the bark off them pickaxe fashion in building its home in the ground. Other spiders’ fangs operate sideways.

Teeth actually are secondary sex characters in many animals. For the male they may determine his ability, or inability, to win and guard females and to sire offspring.

Male shrews and rabbits, for example, seize the necks or backs of their mates during copulation. A mink, too, in order to hold his mate for a union that may last two hours, usually scars her skin, often by biting completely through it. This damaging habit is much to the disgust of furriers, but there’s another way to look at the matter: No scars, no mink!

These scars are sometimes used by researchers to determine the number of pregnancies of the female mink.

As teeth go, so go many dramas in the animal world. Injury of the testicles of some animals causes deterioration of their molars. Injury to left testicles affects right molars, and injury to right testicles affects the left molars.

A male animal may break or wear his teeth out defending his harem and then have none left with which to clasp in copulation the wives he has won. It seems a cruel and unjust law. With the fires of procreation still burning, his family life is gone. The guy with the teeth takes over!

At least, nature has assured by this arrangement that those males who perpetuate the clan are stocked of good teeth.

(Continued on next page)
Cleanliness is basic maintenance for efficient and lasting teeth. In healthy animals they are nearly always spotlessly clean.

How is this accomplished without toothbrushes and dentifrices? It isn't. Such dental care accessories are standard equipment for mammals. They have inside the lips, and sometimes on the sides of the tongue also, natural toothbrushes in the form of little rubber-like outgrowths. When the animal opens and closes its jaws these brushes automatically sweep up and down over the teeth in a dentist-approved cleansing motion. And as for dentifrices, opens and closes its mouth these brushes automatically sweep up and down over the teeth in a dentist-little rubber-like outgrowths. When the animal thought of them. They're found in saliva.

The amounts of teeth in animals range from none, in such as birds and turtles, to uncountable numbers—and they vary in design from the simple to the bizarre. Furthermore, they are found in some odd places on the animals' bodies.

The female narwhal, an aquatic mammal of the Arctic, has a spearlike tooth that sticks out in front of her as much as eight feet.

The bagfish has no jaws, but uses movable plates for grinding.

Some "tooth-jawed" fishes, such as the carp, have pairs of rudimentary crushing molars in the bottom of the throat that work against the base of the skull.

Some insects, including grasshoppers and cockroaches, have an extra set of teeth in their gizzards for grinding food.

A shark can "bite" from the outside as well as with its infamous, undershark mouth full of murderous teeth. It has "teeth" imbedded in its skin with the tips bent backward, presumably to reduce friction as it swims.

The sea urchin's mouth, located in the middle of its lower surface, contains five converging jaws. Not only does this provide a way to feed; it also involves the animal's locomotion. It, in a sense, walks on the tips of its teeth!

By its teeth an animal creates its "tomstone," furnished with a clock set for eternity. Teeth remain even after bones have dissolved to dust. They may tell of life's important happenings, such as the number of pregnancies of a mother; the battles of a father. And they record vital statistics. Teeth, like carbon, lose radium at a constant rate. But in teeth, the loss is thought to be more easily and accurately measured than the radion in carbon. Thus, the dwindling radioactivity of teeth tick off the ages, and we know with fair certainty how long ago the animal had its stay on earth.

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Consider further that shiners are grown for bait like worms. Pond culture is fairly easy. They thrive on a variety of natural or compounded foods; they're tough enough to withstand a reasonable amount of handling and jostling; and they keep pretty well in a close place.

Finally, you'd better believe a succulent Golden Shiner is just about irresistible to a hungry—or even a half hungry—bass. So bait fishermen love shiners as much as bass do. They buy them like hotcakes when shiners in the bait bucket or live well make it a possibility. They never get any rave notices. But, at least, they're popular.

More people consistently catch trophy largemouth bass on live bait than on any other type "come on" used in Florida, and top choice in this department has for years been the native minnow called the Golden Shiner—Nemogobius crypsas to the academically inclined.

This beautifully colored, nicely proportioned fish, which attains a length of 12-or-so-inches, is just about perfect for its role in life—providing forage for other fishes. It is a very prolific breeder; is widely distributed over the whole eastern half of the continent; is adaptable to a good variety of local aquatic habitats (although it has definite preferences here); and is utilized for food at every stage of its own growth and development. All predatory fishes dine on shiners—bass, pickerel, warmouth, speckled perch, and others.

The Golden Shiner is a widely used "tombstone," sometimes called "mouch," is a widely used bass bait. Some fishermen hold their shiners through the ice; some through the brush behind dendro line; some near the bait boat.

The female strews her eggs over any handy submerged vegetation, spawning throughout the summer months. The sticky eggs are fertilized by one or two accompanying males while being extruded. They settle and adhere to the plants beneath them, where they are lightly guarded by male fish until they hatch.

The young shiners into the world rather hap-hazardly. The female strews her eggs over any handy submerged vegetation, spawning throughout the summer months. The sticky eggs are fertilized by one or two accompanying males while being extruded. They settle and adhere to the plants beneath them, where they are lightly guarded by male fish until they hatch.

The young are easily misidentified. They look like several other common minnows, but not at all like their parents. They sport a dark "racing stripe" the length of their bodies. With age they lose the lateral band and become gold in color, with some shading to silvery on their bellies. The fins are reddish.

Few fishermen realize that large specimens are edible. (The little ones, too, if you like "french fries"!) Shiners, though, were never intended by nature for the game fish list. For live bait, however, they're virtually unbeatable. Small shiners usually bring speckled perch and little bass; big shiners get only big bass.

The latter truth perpetuates both the popularity of the "big shiner" fishing method and the fact that "the anglers take the credit, but the shiners catch the fish."
A moss grower once said, "As long as we have trees we'll have Spanish moss."

In fact, so prolific was the growth of this mysterious plant that even at the height of a modest moss-gathering and processing industry there was no danger of the species being threatened. Today, the moss gins are gone, the industry is dead, and the Spanish moss grows just as vigorously as ever. Or does it?

Scientists are not so sure. In October 1968, Mr. Anthony Jensen, extension forester with the Institute of Food and Agricultural Sciences at the University of Florida, Gainesville, received a report that clumps of dead Spanish moss had been found in Manatee County.

Soon other reports trickled in. They came from Orlando and from Ocala. Patches of dead moss were noted around Tampa. Spanish moss in Lake Griffin State Park near Leesburg was healthy and growing in November 1968. A year later the moss started to die. What had first been observed in Manatee County was becoming more widespread. But what was wrong with the moss?

Moss is not parasitic but too much can break tree limbs. Oaks, below, and open-crowned trees are favorable to Spanish moss. A pine is too "glossy" to offer a "clasp." Several birds use moss in their nests—or build therein like Purple Wren, right.

Mr. Jensen had several theories but frankly admitted not knowing with certainty what was causing the problem. He felt that a fungus was a possibility—or a virus—or air pollution.

Dr. Daniel B. Ward, associate professor of botany at the University of Florida, favored the air pollution theory.

"Spanish moss is ultrason sensitive to airborne pollutants. These pollutants are readily picked up by the fuzzy surfaces of Spanish moss. However, I prefer to think that it is a qualitative rather than a quantitative change in pollution," he stated.

Dr. Samuel E. McFadden, assistant horticulturist at the Agricultural Experiment Station at the University, also leaned toward the air pollution explanation.

"It is his opinion that sulphur dioxide from industries using fuel oil as a source of power could be converted to ozone by sunlight. Ozone is known to damage tobacco plants, and there is reason to think it might also damage Spanish moss. Dr. McFadden feels that if the dieoff continues, Florida could lose nearly all her Spanish moss. This is a disturbing prospect.

Spanish moss grows not only in Florida but also in Louisiana, parts of Texas, Mississippi, Alabama, Georgia, the Carolinas and Virginia. Within its range, it hangs in great, sagging folds from trees (Continued on next page)
in one area, yet may be completely absent from an area nearby—only to reappear in profusion some distance away. Why this is so is not clear. Spanish moss, also called Southern moss, Florida moss, and sometimes “old man’s beard,” is a member of the Bromeliaceae family of plants, the best known of which is the pineapple. It is an air plant, and like all air plants it traps and absorbs water through its leaves, thereby dispensing with the need for roots. (The moss combines water with carbon dioxide from the air and manufactures it s leaves, thereby dispensing with the need for roots, (The moss combines water with carbon dioxide from the air and manufactures its own food by photosynthesis.) Spanish moss is not a parasite on trees. Trees are useful only in that they offer ideal mechanical support—“perching platforms” from which the moss hangs in long, gray, dust-catchin g curtains. It is, therefore, an epiphyte. The long strands of moss produce tiny yellow-green flowers in the summer. When ripe seeds are cast off they are spread by the wind to other trees and nearby. Some scientists feel that hurricanes and strong winds may consist of moss. This moss, by blocking out the flora of the Gulf States.

There is even a scale insect that lives exclusively on Spanish moss. This little fellow goes by the name, Orthocoris tillandsiae. But the plight of Florida’s Spanish moss—if it is a plight—has triggered little concern. As Mr. Jensen notes, so little is known about the cause of the moss dieoff, there may not be reason for concern. The plant may simply be passing through an inactive period brought on by natural conditions. Anyway, it appears that little can be done at the moment. On the present scale of priorities it is hard to justify funds for research into the cause of the Spanish moss dieoff. It is not an economic plant. The result is that scientists at the University of Florida who are now attempting to find a solution to the puzzle must work with meager funds. It is mildly ironic to recall that at one time Spanish moss was indeed an economic plant. Moss harvesting in Florida goes back 60 years. (In Louisiana, commercial interest in Spanish moss grew shortly after the Civil War.) Gainsville, Jacksonville, and Palatka all at one time had gins for processing moss. It was collected by hand, generally with the aid of a hook or blade attached to a long pole, and was piled in large heaps, or buried in long, shallow pits. This allowed the gray outer portions of the strands to rot away. The remaining portions, consisting of the central black fiber, were carefully combed and cleaned, baled, and marketed. These tough, resilient, hairlike fibers filled the cushions of automobiles and railway coach seats, mattresses, chairs, couches, and even horse collars. The industry thrived up to the mid-1950’s in Florida. But when the cheaper, more commercially advertised materials arrived on the scene, many of them synthetically and cheaply produced, the moss-gathering industry was doomed.

Today the moss gins are no more. Spanish moss is just Spanish moss, Tillandsia usneoides, a native epiphytic plant of the Pineapple family, the most widely distributed of the air plants of the Southeastern United States. And we recall the moss gather who prophesied, “As long as we have trees we’ll have Spanish moss.” Let us hope he’s right.

Too much moss is not a good thing for any tree. Spanish moss can absorb several times its own weight in water when it rains. Consequently, in areas heavily infested with moss, branches can sag, split, and break off under the ponderous weight of wet moss.

But at the same time, the ability of Spanish moss to absorb large quantities of water may benefit its supporting tree. During heavy rain, the moss, by absorbing large amounts of water, reduces runoff and thus holds rain water in reserve. When dry weather prevails, the trapped water slowly evaporates and in effect produces a “humidity lid” in and around the tree. This layer of humidity reduces the transpiration rate of the tree, and, to some extent, may even reduce the rate of evaporation of water from the soil. Both functions can only benefit trees and nearby plants in times of drought.

Spanish moss may also be important in another way. Dr. Ward estimated that in an area with a dense growth of Spanish moss, 10 to 30 percent of the biomas—the total living material in an area—may consist of moss. This moss, by blocking out most of the sunlight, influences the type of ground plants that can grow under the trees. If the moss were to die or be removed, more sunlight would reach the ground and the plant community would adjust to the new light conditions. Some species would cease to exist; others would become more numerous; and some new plants would likely appear in the area. These changes, in turn, would effect a change in the types of birds and animals one could expect to find living above, on, and below the ground.

Tree-living creatures would definitely be affected by the demise of Spanish moss in Florida. Yellow Bats (Daubenton floridana) give birth and rear their young in thick folds of Spanish moss. The Seminole Bat (Lasoura seminola) and the large Hoary Bat (L. cinereus) occasionally roost in the heavy-hanging, protective strands of Spanish moss—as does the Red Bat (L. borealis).

Several birds use this plant for nesting material. This is especially true of the warblers. Swainson’s Warbler lines its nest with Spanish moss. It is thought that the Yellow-throated Warbler almost invariably builds its nest in hanging clumps of moss. The Parula Warbler uses Spanish moss to the exclusion of all other material for lining the inside of its nest. It is not common in the South. If Spanish moss disappears, the Parula Warbler must find a substitute nest-lining material or its population will decline.

When we consider that animals, notably raccoons and squirrels, and many birds make some use of this plant, either in nest building or as protective cover, Spanish moss emerges as a plant of importance in the flora of the Gulf States.

(Continued from preceding page)
Turtles, snakes, lizards, and crocodilians—these four groups make up the Reptile Family. Turtles, of which some 35 kinds live in Florida, can be divided into two main types: land turtles, of which the little fellow at top left is one, and water turtles, represented by the dry specimen at top right. The Gopher is quite common but the young are not often seen.

Snakes may also be divided roughly into two groups: the poisonous and the non-poisonous. The dangerous ones are in the minority. An example is the defense-minded Cottonmouth, above. The others are the Rattlesnake (three kinds), Copperhead, and Coral Snake. All others, like the round-pupiled snake at right, are not only harmless but beneficial because they destroy rodents and insect pests. It is considered ecologically wise not to kill any snakes except venomous varieties near human habitations.

Florida is world famous for its resident crocodilians—the American Alligator, which is common, and the rare American Crocodile. Also, some species of Caimans, imported from South and Central America, live in Florida streams and marshes. The crocodilians grow to large size. The record for an alligator is around 19 feet; average for an adult is six to 12 feet. Caimans and Alligators are valuable to the outdoor scene and to the tourism industry. Hundreds of thousands pay annually just to see one. Florida would be a poorer state, economically and ecologically, without the alligator and its relatives.

probably the best known lizard in Florida is the Chameleon, right, whose “formal” name is Anole (pronounced a-NO-le). It is commonly found around the house and in the shrubbery, where it does a valuable job of insect control. Anoles can change colors “before your eyes,” from vivid green to brown—and back again, depending on the background. The Glass Snake, above, is not a snake but a legless lizard. Its fragile body probably gave rise to the “joint snake” story. It, too, feeds on insects in the lawn and garden. To distinguish lizards from snakes, look for eyelids. Snakes have none; lizards can open and close their eyes. About 25 kinds of lizards live in Florida. All are harmless; all are helpful.
I have eleven pairs of hunting boots and two business suits (winter and summer). In addition to the fact that I am not exactly a North South type, this should prove that I consider outdoor footwear pretty important. Let's music for sportsmen

By CHARLES WATERMAN

I have been there and back with the Vibram sole, and have the distinction of walking into a boot repair shop in the West and asking for a new pair of soles on my old boots. It's a distinction because the man in the shop told me very few people ever wear out Vibram soles. They have carried my quivering carcass through quite a few canyons in the past ten years, and I sadly note that I probably won't outlast another pair at my age. Incidentally, there are several ways of fastening a sole to a boot. The Bass number I have been talking about has the soles put on with brass screws. I figure that's pretty good.

The Vibram cleats are pretty stiff and if you catch them on a log or rock they'll trip you. Cleaning the mud out of them takes patience and fortitude. They are pretty solid and will not give you the soft, padded effect of rubber soles. Many people who walk for long distances have sponge rubber insoles to make things easier.

While we're on the sole business, the wedge-shaped rubber one is pretty popular. It's generally fairly thick and will hold your foot just that much higher in mud or wet sand, a considerable factor in keeping dry feet. I have a pair of Chippewas with rubber (or synthetic rubber) soles which I have used for a lot of bird hunting and they seem to go on forever.

There are two ways of traveling over rough ground. One is to sock your heels in, plant your feet hard, and keep a solid stance. The other is to walk on top of the rough stuff with a soft step. The Indian mocassin used in mountainous country employs the latter system, requiring extra balance and a very loose gait. Clumsy ox I may be, but I prefer the former method and in mountains I like a boot with lots of heel support, plenty of arch built in and a fairly hard toe.

On Canadian trips I observed a number of guides and wranglers who used high moccasined moccasins with what they called "moccasin rubbers" (much like dress rubbers) over them. For mountain walking they didn't impress me a bit. They went a little quieter than I did with my cleathoppers, but they slipped and fell more often—and those were younger and more athletic guys than I. Their toes were always wet. That kind of footwear requires tough feet. I'll say this though: It's sure nice to shed your mocassin rubbers at the door or tent flap and pad around in those nice soft moccasins. It's especially good in cold weather up north. For Florida? Forget it.

When it's wet I can get along very well with those rubber-bottomed and leather-topped pacs, good bet for much Florida hunting and not bad for wear in a boat in cold weather. There is more tendency for your feet to sweat in those than with all-leather boots. Some models tend to bite your Achilles tendon where the leather and rubber are stitched together, and that's one thing you should look for. In the North there is more and more tendency toward lace pads that are rubber all the way up. No leak where leather and rubber join, but there is somewhat more tendency toward sweating.

Boot height is always good for caustic comments by outdoor writers. Since the very high lace boots of forty years ago have given way to shoes from seven to ten inches high, it is stylish to say anything that comes up over your calf will cut off circulation, strangle your nervous system and cause your feet to drop off. Admittedly, high boots are less comfortable but, when they were stylish, a lot of pretty hard characters walked a lot of tough miles in them. With tight laces up to the ankle and loose lacing from there on up, high boots aren't nearly the ordeal they're supposed to be. You make a square knot at the ankle and lace the rest of the way.

I am a firm believer in lots of socks. If you get the boots a little large and wear several pairs of absorbent socks your feet tend to stay comfortable.

(Continued on next page)
If they swell you can jettison a pair of socks and this takes away the critical problems of fitting. But if you buy boots for lots of socks, and forget to put on the extra pairs, your feet will slide around and you'll have blisters. One merit of extra socks is that you can change them when they get damp. If later kinds of porous insulation dry out better. You can buy some snakeproof boots so heavy that you get some kinds of insulated boots, one wetting them into the boots and take out the moisture. I got the rocks a little too warm and they burned their way out through fabric and rubber. You can't win them all, especially if you're a little feebledminded. Once your boots are wet inside they can be dried quicker if you fill them with warm sand or slightly heated newspaper. There are some electric boot driers on the market that work like a charm. I once became oversoger when I got my big boots wet and decided I'd warm some rocks in a campfire, drop them into the boots and take out the moisture. I got the rocks a little too warm and they burned their way out through fabric and rubber. You can't win them all, especially if you're a little feebledminded. Comes now the inevitable business about snakes. You can buy some snakeproof boots so heavy that a big Eastern diamondback couldn't pierce them with a full swing and a running start. You can get slightly lighter "snakeproof" leather boots that might be pierced by a big snake with a perfect shot—a once in a million chance. A professional snake handler I used to know wore the lighter kind when hunting, and used the very heavy Gokeys in the snake pit. None of these boots resemble ballet slippers in any way, and I know some quail shooters who swear they'd rather take a chance with the snakes than walk with their feet in concrete. New weight in boots never bothered me much for some reason. I have skinny legs but don't worry about a little extra leather or rubber as long as it doesn't rub where it shouldn't. The snakeproof boots are usually made in the "field boot" pattern without laces and come up to the knee. As you break them in they tend to wrinkle in a few places, generally around the ankles, and the wrinkles are stiff enough to rub blisters in many cases. Lots of socks will help, but if you can remember exactly where your feet or ankles tend to rub raw you can put on a few band aids and stave off the agony. This has worked for me but it's too much trouble for some people who just won't use snakeproof boots. Field boots are not made for long-distance hiking, and they tend to work my socks down, so I wear garters. Some socks are tight enough around the tops that they'll stay up most of the time, but a wrinkled sock can make things pretty miserable and I don't take chances. No field boot can be made to fit as well as lace boots and they are very hard for some people to put on—depends on the height of your instep and the shape of your heels. So what are the chances of a snake striking through ordinary hunting boots? Not very good although it's possible. The more socks you have on, the farther the fangs would have to go through to reach your hide. Is a seven-inch boot high enough? Who knows? A six-foot rattler with a perfect shot could nail you through the open window of an automobile if everything was on his side, but it's never happened as far as I know. Pantlegs outside your boots could help deflect the strike, might cause the snake to take poor aim. In most hunting the snake hazards are about like those from lightning, but if you're in known snake country you'd be silly not to take some precautions. There are snake leggings made of fiber glass, screen wire and canvas, and aluminum. None of these are quite as comfortable as pajamas, I guess, but they aren't as awkward as many hunters swear. I have worn all of these things at one time or another and my chief complaint was from brush and weeds catching in the part that went over my instep.

Some years back there was a rash of leather boots advertised as completely waterproof. Remember the ads showing a guy standing in water over his ankles, wearing leather boots and shooting machine guns? The boots were guaranteed, and they'd send you another pair if the first ones leaked, which they always did. Finally you'd get tired of sending them back but they always leaked. At that time it worked out that if you put enough dope on the outside you could keep out the water, but you had the sweaty-footed disadvantage of rubber boots. Now there is a quieter approach and some new boots my friends say are truly waterproof if you'll apply a little silicone spray. I believe this is true although I haven't given such boots a trial. One swamp stomer of my acquaintance says that a leather boot can't be completely waterproof and still "breathe," so you might as well wear rubber. Now I don't want into that argument. In the past I have counted on leather boots for a few steps while fording a stream, for a little operation in mud, and for short periods in wet grass. You can use silicone spray, boot grease, or a dozen other preparations I have tried (most of them work temporarily but can be worn off eventually). You can rub them with biscuits, bacon rind or neutr fool for temporary waterproofing. (Continued on next page)
Target Time

M ost hunters are poor shots. Last season, for instance, I witnessed a dove hunter’s firing of three full boxes of shotshells to bag three birds. Much of the other dove hunting I saw could be rightly classified as poor, even though gunners did average more kills per box of shells than the chronic misser just described.

A lot of quail were missed, too. In good quail country, well populated with birds, I watched two hunters fire into a rising covey of almost a dozen birds without touching a single feather. Time and again I saw relatively easy singles missed.

Simply, most of the seasonal missing can be traced to lack of pre-season practice, especially unfamiliarity with the target flight angles likely to be encountered abroad. Beyond doubt, a lot of missing—and needless wasting of costly ammunition—could be eliminated if shooters would get out and do a little weekly practice shooting at thrown clay pigeons at least two months prior to opening day.

For upland hunters, clay targets thrown from a handtraps by a companion offer the most varied flight angles. Seldom will two successive releases be alike, even if the thrower deliberately tries to make them so.

In the same beneficial practice class is shooting Crazy Quail. Clay targets are released from a revolving stand, low enough to simulate a field flight. The revolving targets take totally unpredictable flight directions. Unfortunately, there are few readily available Crazy Quail setups.

Your best bets for acquiring expertness are sessions with the handtraps and/or visits to the nearest skeet range. Unfortunately, there are few readily available Crazy Quail setups. Your best bet for acquiring expertness are sessions with the handtraps and/or visits to the nearest skeet range.

Whether your skeet range practice does you much good will depend greatly upon your mental and physical approach to participation.

If you shoot dominated by determination to make a good score, or follow orthodox American skeet competition procedures, the practice sessions probably won’t help you develop much gun handling dexterity for next hunting season.

Rules of American skeet permit the shotgunner to first place his feet just right, shoulder gun and even reverse a portion of the arc of his planned gun swing prior to calling for his instantly released target.

This so-called "wind up" unecessarily contributes to higher scores, and can be considered almost mandatory technique for the serious skeet competitor.

But its execution contributes little benefit to live bird hunting. When hunting, one does not walk through woods and across fields with shotgun to shoulder, and rarely do live game targets take definitely known flight lines and with such cooperating delay that the hunter can place his feet just right before attempting every shot. Usually, the shot has to be made quickly, from whatever shooting stance the gunner happens to be in at the moment in one continuous fluid movement of hunter and gun.

Fortunately, there is a form of skeet shooting that offers almost perfect field gun handling practice. It is International skeet.

Under the rules of firing, the shooter is required to keep the gun off his shoulder, low enough in his hands that some portion of the butt-stock touches the top of his pelvic bone, until his target appears. Target release is not necessarily instantaneous, as with American skeet, but may be varied by the trap controller anywhere from "immediately" to a delay of three seconds after the shooter calls "Pull!"

This means that targets usually are well along their flight paths before they can be picked up with aiming eye and the gun shouldered, swung and fired.

Admittedly, shooting International skeet is more difficult. It takes a bit more time to get into action, compared to the ready gun stance permitted under American regulation. It demands gun-handling speed and smoothness come with practice and, for

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the upland gunner, mean fewer misses afield and increased hunting pleasure.

When you go out to the skeet range, inform the
official controlling the release of targets that you
will do your firing under International rules. He
or she will then know that the option of instant
or delayed release of targets can be exercised.
Also, ask the person making up the squad firing
order to put you down as the last man of the squad
or delayed release of targets can be exercised.

To observe target flight heights and angles,
the footwork and body swing of those who
will do your firing under International rules. He
and the footwork and body swing of those who
precede you to firing stations. Use the resulting
information on the height and angles of the
targets to improve your performance. At other times,
misses will result from shooting under targets.

When you miss, try to analyze the cause and
correct it. Likewise, when you score clean hits
mentally review your performance. You’ll learn fast.

From Station 2 through 6 you will be incorporat­
ing more body swing into your shots. For all shots
that cross or angle to gun swing by pivoting on the
back leg. For shots that cross to the left, swing to the
left leg. This will aid in the skeet field’s center marker,
which you hope to break most of your targets.

In general, when you are on firing line stance your
shouldered but ready gun should be correctly held
in hands with muzzle pointing about 30 degrees,
close to the elevation path you expect the high
house released targets to take.

For low house released targets, waiting gun
muzzle angle should be lower—just below the
normal position of the low house target.

Your first shot at Station 1 will be a high house
released target. It will come from directly behind
you and sail over and away from you. To hit it,
you must have to first “float” your front sight about
feet ahead of the clay bird.

Keep your head erect and prepare to quickly
bring gunstock comb up to face—in line with your
aiming eye as it picks up and tracks the released
target. Never duck your head down to rising

Body pivot is minimal at this Station.

The target thrown from the low house at Station
5 can be a surprise type of field shot that the high house target
simulated. Again, the target will have fast flight along an overhead path, but at lower elevation
and with a tight, fast cross to left instead of to right, as taken by the high house target.

Fire the instant you get on target and swing the
gun hard in the direction of the target’s flight for a
fast follow through.

On both Station 8 targets, let your two hands
and arms impart most of the needed gun swing.
Power pivot is minimal at this Station.

Much of the pleasure of hunting is making clean,
sure kills, and the more difficult the shots the more
pleasurable will be your memory.

There is no reason why your bird shooting dur­ing
the coming hunting season should be marred by too much missing.

It is wise to practice by shooting International skeet before season—that’s for sure.

Begin now to improve your field gun handling
tact. But practice then the idea of learning
to hit field targets, not as a competitor of other
shooters on the range.
CONSERVATION SCENE

A bill to increase funds for wildlife restoration, hunter safety and range construction moved one step closer to passage in Congress early in June, according to the National Shooting Sports Foundation.

Rep. John D. Dingell's H.R. 12475 was unanimously passed by the House Committee on Merchant Marine and Fisheries. Similar bills have been introduced in the Senate, such as Sen. Hugh Scott's S.589.

The bill would take the 10 percent excise tax on handguns out of general revenue and divert it to sportsmen's programs in the 59 state game and fish departments via the Secretary of the Interior. Rep. Dingell said the new funds would be on a 50-50 matching basis between Interior and the states. The states would have the option of using one-half the total handgun tax money for hunter safety programs or range construction. If the other half would go to wildlife restoration.

The handgun revenue is part of a package to "revive and clarify the Federal Aid in Wildlife Restoration Act and the Federal Aid in Fish Restoration Act,"Rep. Dingell said. It was introduced at the request of many state fish and game departments and the International Association of Game, Fish and Conservation Commissioners.

This Federal Aid in Wildlife Restoration Act (known as the Pittman-Robertson Act) was passed in 1937. The 11 percent excise tax collected on rifles, shotguns and factory ammunition tax that goes to the states on a 72 percent federal and 25 percent state matching basis, has been more than $400 million has been collected and used for wildlife research and management and acquisition of lands.

The Federal Aid in Fish Restoration Act (known as the Dingell-Johnson Act) was passed in 1956. It funnels tax on fishing tackle to state conservation agencies for programs approved by Interior.

Warren Page, secretary of the National Shooting Sports Foundation, says, "A hunters and fishermen have always been proud to support P-R and D-J Acts. Their tax money goes to improve fish and wildlife habitat and also improve environmental needs for all fish and wildlife, including non-game fish and wildlife species."

Rep. Dingell and others have been trying for four years to pass legislation similar to H.R. 12475. This is the first time one of the bills has moved all of the way out of a committee, Page says.

If H.R. 12475 does not pass the House floor and the Senate by the end of the year, it will die. Rep. Dingell said that whether or not the bill passes depends on an expression of individual sportsmen's views to their Congressmen.

Pollution Control Project

On May 11th, the Controlling Board of the Florida Department of Air and Water Pollution Control approved an expenditure of $18,000 to finance a contract between the Department and the University of West Florida to develop a basic "mathematical model" for an estuary.

The project, under the direction of Dr. A. Edmisten, will take about 12 months, and reduce to mathe­matical formulas all of the tremendous factors which enter into a comprehensive survey of an estuarine area.

The Pensacola Estuary has been chosen for the pilot project.

Florida has thousands of lakes, dozens of rivers and streams, many bays, and over 2,000 miles of salt water coastal areas. This enormous volume of waters which must be sampled for various data vital in pollution control, means the Department would require the full-time services of hundreds of chemists and other engineers if a thorough job is to be accomplished.

To overcome this drawback, the Department's systems engineer, Eddie E. Ellis, has designed a water quality monitoring system which provides for remote sensors to feed data automatically into a computer terminal.

The computer, armed with basic mathematical models (or "programmed," if you prefer) of how things should always do, would constantly monitor the waterways and advise the Department, almost instantly when any factor in a body of water reaches its predetermined limits.

"Abody of water have a water accumulation capacity, or assimilation capacity. This means that such has a certain capacity to absorb pollutants and dispose of them through natural processes without deterioration of the water. The capacity is based on dozens of factors, such as the physical size of the body of water, the characteristics of the impoundment, the speed of flow, interactions of fresh and salt waters—things like that.

The pilot project about to get under way would reduce each of those known factors to a mathematical formula. The computer will correlate all the formulas to arrive at a basic mathematical model which will be valid, with slight modifications, for any estuarine area.

Department engineers will then know with great accuracy the total amount of pollution sources flowing into that body of water and still keep the water from deteriorating. An adding machine applied to known pollution sources emptying into that water will tell the engineers whether output from these sources must be reduced, on some basis, to keep within the water's ability to absorb wastes.

A logical follow-up to this project will be pilot projects to develop similar mathematical models for lakes and for rivers.

A computerized system will enable the Department to put the water quality monitoring system on a 100% objective basis, rather than on consensus opinions as is necessarily the case today.

Man at Grip with Nature

A FRESH, HIGHLY DISTURBING but stimulating view of the human species at war with nature, its own, disastrous effects on nature is supplied by a leader in scientific conservation. This is "The Environmental Revolution — A Guide for the New Masters of the Earth" (McGraw-Hill).

"Awareness of the destructive importance of the disturbing vulnerability of man in general to environmental assault is neither new nor surprising to modern man. Man is an environmental force of a magnitude which has never been before envisaged. Through the cruel process of evolution, man has had to preempt the environment for society to be able to advance in nature and environment, and, on the other hand, the transformation of our own attitude toward that environment: "By going so far as he now has towards taking over and controlling the environment we have made nature our own master, not only that Be should manage nature, but also that he should henceforth learn to manage himself as part of nature." In just under 400 well-documented pages, and with the help of more than 70 illustrations, line drawings, and two color maps, the author presents a picture of the environmental revolution and offers novel ideas concerning "where we go from here."
Smallbore Rifle Guidebook

By EDMUND MCLAURIN

At __ __ __ 

There is plenty of expert guidance to be had, no reasonably good eyesight (natural or helped with prescription glasses) can become a good shot today. In fact, it was not uncommon for a certain large firearms manufacturer to simply ignore letters asking technical questions or seeking some solution to a gunsmithing problem. Remington was a notable exception. Any inquiry or shooting problem presented to that firm by a consumer brought prompt reply, just as a similar presentation does today.

The Sporting Arms and Ammunition Manufacturers' Institute, which for years has represented a long list of supporting trade affiliates, realized the national need for a good giveaway rifle instruction handbook. The member-manufacturers thought the idea good and authorized officials of the Remington Company to prepare a guidebook for new shooters. Colonel Whelen did a very thorough job. The result was the SMALLBORE RIFLE HANDBOOK— authoritative, technically accurate, and published without advertising, other than a list of SAAMI trade affiliates on the inside cover.

The motivating idea behind the book was for individual manufacturer affiliates to pack one of the helpful handbooks with each rifle marketed. But somehow this specific objective got side-tracked. Relatively few retailing sporting rifles ultimately reached their consumers with a packed copy of Colonel Whelen's shooting tips. Either manufacturer overlooked inclusion in rush of shipping or, more often, retail dealers did not save the handbook when unpackaging firearms for store display.

Even so, the SAAMI continued to publish and distribute many thousands of copies of SMALLBORE RIFLE HANDBOOK every year, aided by publicity given the guidebook by the NRA and shooters who had benefited from its reading. In those days, you could get one by writing for it—at first, free of charge; later, by sending 15c. Either way, the effort to obtain a copy was well worth it.

Today, Colonel Townsend Whelen's book is still considered one of the best rifle instruction manuals ever written. After obtaining and giving away hundreds in the interest of promoting the shooting sports, I now have only one copy left, a 1937 edition. It is not for sale and is no longer being loaned.

I have read my copy so many times I can recite some passages, but I still enjoy reading the book's various chapters. Along with National Rifle Association instruction manuals, I use the SMALLBORE RIFLE HANDBOOK to support firearms talks and clinic demonstrations.

Since 1953 almost half a million copies had been printed, I'd say your chances of getting one are good. In fact, I'm reasonably certain that National Shooting Sports Foundation, 1075 Post Road, Riverside Connecticut 06878, distributes an updated version, with current rifle model illustrations, for 25¢ per copy.

Whereas my older edition is titled SMALLBORE RIFLE HANDBOOK, the Foundation's publication is titled HANDBOOK On SMALLBORE RIFLE SHOOTING. It is so listed on the NSSP's rundown of instructional aids available to shooters. Chances are good the two texts are simply far-apart printings of the basic volume by the late Colonel Whelen.

In the old days, unless one got started right with the aid of one of the first editions of SMALLBORE RIFLE HANDBOOK, shooting guidance was usually hard to come by, and especially so if you lived in a small town that lacked likely contact with some shooter of range experience and coaching. Today, during my boyhood I was lucky, I not only liked to read—and read every text I could find about guns—but I developed valuable contacts and friendships as the years rolled by. National firearms personalities like Major John W. Houston, Captain Edward C. Crossman, Major General Julian Hatcher, C.S. Landis, Thurman Randle, and Olymipic Champion Morris Fischer evinced interest and took time to help me develop into a marksman. John W. Fecker, the telescope authority of his day, took pains to indoctrinate me in the working principles of scope sights.

Colonel Townsend Whelen wrote me regularly, often in great detail, and in time urged me to better serve the shooting sports by qualifying as a Certified NRA Marksmanship Instructor and by writing educationally, based on my own increasing firearms experience and knowledge.

If my best, I was fortunate—very fortunate. The best of the gun experts of their time graciously shared their best with me.

The years have brought many changes. Sadly, the named personalities have passed on, one by one. However, among those who read and remember their magazine articles does not miss the helpful writings of Colonel Townsend Whelen and Captain Edward C. Crossman.
FLORIDA WILDLIFE Magazine
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