PUBLISHED MONTHLY BY THE PENNSYLVANIA FISH COMMISSION

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JUNE, 1950

10 Cents a Copy—50 Cents a Year

Subscriptions should be addressed to the Editor, PENNSYLVANIA ANGLER, South Office Building, Harrisburg, Pa. Submit fee either by check or money order payable to the Commonwealth of Pennsylvania. Stamps not acceptable. Individuals sending cash do so at their own risk.

Pennsylvania ANGLER welcomes contributions and photos of catches from its readers. Proper credit will be given to contributors. Send manuscripts and photos direct to the Editor PENNSYLVANIA ANGLER, South Office Building, Harrisburg, Pa.

Entered as Second Class matter at the Post Office of Harrisburg, Pa., under act of March 3, 173.

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The ANGLER should be notified immediately of change in subscriber's address. Send both old and new addresses to Pennsylvania Fish Commission, South Office Building, Harrisburg, Pa. Permission to reprint will be granted if proper credit is given.


A Drop of Water

By Don Blair

THESE two old men were camping and fishing on Sandy Creek, in Mercer County, one day in July. Age is naturally relative. Even so, both these men were well past the ordinary age for retirement. They were of that age of man from whom all bitterness has been filtered through the sands of time.

They had been on a vacation, they said, ever since trout season opened. They had a battered sedan rigged for camping with a built in double bunk. And with a gasoline cookstove, plus a mountain of assorted camping and fishing gear, they were in truth vacationing. Nearly three months they had lived aboard that car, they said, fishing where and when they pleased. I gathered it was the vacation of a life-time.

We talked of brooks and creeks and rivers and fish. Yes, they had fished the Kettle. And First Fork. He caught a 13½ inch fallfish in First Fork. No, they had not seen the First Fork in all the forty years it was polluted. But they had seen the Clarion this summer. Yes, it was like that, maybe worse.

When I mentioned a tiny beaver pond set high along a forest road between Cross Forks and Wharton, they knew it. We stayed there, they told me. It's cram-jammed full of little trout. And they said they would have stayed there longer only they ran shy of grub.

A picture of these two aged happy fishermen has crossed my mind many times since we chatted that midsummer day in Mercer County. They had stood on the rim of the Canyon of Pine Creek and looked far. And then camped in the valley and caught some fish. Now, finally, the reason I kept thinking about these two old fellows is clear. It was not an accident they were able to travel so widely, camp where it pleased them, and fish a beaver pond cram-jammed with little trout! Certainly they could not have had their vacation so easily a generation ago.

If you could only step backward, say, twenty-five years. Maybe I can explain it best by saying we had practically no roads in the mountains twenty-odd years ago. There was good fishing in the Kettle Creek country a quarter century ago. And a few dozen fishermen. There are thousands of fishermen in that country today, fishing the same waters. And the fishing is good. Fifty mile an hour highways span the hill country. Now great forests cover all that north central section. A quarter of a century ago we hunted deer in open barrens where they jumped and ran like rabbits through clipped pasture grass. But lately the forests are grown. The hills are covered. And the reason we have those forests lies principally in the foresight that established a network of firetowers scattered far across the state of Pennsylvania.

Roads and forest fire prevention are not the only things that made it possible for our two old friends to enjoy their vacation of a lifetime. Call it symbolic if you like, the fact remains that a good and great amount of work has been done toward repairing and improving the Pennsylvania we inherited.

There were Game Commission men farsighted enough to buy land, establish refuges, restock beavers and other animals; and to spend millions of manhours of labor to make Pennsylvania a better vacation land. Consider also the work accomplished by Fish Commission men in these past years. So it goes, from Secretary of Highways to maintenance crew.
SEVERAL months ago at the Pennsylvania Farm Show in Harrisburg I stopped at the booth of the Pennsylvania State Game Commission and paid fifty cents for four little booklets on conservation. They are published by the National Wildlife Federation, Inc., and are in order entitled: "Would You Like to Have Lived When—?", "Raindrops and Muddy Rivers", "Plants and Animals Live Together," and "Nature's Bank—the Soil." They interested me particularly because they are graded or listed for children under the categories of: grades 3, 4, and 5; 4, 5 and 6; 5, 6, and 7; 6, 7, and 8. I had to have these four booklets on conservation because in the first place I reasoned that I would probably understand them, and in the second place I had an idea.

Several weeks ago an associate and I were talking about an article on conservation, and his one warning comment to me was, "Make it simple." In further conversation we agreed that too often subject matter that was not really so complicated or difficult in itself was made so by the method of its presentation. On the other hand there is no reason at all, regardless of the complexities of certain information and knowledge, why its method of presentation cannot be simple and lucid.

Several nights ago I picked up John Walter Hill's "A Summer on the Test," and in reading the preface to the first edition ran across this statement in reference to our changing fishing habits and the Test river: "Only the Test will be the same, and its trout, and the sport of fishing, and possibly the Grosvenor Arms. The river will remain, so long as a growing town population does not abstract all its pure springs. The trout will be there, until tar poisoning kills the last. And where clear waters and trout are found, there will fishing be found also."

On a little reflection these three experiences seemed to go together. Here was a statement written in 1924 by one of our most enjoyable authors of fishing books that was a perfect example of clarity and fact. There is no questioning its simplicity or its ominous prediction. It appeared to me that here was an excellent example of my associate's suggestion, and what better way could be found to carry out the idea than to start with a series of booklets on conservation designed for grades 3, 4, and 5.

An excellent club project in the field of conservation might be to make these booklets available to our Junior Sportsmen, the conservation clubs in our public schools, and perhaps even to ourselves in spite of the fact that we consider ourselves men and have now put away childish things.

The first little booklet is entitled "Would You Like to Have Lived When—?" This is a pleasant little story of David Robinson who takes a trip across our continent to see our forests, the plains, the prairies, our mountains, and our streams. His trip is an amazing revelation of the living and doing of nearly 150,000,000 people and the changes that have come about in their land as they pushed ever westward.

Eastern forests have given way to cleared lands and crops; a great many of our fur bearing animals to the trap line, and in turn to the style of coats and hats worn by both American and European ladies and gentlemen; certain fish migrations to the big power dams; clear streams to muddy and too often polluted ones; the groves of trees in Ohio and Illinois to clearings for farming; the short grass plains to the plow and the dust bowl. Of course much of this was necessary, for after all where was our population supposed to go, and how would they be fed? However, in our ever rapid expansion we cut too much timber, trapped too much game, killed too many fish, plowed too much land, and today we are with our right hand continuing this process in too many places while with our left we are trying to repair the damage already done. In spite of floods in West Virginia, Ohio, and along the Mississippi drainage basin—acres flooded in spite of the dikes—we are building new ones in Pennsylvania. The Chinese have an old proverb, "Build the dikes high and live in fear, build them low and live in peace." Could it be so? Ohio is planning to blow out several dozen small dams built not long ago for flood control because more area is flooded with them than without, but we are urging the building of new ones in Pennsylvania. The conservationist awakens as if from a nightmare and asks, "Can this happen here?" David Robinson's story may be for grades 3, 4, and 5, but why not for 30, 40 and 50 as well?

The second booklet is entitled "Raindrops and Muddy Rivers." The first page claims that it is for grades 4, 5, and 6, and I rather reluctantly decided this must be my level because I have learned a great deal from reading it. The first of the story has to do with the presence of water in places where it is often overlooked. I was surprised to see a picture of a carrot, but then I remembered that I had taught students of Botany at one time that plants are frequently consisted of as much as 90% water, and certainly 75% would be a very conservative figure. I recalled now that I myself was surprised with...
Take the timber and then the soil. Note particularly that this is not a modern operation.

The idea that a plant, which is three-fourths water, could stand up out of the soil and have enough consistency so that it could be cultivated, harvested, or, in some instances, cut down and made into lumber. Even in the dry state, seeds and grains will contain 15% water. Now perhaps the water in plants and animals is not considered in the water of conservation, but certainly it is important to me and to you. The game, which we shoot, might be as much as 50% water. Can you visualize a grouse or deer being half water? Honestly, it is hard for me to do so, and yet these are the facts. Water for some reason or other now begins to take on a slightly different appeal to my imagination, and I find my concept of conservation enlarging and encompassing more and more ideas and territory. When I recall that the source of this water, as well as that which we need for drinking purposes, to fill our springs, and to water our crops, must come from rainfall and that it must be retained in locations where the fish and game can get it and use it as one of their fundamental building units, I begin to consider a little more seriously the danger of too rapid run-off: the overflow that I see in our creeks and rivers begins to be converted into pounds of game and fish. To the biologist, water may mean life; to the chemist, it might mean solutions and reactions; to the farmer, it might mean crops; and to the rancher, pounds of prime beef. But to the conservationist, it should mean all of these. Water is commonplace in most locations, and we assume its ever presence; but its distribution on the earth has far reaching effects, and its importance can hardly be overestimated. Much of the continent of Australia is desert, and it would appear that water alone is the determining factor. There is a large desert area in Africa for the same reason, and in the United States we have the semiarid region of the Southwest, and Death Valley to remind us of its importance. It is water that determines the areas known as the plains and the steppes of Russia, the pampas of Argentina, and the savannas of Africa. It has been estimated that each corn plant, which grows, requires in its lifetime about 50 gallons of water, and when you multiply this by the 10,000 plants of corn per acre and the thousands of acres planted in this country in a single year, the number of gallons needed for this one crop alone begins to take on astronomical size. Figures and facts such as these somehow lose their importance to us, but can we, as conservationists, really afford to “play” with the problem of water? Water, with the problems involved, deserves to have the best brains in the country consider it, and the rather irresponsible overcropping, overgrazing, and overstripping must stop. We dare not build dams, dikes, levees, or dredge channels and similar diversions just because someone thinks they are nice or will provide employment or a convenient recreational spot for boating. We are playing with water as a small boy might with a new toy when in reality here is a single factor that has had more to do with the distribution and development of civilization, trade and commerce, agriculture. (Turn to Page 22)
Tying Those Dry Flies

By Don Shiner

RECORDED in the Book of St. Albans, published in the year 1496, is the fact that fishermen of that era went astream in quest of trout, armed with a 20-foot rod and a dozen flies. One can hardly imagine that men armed with a 20-foot rod and a dozen era went astream in quest of trout, but there were sportsmen of his day who practiced the art of fly fishing and fly-tying. The fact that fish will rise or give chase to a feathered hook is one reason why the sport of fishing has grown to the gigantic following it has today.

Tying these flies has developed into a science or art today and is a hobby often referred to as nothing short of fascinating. I know of no other way that causes time to pass so quickly as it does when an angler is bent over a fly tying vise, nor a more pleasant atmosphere than that of a desk covered with bits of colorful feathers, tinsel, yarn and fur. Ask any of them too how grand the feeling is when they hold a handful of flies just completed, or the pride felt when outwitting a fine trout on a fly constructed by yourself. It adds something to fishing that is otherwise unknown.

To those that as yet have not tried their hand at this "art," why not do so now? You'll find it a wonderful pastime for those evenings when the weather is not suitable for going outdoors. You can set at your desk or at a small bench in front of the roaring flames in the fireplace and produce dozens of flies in an evening's time.

Don't think that you can't accomplish this, and that fly tying know-how is limited to only experts, such is not the case. Chances are the first fly you attempt to tie will amaze you with its handsome appearance. Fly tying amounts to nothing more than about 30 turns of thread around a hook holding bits of feathers securely in place. And it's fascinating to watch the fly take shape as it progresses step by step to a completed lure, and this same fly may be the one that will fill your creel this trout season!

In contrast to the 12 patterns used in the days of Columbus, there are over 30,000 recognized patterns today, all originated by men who were intrigued by this pastime. Take for instance the Royal Coachman dry fly, originated by John Haily, a New York fly-dresser, in the year 1878. It is one of the most potential fish getters of all flies, one of the most popular today, and one that is excellent to learn fly-tying from. Even after these 60 odd years, this fly remains a challenge to every fly-tier to create a better all-around fly.

How is this famous fly tied? First, a certain amount of tools and materials must be obtained. You can get along very nicely with a fly vise and a pair of finely pointed scissors. For materials, a small assortment of duck wing feathers, some hackle feathers (those long fibered feathers found on the neck of domestic roosters), a few spools of floss in assorted colors, some yarn and chenille, and a few fancy feathers such as peacock tails and golden pheasant tippets, will be enough to begin with.

Once these materials are set before you, the first step in tying the Royal Coachman dry fly is to insert the hook in the jaw of the vise and clamp it tightly. This will allow you to work with both hands. At first your fingers may be all thumbs, but after a few flies you'll be surprised how nimble they become.

Cut a piece of thread about two feet long and draw it over a piece of wax to waterproof it. Then, tie the thread fast to the shank of the hook, somewhere near the center. It is now in readiness to have the tail tied in place. For the tail, select a few fibers from a golden pheasant tippet, hold these with the left hand on top the hook near the bend. Then, wind the thread around the hook and material, thus binding the tippets in place.

Next, add the wings to the fly. For this, select two white hackle feathers and place them on top the hook with the tips extending beyond the eye of the hook. Wind a few turns of thread around the hackle feathers binding them in place, then wind a few turns of thread in front of them, thereby making them stand erect.

For the body, use a long peacock herl and some red silk floss. Tie both of these materials fast to the hook, then wind the herl around the hook to within a third of the distance to the wings. Stop at this point and wind the floss a few times around the hook. Finish by winding the herl the remaining amount of distance to the wings. Thus, the tail, wings and body of the Royal Coachman fly has been completed.

The fibers that project outward from the fly are made by winding a hackle feather around the hook. Tie a brown hackle feather fast to the hook in front of the wings and grip the free end slowly winding it around the shank in front and to the rear of the wings. The fly is now ready to be finished "off." The knot used to finish a fly is very important for unless it is tied properly the fly can very easily unravel.

Fly tiers have originated the "whip" knot, and while it takes a little time to master this knot, it actually is quite simple to make. Start this knot by holding a toothpick or similar pointed object a slight distance above the eye. Then, wind the thread around the toothpick and hook, forming three of
four loops. Insert the free end of the thread through the loops and pull it tightly. To make doubly sure the fly will not unravel, coat the thread with varnish or cement.

The Royal Coachman fly is now complete, ready to be tied to a leader and cast into mid-stream for those waiting trout.

Indeed, there is no reason why every angler or fisherman should not tie his own flies and have his fly box filled at all times. Besides being a delightful pastime, fly-tying is the means of passing time when confined to the indoors and the means of filling the creel when the time is spent outdoors along the favorite stream. Why not try your hand at it now?

Delaware County Association
Holds Field Day for Juniors

Recently the Delaware County Field and Stream Association held a Junior Field Day in which only Junior members participated. Fifty boys, ranging in age from eight years to sixteen years were divided into ten groups of five boys each. Ten senior members of the Association were in charge, one leader to each group. At ten different points, covering the high power rifle range, small bore rifle range, pistol range, the traps, the skeet layout, plug casting court, fly casting court and three different points where fish, game and conservation could be discussed, a senior member (experienced in that particular phase of the outdoors, and assisted by a local Game Protector and local Fish Warden), was in charge to lecture and demonstrate to the boys. Fish laws and game laws were discussed, nomenclature of guns and proper method of handling and shooting were shown, proper ways to fly and plug cast were demonstrated, feeding game and building feeding stations in winter was explained, and at the discretion of the leader, most boys were permitted to shoot or cast, with emphasis on safety. Each leader carried a score card bearing the name of each boy and each contestant was scored for each event, for interest, participation, conduct, safety and knowledge. Each scoring item had a high rating of three and it was possible for a boy to be scored 15 points each of the activities he took part in, or a total of 150 possible points for the day.

Sophomores and juniors in high school were further screened at the end of the day's activities and the two considered best by the judges earned a week's trip to the Junior Conservation School held each summer at State College. All expenses for the trip will be paid by the Association. Ten other boys, three in the group from 8 to 11 years, four from 12 to 14 years and three from 15 to 16 years will be entitled to a three day trip to the Brotherhood of the Jungle Cock Campfire in Thurmont, Md., (sponsored by the Outdoor Writer's Association of America) and all expenses for these boys' week end will be taken care of by the Delco group. The contestants were also provided with a lunch of sandwiches, milk, cup cakes and soft drinks, all on the house.
Fly Fishing—Why?  

By Dick Fortney

The female fly lays eggs in water. The eggs sink to the bottom, hatch into larvae, change into nymphs, and rise to the surface again to take to the air.

There, boiled down into 30 words and stripped of a lot of complex scientific explanations, is the answer to the question:

Why can fish be caught on artificial flies?

In this natural evolution in the insect world lies the whole answer. Were it not for the year-after-year reproduction of the wide variety of species of insects on which fish feed, there would be no fly fishing. And, incidentally, fish would be deprived of a source of forage which is their principal means of sustaining life and growth.

And imitating the appearance and action of real flies in creations made of fur, feathers, and steel is the problem the fly fisherman must solve if he is to be successful.

Any angler would observe a fast improvement in his fishing if he had an intimate knowledge of entomology, which is the science of insects. He would know, for example, what varieties of insects to expect at the various seasons of the year. He would know, also, in what particular kind of water—shallow ripples, or flat pool, for example—he could expect to find certain insects.

He further would be well acquainted with such important details as size, shape, and colorings of the insects he imitates with his lures.

Fishermen-entomologists are rare, naturally. But every angler can be informed on the subject of the evolution of the insect.

Let us consider the process described in the first paragraph of this article, step by step.

First, the female fly lays eggs in water.

This fact is of vital importance to the dry fly fisherman. When large numbers of female insects begin laying their eggs at the same time, the fisherman observes what he calls a hatch of insects. (That isn’t precisely a correct definition. The hatch rather is the period when the nymphs emerge and unfold their wings. But still egg-laying is called a hatch).

Eggs are extruded from the bodies of the females. Some of the adults are so heavy with eggs that they have distinctly colored, usually a yellowish-green, sacs of eggs attached to their bodies.

Because they obtain rich nourishment from these eggs, trout feed on the female insects. Male insects are in evidence during this egg-laying period, incidentally, but they are not in much danger from hungry trout. The fish prey principally on the females.

Eggs of insects usually are laid in riffles, and if not there, in currents which have fairly good motion. Thus the moving water distributes the insect eggs over a considerable expanse of stream.

The female insect dies after its eggs are laid, and its body floats on the current in a sprawled-out position. Trout also feed vigorously on these “spent” insects.

The dry fly fisherman imitates the egg-laying insects with lures made to float on the surface of the water. The egg sacs are imitated by a small knob of material of the proper color tied at the back of the fly body. The dead insects are duplicated by flies which are made with wings extended horizontally instead of in an erect position.

Step No. 2 in the evolution of an insect is just the sinking of the insect eggs to resting places on the bottom. In time these eggs hatch into larvae, and again the fly fisherman is interested, for trout feed a great deal—probably getting as much as 85 or 90 per cent of their food—on the insects in this stage.

Larvae of insects take many forms. They attach themselves to rocks and other underwater objects. Some remain stationary, but others are able to move about in the water as they grow and develop. Always, however, they are below the surface. The fisherman must remember this.

The caddis is one of the most interesting of the insect nymphs. It encloses itself in a small case—which looks like a bit of twig—for the period of its growth.

The fisherman in early spring may observe these cases in shallow water, attached to the surface of flat rocks in plain view.

Trout also observe them, and every time an angler has caught trout whose stomachs were filled with these cases. The fish consume the whole business, the digestive apparatus disposing of the case and allowing the trout to consume the juicy larva inside it.

Some fishermen use these cases as bait. Others break open the cases, extract the larvae, and use them as bait.

But even more interesting, artificial lures which are good imitations of the caddis case also can be made and used with considerable success.

Step No. 3 in the larva development is the transformation into nymphs, casts itself free of its underwater refuge, and rises toward the surface.

On this stage of the insect trout really make a feast.

You've seen the signs. Trout feed furiously in riffles or flat. But the tails, not their heads, break the surface of the water as they grab the nymphs en route from the bottom to the surface.

The angler imitates the insects at this stage with two types of lures—nymphs and wet flies.

Nymphs are imitations of the full developed larva. Wet flies are duplications of the nymphs just before they emerge from the water.

On route toward the surface, the young insect slowly unfolds the wings which will in time bear it aloft, if it isn't gobbled by a trout. And the imitation of these wings is important.

In the case of the nymph, wings appear as little more than pads on the bodies of the insects. In wet flies, these wings have begun to unfold, and the nymphs are a prominent part of the lure. But the wings of the natural insect still are weak and wet, folded close against its body, and the wings of the wet fly must also have that appearance.

The nymph moves through the water in short, jerky stages. The nymph at a wet fly, generally speaking, must be fished in the same manner.

The fisherman must bear in mind:
another fact about imitating natural insects at the nymph and wet fly stages. It is this: Trout get a close inspection of such lures. The flies are down in the water, so there are no light refractions. The trout, further, can inspect the lure leisurely—there is no need for a dashing strike to enable the fish to take the fly before it floats out of reach.

So, more than in any other lure, the nymph and wet fly must be true imitations of the natural insects. The size is extremely important. The formation of the body must be given careful consideration. Colors have to be studied and imitated with precision.

All of this boils down to this statement: Catching trout with nymphs and wet flies is the most difficult method of all.

Finally, comes the last stage in the evolution of the insect.

It reaches the surface of the water. Its wings unfold and quickly stand erect and dry out. And the insect takes to the air. Its mission is, in time, to lay eggs and continue the propagation of its kind. It begins all over again the process of evolution out of which it developed.

Emergence of the floating insects is the real fisherman's hatch. It is an amazing and interesting thing to watch on a stream—to see insects appearing out of the water, and to see trout begin feeding on them.

This is the dry fly angler's second chance in the evolution of an insect. He uses the same kinds of flies that he made to imitate the female fly which laid the original eggs. They must float high and dry, with wings cocked and erect.

The angler has a bit more leeway in building the dry fly. Since it is floating on the surface, and the trout is down in the water, it does not appear sharply defined to the fish. As a matter of fact, it probably is very much distorted.

The fish, as some experts describe it, get an impression of the appearance of the fly rather than an exact picture of it.

Size is the important thing. The trout will seldom take a big floating fly when the natural hatching insects are small. Likewise, it will not get much excited about small artificial flies when large and juicy naturals are appearing on the surface of the water.

The matter of color is debatable. Even the question whether fish can distinguish delicate differences in colors is widely argued. But one general observation may be made without fear of contradiction. The color of the artificial should approximate the color of the natural.

If natural Light Cahills are emerging, the artificial should have tan wings and a cream-colored body, for example. We have said that the nymph and wet fly move through the water in short, rather jerky stages. The adult fly floats freely and gracefully on the surface.

So the artificial dry fly must float, like the natural, free of all drag and other interference from line or leader.

In conclusion, please remember this: All species of fish except a few such as suckers and catfish feed on insects in their various stages of development.

So a fundamental knowledge of the science of insects is as valuable for the bass angler as for the trout angler.

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**Regulations Relative to Live Bait – 1950**

The Pennsylvania Fish Commission has set up the following rules and regulations on bait-fish and fish-bait:

**SPECIAL NOTICE—Under new amendment to the fish law no fishing is permitted in any waters from midnight March 14th to 5:00 A.M., April 15th. This amendment prohibits taking bait-fish or fish-bait during that period, except in rivers, lakes, and ponds not stocked with trout.**

Bait-fish or fish-bait taken from our inland waters CANNOT BE SOLD within the Commonwealth or transported outside the confines of the Commonwealth for sale. This ruling does not prevent a fisherman from taking his own bait from public waters, but under the law he cannot have more than thirty-five (35) fish-bait or fifty (50) of the combined species unless purchased from a Commercial Dealer who operates under a license issued by the Commission, or from a dealer who has purchased them from a Commercial Hatchery.

Every minnow box anchored in a stream, pond, lake, or place of residence must have attached thereto the owner's name and address and fishing license number. If maintained by more than one person, it must be in sections and each section must have owner's name and address and license number.

Pennsylvania fishermen are also permitted to take bait on a fishing trip either within or without the State provided the possession limit is not exceeded and the bait are for his own use. If there is more than one fisherman, bait must be in separate containers or a divided minnow box or bucket.

**SUNDAY FISHING FOR FISH-BAIT OR BAIT-FISH:**

Under an amendment to the Sunday Fishing Law, bait-fish or fish-bait may be taken on Sunday with the same devices used on week-days, i.e., two rods and two lines with not more than three (3) hooks attached to each line; a dip-net or minnow seine not over four (4) feet square or four (4) feet in diameter; a minnow trap with not more than two (2) openings which shall not exceed one (1) inch in diameter. The rods, hooks, and lines must be under the immediate control of the persons using the same.

**SPECIAL NOTICE**

BAIT IMPORTED INTO PENNSYLVANIA:

No person or persons are permitted to bring bait-fish or fish-bait into Pennsylvania for resale without first securing a permit issued by the Pennsylvania Fish Commission, Harrisburg, Pennsylvania. In making a request for a permit, all persons must supply the Commission with the name and address of the person or dealer from whom bait-fish or fish-bait are to be purchased, species of bait they desire to transport, number, place of business where fish will be resold, etc. Dealers must keep a record of all fish or fish-bait purchased under their permit and copies of bill of sale to individual fishermen which must check with purchases made.

Fish For Sport, Not Meat

Another fishing season has just opened. From now until cold weather comes again, anglers of Pennsylvania will have the privilege of fishing for trout, bass, and panfish.

Nowhere else in the world are men so free to enjoy the outdoors. In some countries men are slaves of the government, and any kind of recreation is out of the question.

In other lands, fishing rights are held by the privileged few. All good waters are privately owned.

But in this country—and more particularly in this state—all a man or woman needs to go fishing is the desire, the proper tackle, and a license that costs only a couple of dollars.

And privately owned waters are no problem at all. This fine, free sport of fishing can change, though.

We can't eat our cake and still have it. Or, it might be said, we can't kill our fish and still enjoy fishing for them.

There are not enough fish in the streams—even with modern creel limits and hatchery operations—for all of us to take our limit of fish on a single trip.

Every individual fisherman can help to make fishing better—if he will fish for sport instead of for meat.

Certainly, enjoy a meal of fresh caught fish caught once in a while. But also enjoy the pleasure of catching a nice fish, handling it carefully, and then returning it unharmed to the water to be caught another day by yourself or some other sportsman.

We repeat—

In 1950 fish for sport, not for meat.

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**Editorial—The Lycoming Sportsman**

**Club Lays Plans for Picnic**

The Beaver County Sportsmen's League has scheduled an outdoor picnic for August, at the Ambridge Firemen's Park. The date and events will be announced in the near future. It will be a family affair and the picnic committee is busy planning a complete program for men, women, and children.

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JUNE—1950
Skish as a Park Activity

There are more than 20,000,000 fishermen in the United States. Each and every one seeks the great outdoors for relaxation and a fuller life. No other sport in America has as many active participants. From the barefoot boy with pin hook and worms to the President of the nation, all are equal on lake and stream, with a common thought.

The sport of fishing knows no profession, creed or color. It is one activity which appeals to the old and young alike. Just being out-of-doors, plus the anticipation of the catch, makes each trip not easily forgotten. Not all anglers are sport fishermen; neither do all fishermen have an opportunity to travel long distances in their quest for the thrill of landing our better game fishes. The great majority being less fortunate, must be content with poorer fishing near congested areas. It is here that much can be done. It is also here that we find the park systems of today.

Skish for Fishermen

During recent years, a great number of civic minded sportsmen banded together to give the fishermen a recreational sport between fishing trips as a means of bridging that gap. This activity, known as Skish, is a target casting sport for the angler, as Skeet is to the hunter. It is not only a great fill-in, but an aid toward making hobby fishermen as well. Hobbyists as you well know, are a contented lot as long as they are playing at their hobby. With this in mind, those sponsoring Skish are making an all-out effort to bring this sport to every city and hamlet in America in an effort to create hobbyists and cleaner living.

While not all fishermen are interested in target casting, a vast number are when they learn of the facilities furnished by many of our parks, and the services rendered by the many expert casters working closely with the parks in furthering this activity. This service which is so valuable to the hobby fisherman, has attracted nationwide attention among all fishermen interested in better casting. Good casting plays an important part in improving one's catch, and who isn't interested in a better catch of our finny tribe?

Not all sport fishermen are in a position to spend months at their hobby. The majority have but a few weekends in addition to their two weeks' vacation. Therefore, thousands of these hobby fishermen have taken to the sport of target casting as second to real fishing. This increased interest in casting has meant the development of hundreds of clubs which did not exist a short time ago. The more fortunate clubs have found suitable facilities in our city parks for practice casting, while many others not so fortunate lack the knowledge of planning facilities for this activity. It is for this latter group that these words have been written.

No Expense Needed

Park executives who wish to add the sport of target casting to their activities need not delay action because they lack the necessary funds for an immense platform. Many casting groups are active today with neither pool nor platform, all casting being done on a lawn. While this is far from ideal in the minds of fishermen, it does serve the purpose for a limited time. However, if these conditions continue indefinitely, the enthusiasm for the sport will decline. Fishermen naturally like their casting on water because it simulates actual fishing. Therefore, park officials who organize lawn casting should bear in mind the placing of the activity in a lagoon or wading pool as soon as conditions permit.

Wading Pools

Wading pools have been used successfully by many casting clubs. Whether round, square or oval, pools of sufficient size for casting should be no less than one hundred feet in length. Round pools one hundred or more feet in diameter make excellent casting pools, providing a walk circumvents the entire pool. This will permit casting with the wind, which is very important if good casting is to be done. The surface of the walk or platform should be as near eighteen inches as possible from the water. While this may vary a couple of inches either way, it should be maintained within reason, otherwise it will affect the casting of visiting casters, especially during state, regional and national tournaments. Shallow pools should have a cement bottom. This will prevent weed growth during the peak of the casting season.

Casters Need Space

Wading pools in many parks are unsuited for all forms of casting because they are located in congested areas. While they will serve for accuracy ball casting, they are unsuited for fly casting unless there is sufficient clearance around the periphery. Pools having a clearance of less than fifty feet will make fly casting difficult and hazardous. All casters should be warned to break practice fly hooks off back of barb. New pools should be planned for fly casting as well as ball casting because fly fishing is rapidly becoming the leading method of taking game fish.

Octagonal Pools

Where no lagoon or lakes exist, a step better than a wading pool is an octagonal cement pool about one hundred and fifty feet in width. This pool should also be circumvented by a walk no less than six feet wide. Pools of this type permit casting with the wind and with all casters on the same line. The Buffalo, New York, casters are proud of their pool built in this manner. At the time of construction, the Buffalo Anglers Club worked closely with the Buffalo park officials to provide a very fine pool. In building pools of cement, the bottom should drain slightly to the center. No more drain than necessary should be provided because it will make it difficult to wade when setting out the target and while scoring the casting.

Small Lakes and Lagoons

Small lakes and lagoons are ideal for permanent casting facilities because sufficient space can be had for all types of casting under all conditions. When using lakes and lagoons, it is best to extend a casting platform into the water. The ideal platform being built
in the form of a cross, with one arm being used as an entrance from shore. With casting facilities of this type, all casting can be done parallel with the shore. That portion of the platform extending from shore should be at a right angle to the prevailing wind. This will permit casting crosswise of the main section and with the wind. The other section forming the cross is used for rod racks, spectators and the judges when scoring games.

**SIZE OF PLATFORMS**

When building the cross type platform the size will depend entirely upon the number of casters using it. The most outstanding platform of this type is located in Lincoln Park, Chicago, Illinois. The main section extending from shore is one hundred and twenty-five feet long with a width of twenty feet. The north and south section which completes the cross is located in the center of the main section and extends eighty feet from each side. This particular platform is built of reinforced concrete twelve inches thick and with a skirt six inches deep around the entire edge. The entire structure is supported on piling extending forty feet into the ground. While it may seem extra heavy, it must support exceptionally large crowds.

**NATIONAL TOURNAMENTS**

The Chicago Park District and eight casting clubs cooperatively sponsored the first Annual All Skish National Tournament which was held August 26-27-28, 1949. This tournament drew a large number of casters from Coast to Coast, and was held on the above mentioned platform in Lincoln Park. The choice of this park was made because facilities are ample for a tournament of this size. All park executives wishing to attract national attention among fishermen following this sport should fully consider the capabilities of their casting facilities before building. Inasmuch as this sport is growing rapidly, the platform just mentioned will be more than large for general use in this area. Many other parks in the Chicago Park District are also equipped with outstanding facilities for the target casters. In fact, the Chicago Park District has more casting clubs than any other city in America.

**LONG BEACH, CALIFORNIA**

As an example of rebuilding, the fishermen of Long Beach, California, were awarded a national casting tournament for 1947. The casting pool used prior to that time was a cement pool about one hundred twenty-five feet in diameter. In order to handle the 1947 National, it was necessary to rebuild the pool into an oval, giving it more length. While the pool was used for many years, it was far from ideal until the change was made. This resulted in a much happier group of casters and increased activities. They are now equipped for any eventuality.

**SAN FRANCISCO, CALIFORNIA**

In the Golden Gate Park of San Francisco, the fishermen have for their use one of the most outstanding pools ever built for the sport of casting. Here the pool, built entirely of cement, is about four hundred feet square and with two crosswalks built through the pool, thus making three distinct pools. It is, without a doubt, one to be proud of by every caster using it.

**DISTANCE POOLS**

Casting pools built for accuracy casting need not be as large as those built to include all casting games. Distance casting takes considerable space. Therefore, this phase of the sport cannot be played in one hundred foot pools. If space permits, it is well to plan the location of the platform permitting a cast on water of two hundred and fifty feet or more. To get this distance with the wind, it would necessitate extending a platform into the center of a pool having a length of five hundred feet or more. Facilities planned along these lines will be ample for all tournaments. The size of this pool should not discourage park officials from adding bait and fly casting to their activities merely because their pools are too small for distance casting. As I have mentioned before, casting can be done on a lawn or in small pools from shore, thus requiring no expenditures whatsoever. The large pool is merely mentioned to show what has been done in some of our larger cities.

**LOCKER FACILITIES**

All parks planning facilities for casting should provide a locker for targets and other equipment not carried by the casters. Quite often space can be provided in a nearby field house for this equipment. In many instances the parks have an equipment locker built into the casting platform. Lockers of this type should be about ten feet long, four feet wide and three feet deep. The top should be sloped to prevent rain reaching the storage space.

**CLUBHOUSES**

In practically all of the large cities, the parks have provided the casters with a clubhouse for their particular use or have given them space in one of the nearby fieldhouses. Many are equipped with lockers of sufficient height for the storage of six foot rods, reels, lines and other gear used by those following this sport. These buildings are also used for meetings and social activities during the winter months when weather doesn't permit outdoor casting. While clubhouses are not a must for this sport, it does keep these hobby fishermen together tying flies, telling tall tales and amusing themselves in general. Movies of fishing trips play an important part in keeping this group happy during the long winter months.

**TARGETS**

The standard target used by all casting clubs is a ring thirty inches outside diameter made from one and three-quarter inch diameter aluminum tubing, rolled to a perfect circle and welded with a special welding rod made for use with aluminum. However, some clubs have made their targets to these same dimensions from wood, using a good waterproof glue, while others have made discs thirty inches in diameter with a thickness of about one and one-half inches. Waterproof glue should also be used with wood discs. Those wishing to obtain their targets at less expense have used old bicycle tires as a substitute. Five targets are used, one at a distance at various distances to conform to the rules of the games. The colors of the five targets should be red, white, blue,
Pine Creek Bass Are Numerous

It's a safe bet that every fisherman has his own favorite stream and riffle. Further, he'll probably drag you along with him to his chosen spot unless you have your own favorite fishing place and can talk faster and more convincingly than he.

Take the case of Ralph. He had been telling me all spring about that somewhat isolated fishing place in Pine Creek that he had discovered the season before. To hear him, you'd gather he had to keep the lid of his minnow bucket closed to prevent the hungry black bass from jumping out of the creek and stealing minnows when his back was turned.

He was persuasive all right, sufficiently so to induce me to accompany him to his bass-infested stretch of water on July Fourth.

For the information of those who may not know just where Pine Creek is, perhaps I'd better locate it. Pine Creek is a good-sized stream, larger in many instances than waterways in other states of the East graced with the designation of rivers.

It flows southward through north-central Pennsylvania to empty into the West Branch of the Susquehanna River a few miles southwest of the Borough of Jersey Shore. For much of its course it tumbles through a narrow ravine with mountains on both sides rising to a height of as much as 2,000 feet above tide.

The scenery of the Pine Creek gorge is exceedingly bold and picturesque, and before the advent of the railroad there was no wilder place in the Commonwealth. At times Pine Creek, at present as in pioneer days, becomes a mighty torrent carrying off an immense volume of water from the extensive mountain regions which it drains.

It has numerous tributaries, some of them streams of considerable size and virtually all of them desirable trout waters. The largest of these is Little Pine Creek, in which the state is at present building a huge dam to provide a lake for flood control and recreational purposes. This dam is located about three and a half miles above Waterville, where Little Pine joins main Pine Creek.

Other tributaries are Callahan's Run, Tomb's Run, Slate Run, Miller's Run, Gambles' Run, and Cedar Run. Slate and Cedar Runs are streams of some importance and were utilized for conveying logs in the lumbering era. At present Slate Run is an exceedingly popular trout stream with special restrictions on legal-sized fish and fishing tackle.

Little Pine has been a popular trout stream, but there are those who maintain the creation of the recreational lake will destroy its attractiveness as a trout stream from the dam to its mouth. Many of its tributaries—Callahan's Run, English Run, Lick Run, Bear Run, Block House Fork, Wolf Run, Rock Run, Crooked Creek, Otter Run, Buckeye Branch, Pine Run, Bonnell Run, Four Mile Run, and Hews Run—provide good brook trout fishing.

Now to get back to Ralph and that July Fourth of a few years ago. We got away to an early start and encountered little traffic as we traveled through Jersey Shore toward Lock Haven. We continued along at a good clip after turning north off the Jersey Shore-Lock Haven highway to proceed along the east side of Pine Creek.

It was less than 15 minutes until Ralph turned off the macadam highway onto a dirt drive that had once been part of the main Pine Creek road. Down this dusty lane we went, thriving blackberry bushes scraping the sides of the car at places.

When we came to a high wire fence the bass hole wasn't more than 200 yards long. It extended along the east side of the stream, and above and below it was shallow, rapid water. I could see, too, that the water was shallow along the opposite shore.

There was a big rock protruding from the water at the upper end of the hole, but we placed our lunch and can of helgramites among the high weeds of the embankment for protection from the hot sun already beating down on us. We set about with all speed, and assure Ralph, probably noting my dubious expression, that they were in there, all right.

"You are, fellow!" Ralph exclaimed, and I looked with misgivings at the stretch of creek below us, for there wasn't a place so deep the bottom wasn't visible.

"They are in there, all right," assured Ralph, probably noting my dubious expression.

There was a well-defined path leading from the railroad right-of-way to the creek's edge, obviously worn there by the farmer whose isolated place was almost directly opposite from where we had parked our car. A boat with a long pole lying across the seats was fastened to a big rock with a heavy chain, indicating the farmer, or at least a member of his household, was somewhere on our side of the creek.

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We drove up along the railroad tracks over a cinder roadbed that had once accommodated a third track and parked between the railroad and the creek bank after going about a quarter of a mile.

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One of Pine Creek's popular fishing places.

By William Boyd
us from above the slope leading to the Waterville highway.

"I'm going to try a stone cattie," said Ralph, and fished a lively one from our "breather" bucket. He waded straight out until the water was almost to his arm pits and then began moving slowly down stream, fishing toward shore as he went.

The lower end of the hole looked good to me so I waded out to a submerged flat rock where I could stand in water up to my waist. I put a "jack" on my hook, reasoning we would use different bait and perhaps learn which had the greater attraction for the bass that holiday morning.

After making my first cast I looked upstream toward Ralph and learned he already had a "run." He was pulling line from his automatic reel at a rapid rate so I concluded the bass which had his "cattie" in its mouth was moving rapidly through the water.

The bass was coming in my direction, and Ralph was stripping off so much line I began to think I might see the fish before it stopped its run. As this thought passed through my mind Ralph set the hook and began retrieving line. The bass broke water once a few seconds after Ralph hooked it and I could see it was a good-sized fish.

In a few minutes my companion whistled to attract my attention and held up the bass, a 13-inch specimen, broad and heavy and fighting mad.

"I told you they were in here, Boyd," said my friend, and I acknowledged that perhaps my first impression of his favorite fishing spot was erroneous.

All the while I had been retrieving my helgramite slowly for the double purpose of preventing it from fastening itself to a stone on the bottom and to attract bass which might be in the vicinity of the place where my cast had dropped the bait.

Then "bang!" I, too, had fastened into one! As is my practice when using helgramites as bait, I permitted my fish to swim only six or eight feet before jerking the tip of my rod sharply in the opposite direction to which the bass was going.

I had adopted this method of fishing "jacks" some years ago in the interest of fish conservation upon learning that I could hook the bass through the lip eight times out of ten and thus not hurt him seriously if he proved too small to interest me. I had had the experience of giving a fish too much line when I had a "jack" on my hook and when I got him in I had the bait so deep in his digestive tract it was a case of cutting the leader or killing the fish if he proved too small to keep.

However, this time I could tell by the tug on my line I had a legal-sized bass, and so he proved when I led him to the shore and beached him. He was a good 12 inches, so I put him on a stringer and returned him to his native habitat, albeit securely tied to a stone at the water's edge.

That's the way it went all morning. First Ralph would tie into a bass and then I'd have a run. However, Ralph continued to bait with stone catties while I used "jacks," and he seldom caught a bass less than nine inches long while I too frequently caught those which were less than legal size.

"I'll take stone catties any time," argued Ralph. "First, they'll get you larger fish and second there's more sport in fishing them, for you must let your bass complete his run before you set the hook.

"I've also learned something else," continued my fishing companion. "Often I have failed when I have attempted to set the hook and I have adopted the practice of retrieving the 'cattie' only a short distance and that slowly.

"More often than not, the hungry bass which has struck and from whose mouth I pulled the bait will pursue it if given the opportunity and will strike again. Thus one has a second chance to hook him. Try this the next time you are fishing 'catties' and see if it doesn't work out for you, too."

As we fished, a heavy storm blew up, dark clouds obscuring the sun. Neither Ralph nor I cared greatly if it did storm, for we already were as wet as it was possible to get as a result of our wading practice. But when that storm struck it was a corker. The rain came literally in sheets, the lightning was vivid, and the thunder reverberated from the mountainside in an ominous manner.

Within a half hour there was a marked and unusual change in the appearance of the creek. The water for perhaps 25 or 30 feet from the shore became yellow with mud, while in the center of the stream it continued as clear as crystal.

Both Ralph and I waded out beyond the muddied area and continued our fishing with satisfactory results. In

Little Pine Creek is a good-sized stream.
What Colors Can a Fish See?

EVER since Dame Berners wrote her treatise on fishing, a hot controversy has raged among fishermen as to whether fish can see color. Some expert fishermen say that they can take fish on red, blue, green or yellow flies at will. They back up this argument by saying: “What under the sun looks like a Royal Coachman that has taken more fish in America than any other fly?” An equally large group, and equally vehemently insists that trout can not only distinguish color but they can also distinguish shades of color. Why, I’ve merely changed the shade of color of a fly, and put the trout down, time and again.”

Because of this controversy, which has been pretty evenly divided, I felt that there must be justification in both points of view: that fish can see color clearly; and that fish cannot see color. Sounds like nonsense, but with this new Firelaquer, which is activated, I pretty well proved the point.

As every fishing editor knows, the Germans have conducted a lot of careful research on fish vision feeding trout on colored tiles and building up conditioned responses so that when the fish was moved out of his tank into another he would hurry to his particular color for his food. In this research, it was found that the fish were particularly alert in distinguishing the colors which ranged toward the brilliant hues. Toward the dark colors, the fish did not react as well.

This pretty well convinced me that the fish were being tested on color within the human range of vision and it was my contention that the fish could see farther into the ultra-violet colors which did not register in our eyes.

First, I studied the things trout fed on naturally and I found that practically all of this material—nymphs, worms, insects, fish eggs, and fish scales gave off a certain amount of ultraviolet coloration.

With this in mind, I studied some of the popular flies—such as the Royal Coachman—which, as has been said before, looks to the human eye like nothing under God’s heaven. Under an ultraviolet lamp, I found that the Peacock herl fluoresced slightly. The same with bucktail, junglecock, barred rock. And as any trout angler can tell you, put together these combinations—peacock herl, bucktail, junglecock and you have a good trout fly which will kill fish, day in and day out. That was an exciting find.

Then the war came along and in my war work, I went aboard the carrier, USS Enterprise. There I saw some exceedingly bright signal flags. As a matter of fact, they were the most brilliant flags I had ever seen. Following a hunch, I put them under an ultraviolet lamp and they glowed as though on fire, from within. Again, in the Aleutians, everyone was assigned a blue shoulder patch. This, too, glowed and in the fog identified our troops. Again, in Africa, on returning from a round-the-world mission, I saw panels of this material used to identify our troops on a very fluid front. The American pilots could spot the panels two miles away, and therefore knew where our lines were.

After the war, I located the material at Gantner & Mattern’s, San Francisco, the bathing suit manufacturers. John O. Gantner, Jr., the man who put the American male into a trunk with his Wikies, had already had some so-called Fireflies tied up. He gave me some of the Gantron Fire fibre. I could not wait for the fishing season to open. I got special permission from the game commission of California to conduct some experiments with hooks cut off just in front of the bend. Then, when the trout opened, I found that the trout hit this new material very viciously. In several instances I found that the trout would hit the flies so hard that the hook would have to be removed deep in their throats. This had never happened to me in more than 20 years of dry fly fishing. And so I knew that I was on to something very important. And big.

Mr. Gantner allowed me to send more than 200—about 210 samples, expert fishermen throughout the world. Some were in South America, Africa, England, Scotland, Sweden, France, Norway, Iceland, New Zealand, India, Canada, Mexico, and course throughout the United States.

Of these, 153 replied, giving me very precise answers. One hundred and fifty said that the material was a decided advance; that, under the proper conditions, it would take fish when the old materials would not take fish that the fly tied with Gantron Fire fibre was much easier to follow; that it would float better (beating water proof). Two said that they could see no difference whatsoever between Gantron Fire fibre and the new materials. One, a Scot, said that he felt the brilliant UV-activated material actually frightened the fish away.

But much more important, almost every fisherman said (there were five exceptions) that the Gantron Fire fibre worked best during heavy overcast, early morning, and evening fishing in short during the shadow hours of the day.

Now, this was significant, but couldn’t make heads or tails of it. Just why in the devil should this new material work and that old material not? Another authority on Polynesian civilization, and the author of books and articles on many subjects. An ardent angler, he has done much research on fish vision and is the originator of a new theory as to whether a fish can see color and if so, to what extent and when.

By Gene Burns

Mr. Burns has been a University professor. He was a war correspondent for the Associated Press during the last war, is considered an authority on Polynesian civilization and the author of books and articles on many subjects. An ardent angler, he has done much research on fish vision and is the originator of a new theory as to whether a fish can see color and if so, to what extent and when.
of his room, he put on a very heavy pair of dark glasses which covered about one third of his face. "Are you ashamed to be seen with me?" I asked. "No, Gene," he said, "I have a very rare eye affliction. My pupil will not contract. And when I step into the bright daylight, I catch holy hell. My eyes feel as though they will kill me."

Right there was my answer.

"Can you see color under these conditions?" I asked.

"Not unless I keep these heavy glasses on," said Harry, "and then only if I let my eyes get accustomed to the glare a little while. Why, you know what it is when you look directly into the sun."

As for the fish, I knew that they have a very large eye and their pupil is fixed—just like Harry Miller's except that the fish has a very much larger pupil and it will not contract at all.

For the next twelve months, I tried to test out this theory and I found some very interesting results.

I found that if I presented a fly to the fish in bright daylight, and if the fish were in daylight, he would take a yellow, black, red, green or blue fly without discrimination. Apparently, he saw only a silhouette. The size of the fly and the pattern it cast made the difference. Certainly not the color.

And there is where the angler who says that the fish cannot see color is right: in bright daylight, if the fish's eye is in sunlight, he cannot distinguish color.

But, I found too, that the fish can distinguish color if he is in the shade and looks out from the shade into the light. Much as we can see when we are sitting in a darkened room into a bright area. As long as our eye is shaded.

Asking plug fishermen to experiment along this line, I found that they confirmed my statements. The bass, for example, would be laying in the shadows and among the weeds. In the shade, when a lure was cast, he would hit it.

Study the stream behavior of fish, it is pretty well recognized that trout will remain behind rocks, in shadow, along ledges. For a long time, the popular belief was that the trout were biding out from natural enemies. Actually, most of the fishes' enemies work these very areas. While a forest ranger in the Olympics, a forest ranger in the Olympics, a forest ranger in the Olympics, a forest ranger in the Olympics, a forest ranger in the Olympics, a forest ranger in the Olympics, a forest ranger in the Olympics.

Anyone who has done much trout fishing, knows that as soon as the shadows fall the fish will move out into the shallow water, near banks, into the quiet water to feed. This, in contrast to daytime feeding, when the trout will seek the deep places or if he must feed—when hunger triumphs, he goes into the broken water ripples where comparatively little light enters the water.

Incidentally, in quiet water, about five to eight percent of the sun's rays—including the ultraviolet rays enters the water. Of these, the ultraviolet rays keep boring down, deep down. In extreme depths of three thousand feet, the water is absolutely black to human eyes, but yet, the ultraviolet ray is present, and, I believe, from my still incomplete experiments, that the fish see in part in this wave length.

Among some very unusual work done in the northwest, I observed Salmon. These fish tend to roll early in the morning and toward evening. During the bright intense hours of the day, they seem to head down. They will come up, briefly, during bright daylight to thrash among schools of candlefish, say. Then they wound as many as they can with their tails, and drop down and pick up these cripples. But the salmon, too, avoids the bright daylight. In this connection, salmon were taken with baits coated with Firelacquer, which is activated by ultraviolet to depths of 650 feet.

With the experimenting I have done, which is admitted conclusive because I have been working with these ultraviolet-activated materials for only three years, I have found indications of the following:

1. That fish see in a color range which is between that of a bee and a human, with overlapping both ways. 2. That most of the insects fish feed on, give off colors in these wave lengths. 3. That fish, in bright daylight, and with their eyes in bright light can see no color. 4. That fish can distinguish colors within the human range, in the bright colors, very distinctly during the "shadow" hours of the day.

This summer I am going to experiment with fish vision by moonlight. It remains that there is a little ultraviolet activation during these hours.

Most Fishhooks Are Imported

Fishhooks were made in several countries before the war, but the majority of the fly hooks sold in this country came from Norway and England. There is no standard terminology by means of which all hooks can be described to indicate length of shank, width of bend, length of hook, and type of point. Although the same numbering system may be used, nearly all foreign manufacturers have variations in their lengths shank shape and quality of hook. There have been many attempts to standardize the length of shank, width of bend, diameter of wire, and other features, but there have been few concrete results. During the last few years, however, there has been some success in getting established in this country a standard for fly hooks. This was proposed by the National Association of Angling and Casting Clubs. The association proposed that fly hooks be governed by length of shank, exclusive of the eye; that the gap between the point and shank be one-half the length of the straight shank; that the diameter of the eye be the same as the diameter of the wire, and that the standards be applicable to every bend and style of hook.

Interest and Enthusiasm Pays Off

The Olean (New York) Rod and Gun Club, organized in 1922, is an outfit that really gets things done. Here's what the club managed to do in one year:

Increased its membership from 14 to 345; obtained 116 acres of property; cut and saved over 3,000 feet of lumber for a club house; excavated a basement for the club house; erected and put to use a rifle range; dug a pond which is full of water and ready for fish; completed a parking area; sponsored and organized a junior club for boys 15-18.

Says Fred J. Carver, vice president: "Keep the interest and enthusiasm high and you will be successful."
No one will dispute the fact that the streams, lakes and rivers containing game fish are woefully overcrowded. This is essentially true near large centers of population. Gone are the days when with a companion you could cover two or three miles of your favorite stream with the assurance of finding it undisturbed. It is the exception day that you do not meet others even on remote mountain streams where a score of years ago an angler was a rarity. This conjection brings up a number of problems that require a solution if angling is to continue to be the "Gentle Art" of father Izaak Walton.

It is fortunate that most anglers are good sportsmen and gentlemen at heart. Perhaps I should also include ladies of which there are an increasing number. A few individuals have probably left their courtesy at home or believe that good manners are unimportant in the out of doors. On these few the ideals of sportsmanship and fairness are lost. They are not in tune with the true spirit of nature. Each year a few of these untought specimens cause an unexpected amount of criticism to be brought against sportsmen as a group.

A case where retribution came swiftly under observation the first day of trout season a few years ago.

The pasture stretch of Spring Creek is not my idea of a perfect location for a season opener. An elderly friend who had much to do with my early training as an angler and who is no longer capable of adventuring the wild mountain torrents suggested we open the season together for old memories sake. Every thing was perfect except for the fact that approximately two dozen heligrams were closed. Who has a solution to this problem?

A friend of mine who is an expert companion and close observer of nature declared that the fly hatches on one of his pet streams were becoming scarcer each year. He has an angling note book that goes back more than fifteen years in which he notes the abundance. My friend produced his notebook that goes back more than fifteen years in which he notes the abundance. He believes that most of the trouble is caused by fishermen gathering live bait from the stream bed and thereby not only reducing the capacity of the stream for carrying trout but wasting much of the bait taken. We visited the stream during the annual "Shad Fly" hatch and found it in fair abundance. From the reading I gathered that the hatch was one of the best I have ever seen. My friend produced his note book and read to me the entry dated eighteen years previous. From the reading I gathered that the hatch had been so abundant that an angler on one side of the stream could barely identify another fishing from the opposite bank less than twenty yards away.

To further prove his point my friend led me to a shallow rocky portion of the stream and pointed out the fact that practically every stone that was moveable for almost three hundred yards had been moved, turned and scorched in the effort of gathering bait. How many thousands of nymphs had been destroyed we could only guess. Along the bank we discovered a pint jar containing approximately two dozen bel-granites that had been discarded and left to die. My friend grew rather
loquitious in his denunciation of the person who had been so lazy as to not remove the jar cover and return them to the stream when he had finished his fishing.

A Doctor friend of mine never goes fishing without having as his guests a boy or two. We were loafing away the afternoon in the shade of the willows keeping an eye on Doc's latest pupil, a sandy haired freckled youngster who worked the pool industriously with a streamer. He made up in sheer lack of skill at intervals a trout of about a pound in weight would swirl vigorously at the streamer and increase the boy's enthusiasm to the near bursting point.

As we watched an adult angler approached and seeing the swirl proceeded to move in on the already occupied territory. The boy's face colored with the temper of his Irish American ancestors. The heavy streamer fell a few feet in front of the intruder as if in warning. The retrieve was a trifle hurried as the stranger shuffled a step or two ahead unmindful of the danger signals in the boy's face. Again the streamer rolled out across the stream and swept down coming in contact with the booted leg. Whether the force of the current of the rod set the hook I cannot be sure. The stranger gave a surprised grunt and reached down to extract the hook. The procedure required some time and effort before the hook came free, as he dropped the fly into the current and moved down stream to make the needed repairs on his leaky foot gear. I heard the boy say "Oops! Sorry." Doc's face was set in noncommittal lines but his body shook with suppressed merriment.

Chet had discovered the den of a large trout early in the season. A grass crowned log wedged between the bank and a shoulder of rock just below the roadway, with patches of floating foam marked the spot perfectly. Hope that he could be taken on a floater brought us to the pool in late afternoon at the beginning of the Shad Fly Hatch. A careful study indicated a careful approach through the still flat below to gain the only possible position for a dragless float over the lie. Chet was a half hour working into proper position and probably another quarter hour before the old fellow began to feed. Everything appeared perfect for the trial when one of those Drug Store Cowboy characters came down the far side of the stream and spotting the rise waded down with all the grace and silence of a bull elephant. Without a by-your-leave he put the trout down and waded right through the lie on his way to the next pool. The disturbance had hardly died down when another of the same tribe duplicated the maneuver. Finally a third repeated the same procedure. My friend kept his place until darkness closed the day, but our trout had lost all interest in surface feeding. I still find much to marvel at in my friend's forebearance. My patience would have been exhausted long before darkness came.

There are times along the stream when I feel like committing mayhem, then standing over my victim and quoting Doc's small friend. "Oops! Sorry!"

### Hard Work Saves Loyalsock From Pollution

Because of fast, hard work on the part of seven members of the Consolidated Sportsmen, the upper reaches of Loyalsock Creek were saved recently from a destructive pollution by culm from an abandoned coal mine.

And that same day trout from the State Fish Commission were stocked for the first time in years in the eight-mile area of the creek where only last year the state department of mines completed the sealing of two mine tunnels that had been discharging acid water into the stream.

The scene of the new pollution was barely a quarter mile downstream from the area in which the trout were stocked.

Carl A. Birdspacher, state fish warden, was enroute to the area to supervise the stocking of 2,000 brown trout when he noticed heavy discoloration of water being discharged by Scar Run into the Loyalsock.

He made an immediate investigation and discovered that mine waste was being washed down the run.

News of the discovery was sent to William R. Waldeisen, and he is being assisted by a large corps of workers organized in teams. An effort is being made to finish the campaign within the next month or two.

First 1950 membership, incidentally, was sold to Clarence B. Mumma, a resident of the state of Utah. He read the story which appeared recently in the magazine Recreation on the Memorial Grounds.

The drive is under the supervision of William R. Waldeisen, and it is being assisted by a large corps of workers organized in teams. An effort is being made to finish the campaign within the next month or two.

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Hunting rattlesnakes has reached the proportions of an outdoor sport in Pennsylvania. Residents of some northern tier counties, encouraged by bounties of $1 for each rattlesnake killed, have combined pleasure with business, but many sportsmen have taken up this unusual pursuit simply as an outdoor sport. In the photo above, M. Graham Netting, editor of this picture story series, shows a freshly-killed rattler to a group of snake hunters in McKean County.

City sportsmen are finding rattlesnake hunting an exciting and interesting sport. Elmer Cheuvront, left, and Steve Harwig, two Pittsburgh district outdoorsmen are enthusiastic hunters and spend many summer weeks in pursuit of this sport. In the photo above, the men team up on a rattlesnake. Cheuvront pining it to the ground with a stick made especially for the purpose while Harwig reaches for the reptile with long-handled tongs.

Long-handled tongs are considered by many rattlesnake hunters as the best instrument for taking the snakes alive. Pressure on the tongs can be made so great that it is practically impossible for the reptile to escape, and the handles are made long enough to keep the hunter at a safe distance from his prey. A novice on his first snake hunt would do well to go with veteran hunters until the safest and most practical methods are learned well. In rattlesnake hunting, the wrong move may be fatal.

Snake hunters find "den areas" the best hunting grounds for rattlers. Rattlesnakes hibernate in rocky outcrops in mountainous country, and emerge from hibernation in May and return in September. During these periods, concentrations are common and great numbers are sometimes taken by hunters. Art Hadley, of Mt. Jewett, shown above, pulls a big yellow rattler from under a rock in a den area on Wolfe Mountain. A hooked stick is Hadley's simple method of capturing the reptiles.

Carnegie Museum's herpetologist, M. Graham Netting, left, uses a professional snake-hunter's stick for his work with rattlers. The stick is equipped with a leather noose on the end, a noose which may be tightened from the opposite end of the stick. Bill Carpenter, of Mt. Jewett, who has probably captured more rattlers than anyone in the State, holds the Big for Netting. Many snakes are captured alive for scientific purposes and for exhibit in museums and zoos.

This is a trick for the veteran of many snake hunters, and is not advised for anyone except an expert. Elmer Cheuvront has captured hundreds of rattlesnakes alive and has long since learned to respect these dangerous reptiles. Much of the danger in snake hunting may be eliminated by proper clothing, proper equipment, and the utmost respect for the venomous prey. Unnecessary chances are frowned upon by old-timers in this sport and they see nothing brave in the careless hunter.
workers, from Game Commissioner to common laborer, from Fish Commissioner to sportsman engaged in a stream improvement project, and from Department of Forests and Waters to Highway Police, hundreds of men and women have worked over the years, worked perhaps unknowingly, to plan the perfect vacation for two old fellows who deserved it. And whom, whoever they are and wherever they may be, appreciate every bit of it. I like to think of it that way.

So you see, in spite of the bickering and the squabbling that sometimes seems to rule our affairs, we are on the right and the good trail and we are moving on the main goal. I like to think that every man working for Pennsylvania was directly helping our two old friends, to tote safely along the vacation path they had chosen. That hundreds of men had and were helping to smooth the path for their feeble old car. And other hundreds had planted the fish they were able to catch. And the many more who were engaged in caring for the wild birds and animals they saw were also helping. We saw a bear in Potter County.

But Effective

Simple But Effective

If you ever want to determine the weight of a fish and no scales are handy try this method. Measure the length by the square of the girth and divide the results by 800.

For example if your fish is 18 inches long and 10 inches in girth—18x10x10 equals 1800 divided by 800 gives your 2.25 pounds. Although this won’t be exact you will be surprised how accurate it is.

Warden's Nab Netter in Snyder County

What, had all the earmarks of a commercial enterprise was terminated on Friday April 14 when Otto Glace of Selinsgrove R. D. No. 2, Pa. was apprehended by Field Officers of both the Fish and Game Commissions. As evidenced by the photograph. Glace was well prepared to carry on the commercial industry of netting fish in Penns Creek.

In the photograph displaying the equipment recovered by the officers are left to right Clyde Lauback and Raymond Holzapple both State Game Protectors. These men assisted State Fish Warden Carl A. Biedespacher of Williamsport who made the photograph.

In the basement of the defendant's home the officers found a large concrete tank with running water where he kept the fish until disposed of. The defendant was fined $100 and sent to jail for 90 days.
Lake Trout

Edited by
LOU S. CAINE

One of the largest and most powerful of our fresh water fishes, the lake trout, deserves a much brighter place in the angling sun. Its true fighting character is shadowed by the methods necessary in fishing for it.

Since most lake trout are caught in summer, in extreme depths, it is necessary for the fisherman to use tremendously heavy weights to sink their bait. Some of these weigh several pounds.

Despite the huge size and stellar fighting qualities of this fish the cumbersome sinker virtually reduces the affair to a "haul and wind" process.

However, during early spring just after the ice goes out, and in the fall, anglers with light tackle have the time of their lives taking these splendid fish in the shallows. If the lake trout could be taken like this the year around, it would undoubtedly be one of our top ranking game fish.

Other names by which the lake trout may be known are: Forktail Trout, Gray Trout, Great Lakes Trout, Laker, Landlocked Salmon, Longue, Machinaw Trout, Namaycush Trout, Salmon Trout, Tongue.

The lake trout is a charr and therefore closely related to the Dolly Varden trout and brook trout because of the formation of the teeth in the roof of its mouth.

Although color varies widely because of different water conditions, generally it ranges from very dark gray to a light pale gray. The body is profusely covered with pale spots which often are tinged with pink. Tail is forked and flesh varies from white to rosy pink.

From New England states westward through Great Lakes to British Columbia, and north of this area to Labrador, Hudson Bay and Alaska this fish may be found.

In early spring, lake trout can be found on reefs or shoals from 10 to 20 feet down. However, lake trout cannot thrive in waters warmer than 65°F and prefers temperatures of 40°F to 50°F. In summer, these fish are found in water of 40 to 100 feet in depth.

The world's rod and reel record is a 65-pounder taken by Miss L. L. Hayes in Lake Athapaspukow, Manitoba, Canada, August 22, 1930. Shallow water lake trout average around 5 pounds; those from deep water average from 8 to 15 pounds.

Smaller lake trout are very tasty but the larger ones are quite fat and have an oily flavor some find objectionable.

The food of the lake trout consists of flies, insects, small whitefish, herring, smelt and other small fish.

When in the shallows, lake trout will take fly lures like the Wilder Dilg, Popper Spook and Bass Bug Spook; also pork rind lures like the Ace and the smaller River Runts.

In deeper water, plugs like the Vamp Spook, Go Deeper River Runt, Punkinseed and Dowagie Spook are excellent; also larger spoons like the King and Queen. To reach extreme depths it is necessary to add a keel sinker about 18" ahead of the plug.

The majority of lake trout are taken trolling. However, in shallow water they can be taken by bait casting, fly casting and spinning.

For trolling, heavy tackle is required. Tubular steel rods like the "Pal" in sturdy action, or the "Riptide" split bamboo rod, are ideal for lighter trolling. Where extra heavy sinkers are necessary, a rod like the "Pal," which has a 6 oz. tip, provides the necessary backbone.

Huntingdon County Boy Lands Notable Prize Brook Trout

James Snyder, Jr., 11 years old of Orbisonia while fishing in Black Log Creek in Huntingdon County on April 15 snagged into a 3 lb. 11 oz. long brook trout. The monarch measured 10" in girth and is of exceptional interest in that this stream has not been stocked with brook trout for many years. According to the fish grapevine in the area this is the largest brook trout ever taken and while the Pennsylvania Fish Commission considers it among the largest if not the largest brook trout ever caught in the public fishing waters of Pennsylvania. The fish was taken on a worm.

A good trolling reel is a size 3/0 salt water model equipped with a star drag. Many trollers use a short, stiff rod with an oversize single-action reel built in for handiness.

For bait casting, an outstanding outfit is a medium or stiff action in the "Pal" tubular steel, and a reel like the "Pal" which will hold 100 yards of 15 pound test line, with arrow removed.

For fly fishing, heavier rods like the "Power Plus" built on a No. 2/4 ferrule, made of split, tempered bamboo, are best. This rod is 9 feet in length and has the necessary backbone to handle the surges of this strong fish. It is advisable to use ample backing of casting line, in addition to the regular length of fly line, to handle long runs. Leaders should be chosen according to the average size of fish being taken. An excellent reel for this outfit is the Imperial single action model.

For spinning, a medium action, 7-foot tubular steel rod like the "Pal" will prove best. Small lures like the Ace spoon, Midget River Runt and Midgit Digit are excellent either cast or trolled slowly in the shallow waters.

Some lake trout are taken still-fishing with live bait. Any standard still-fishing outfit is satisfactory for this purpose.

Although many fishermen cast a skeptical eye on lake trout fishing because of the heavy tackle necessary for taking them, this kind of fishing has a steady following. It is very regrettable that this fine game fish lives in depths that usually require bulky tackle to match the style of fishing instead of the average size of the fish.

Home-grown Worms

To fishermen who wish to raise their own fishing worms, the following method is recommended:

Construct a frame 4 by 6 feet and 12 inches in depth. To this nail a tight board bottom. Place in the box about five inches of good soil and on top of this put a layer of coffee grounds and corn meal. Now put in the box 500 or 600 fishing worms, after which fill the box to within about two inches of the top with another loose layer of soil.

On the top layer of earth place a mixture of coffee grounds, corn meal and vegetable shortening. Coffee grounds may be added as they become available and once a month corn meal and vegetable shortening should be sprinkled on the top of the earth.

Worms thus cared for will remain in good condition and will reproduce, thus providing a constant supply.

Smaller equipment may be desired, and many worm gardeners use old wash tubs or other containers. These should first be cleaned and painted with a good hard paint and permitted to dry before the earth, food and worms are placed in them.

PENNSYLVANIA ANGEL
**Eddie Rickenbacker Writes**

A Code for Good Sportsmen

Captain Eddie Rickenbacker, president and general manager of Eastern Air Lines, always has been known as a man of action. Long an observer of the plight of American wildlife, the famous flier recently suggested a creed for all sportsmen. He calls it a "Challenge to Sportsmen." It follows.

1. Game law violators are thieves. Treat them accordingly.
2. Teach beginners their obligations as well as pleasures thereof.
3. Devote as much effort to improving habitat as you do to harvesting the fish and game.
4. Actively work to improve farmer-sportsmen cooperation.
5. Become an active and constructive member of a sportsmen's club.
6. Demand sound conservation legislation.
7. Let maximum sport, rather than kill, be your guide.

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**THE WATER MITES**

By Carsten Ahrens

The water mites belong to that large and interesting group of eight-legged animals that include the ticks, spiders, scorpions, and the king-crabs. Most of them, except for the water mites, the king-crabs, and a few others, are terrestrial. At first glance, the water mites seem to be little water spiders for their mouthparts seem spider-like and there are eight legs. However, a second glance will show that there is no segmentation; the body is not divided into two parts.

Water mites have been found in salt water and in swift mountain streams, but the greatest number of species are reported from permanent fresh water lakes where there is an abundance of plant and animal life. Most of them are small, from 1-2 mm in length, but some are even more minute, and one species grows to a ponderous 5 mm.

There are some three dozen families of mites, and their coloration is monotonously drab. The Hydracarina group is a welcome exception. Here are found brilliant reds, greens, yellows, and blue, often with a high metallic luster. Again, the most miles are oval, occasionally fantastically-shaped Hydracarina are found.

All the water mites lay eggs, and each species seems to have a particular plant or animal in or on which it deposits the ova. The eggs are often as bright as the parents. They are covered with a glistening film that is transparent but tough. The incubation times vary greatly. The larva has but 6 legs when it hatches, and since it immediately becomes a parasite, it frequently loses some of them. When it becomes an adult, it has its full complement of eight legs. The legs help to identify species for the crawlers lack these swimming aids and tend to be sluggish.

The water mites are parasites during part or all of their existence, and there are few aquatic animals that escape their sucking palp. They work their way into colonial protozoa and into the fresh-water sponges at the lower end of the animal kingdom and are found in freshwater clams higher up the ladder. I have found them most commonly on the larvae of water insects. The water-boatsmen, water-bugs and beetles, water-scorpions and stiders, dragon-and damselflies, and gnats act as hosts. Frequently they parasitize the adults. I have counted as many as fifty mites on the thorax and abdomen of a single damselfly.

The water mites are probably of slight economic importance. Their contribution to the food of fishes is not considerable even though in stomach studies of fish their presence is often noted. But their activities add splashes of raw color to one’s study of the underwater world.

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by Carsten Ahrens

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"No-Fishing" Signs Are Coming Down

By Don Shiner

It appears as though free hunting and fishing is near an end! Conditions are pointing to that and it is with regret that thousands of sportsmen throughout Pennsylvania are being deprived of their pastime. Farmers are key figures in this new era as can be seen when driving throughout the country, the many NO TRESPASSING signs being erected. Actually the trouble lies in the fact that thousands of sportmen literally swarm to certain localities and cause no end of worries for the landowners. This is particularly true when it is realized that hatchery trucks have just visited the streams.

Since World War II the army of fishermen and hunters has increased by leaps and bounds, until today, only four years later, over 15,000,000 are shouldering a rod and gun and spend thousands upon thousands of man hours afield. So gigantic are these crowds of fishermen that farmers are growing weary of afield. So gigantic are these crowds of fishermen that farmers are growing weary of access to the farmer's fields and streams. They at hand when sportsmen will have free.

No one has yet been able to perform the feat of keeping the mouth and the mind open. It appears as though free hunting and fishing is near an end! Conditions are pointing to that and it is with regret that thousands of sportsmen throughout Pennsylvania are being deprived of their pastime. Farmers are key figures in this new era as can be seen when driving throughout the country, the many NO TRESPASSING signs being erected. Actually the trouble lies in the fact that thousands of sportmen literally swarm to certain localities and cause no end of worries for the landowners. This is particularly true when it is realized that hatchery trucks have just visited the streams.

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### PENNSYLVANIA FISH LAW VIOLATIONS

#### Cases Settled During the Month of April 1950

<table>
<thead>
<tr>
<th>County</th>
<th>Name</th>
<th>Address</th>
<th>Violation Details</th>
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<tr>
<td>Allegheny County</td>
<td>Allen, Samuel</td>
<td>1412 Juniata St., Pittsbr.</td>
<td>Exceeding creel limit</td>
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<td></td>
<td>Benaglio, Louis R. D. No.</td>
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<td></td>
<td>Chapman, Curtis</td>
<td>913 First Ave., Brackenridge</td>
<td>Fishing before 5 A.M. on April 15th before season opened</td>
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<td>Blair County</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Christofle, Eugene B.</td>
<td>Box 25C, Altoona, Pa.</td>
<td>Violation of the rules and regulations</td>
<td>20.00</td>
</tr>
<tr>
<td></td>
<td>Finnegan, Irvin</td>
<td>Box 215C, Altoona, Pa.</td>
<td>Violation of the rules and regulations</td>
<td>20.00</td>
</tr>
<tr>
<td></td>
<td>Schum, W. H.</td>
<td>120 E. 5th St., Altoona, Pa.</td>
<td>Violation of the rules and regulations</td>
<td>20.00</td>
</tr>
<tr>
<td></td>
<td>Bradford County</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conrad, Robert</td>
<td>Columbia Cross Rd., Pa.</td>
<td>Violation of the rules and regulations</td>
<td>20.00</td>
</tr>
<tr>
<td></td>
<td>Larrabee, Benjamin H.</td>
<td>R. F. D. No. 1, Towanda, Pa.</td>
<td>Violation of the rules and regulations</td>
<td>20.00</td>
</tr>
<tr>
<td></td>
<td>Rhodes, Wesley C.</td>
<td>New Albany, Pa.</td>
<td>Violation of the rules and regulations</td>
<td>20.00</td>
</tr>
<tr>
<td></td>
<td>Backs County</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Million, Louis M.</td>
<td>216 Aberdeen Ave., Morrisville</td>
<td>Fishing on Sunday without permission of land owner</td>
<td>25.00</td>
</tr>
<tr>
<td></td>
<td>Cambria County</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bearer, J. Earl</td>
<td>215 Brewer Ave., Paton, Pa.</td>
<td>Three undersized trout</td>
<td>20.00</td>
</tr>
<tr>
<td></td>
<td>Sperry, Benjamin F.</td>
<td>634 Moger Ave., Paton, Pa.</td>
<td>Two undersized trout</td>
<td>20.00</td>
</tr>
<tr>
<td></td>
<td>Carbon County</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thompson, Mark</td>
<td>Palmerton, Pa.</td>
<td>Fishing on Sunday without permission of land owner</td>
<td>25.00</td>
</tr>
<tr>
<td></td>
<td>Thompson, Mark</td>
<td>Palmerton, Pa.</td>
<td>Interference with officers</td>
<td>100.00</td>
</tr>
<tr>
<td></td>
<td>Centre County</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gates, Richard P.</td>
<td>R. D. No. 2, Howard, Pa.</td>
<td>Fishing without a license</td>
<td>25.00</td>
</tr>
<tr>
<td></td>
<td>Kurzinger, Anourose V.</td>
<td>Pleasant Gap, Pa.</td>
<td>Two undersized trout</td>
<td>20.00</td>
</tr>
<tr>
<td></td>
<td>Swarts, Clyde G.</td>
<td>420 Logan St., Bellefonte, Pa.</td>
<td>Violation of the rules and regulations</td>
<td>20.00</td>
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<tr>
<td></td>
<td>Swarts, Clyde G.</td>
<td>420 Logan St., Bellefonte, Pa.</td>
<td>Rods not under immediate control</td>
<td>20.00</td>
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<tr>
<td></td>
<td>Clearfield County</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hurd, Stanley</td>
<td>DuBois, Pa.</td>
<td>One undersized trout</td>
<td>10.00</td>
</tr>
<tr>
<td></td>
<td>Phillips, David</td>
<td>Brishin, Pa.</td>
<td>One undersized trout in closed season</td>
<td>10.00</td>
</tr>
<tr>
<td></td>
<td>Clinton County</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Allison, Robert S.</td>
<td>371 W. Park St., Lock Haven, Pa.</td>
<td>Violation of the rules and regulations</td>
<td>20.00</td>
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<tr>
<td></td>
<td>Arnold, Ward</td>
<td>Hammersley Fork, Pa.</td>
<td>Exceeding creel limit</td>
<td>50.00</td>
</tr>
<tr>
<td></td>
<td>Bucks County</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Huff, John</td>
<td>West Leesport, Pa.</td>
<td>Violation of the rules and regulations</td>
<td>20.00</td>
</tr>
<tr>
<td></td>
<td>Bouchelle, A.</td>
<td>204 Tattnall St., Norwood, Pa.</td>
<td>Exceeding creel limit</td>
<td>20.00</td>
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<td></td>
<td>Goodwin, Charles</td>
<td>W. R. D. 2, West Ridge Rd., Erie, Pa.</td>
<td>Failure to display button</td>
<td>25.00</td>
</tr>
<tr>
<td></td>
<td>Heuser, Ralph F.</td>
<td>R. D. No. 2, Chambersburg, Pa.</td>
<td>Violation of the rules and regulations</td>
<td>20.00</td>
</tr>
<tr>
<td></td>
<td>Reid, Charles W.</td>
<td>19 S. Grant St., Waynesboro, Pa.</td>
<td>Exceeding creel limit</td>
<td>20.00</td>
</tr>
<tr>
<td></td>
<td>Lackawanna County</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yanovitch, John</td>
<td>Rear 1025 Capouse Ave., Scranton, Pa.</td>
<td>Violation of the rules and regulations</td>
<td>20.00</td>
</tr>
<tr>
<td></td>
<td>Burkett, Clive</td>
<td>Armaugh, Pa.</td>
<td>Fishing without a license</td>
<td>25.00</td>
</tr>
<tr>
<td></td>
<td>Buschan, Charles</td>
<td>417 W. Market St., Marietta, Pa.</td>
<td>Violation of the rules and regulations</td>
<td>20.00</td>
</tr>
<tr>
<td></td>
<td>Huber, Norman</td>
<td>R. D. No. 6, Lancaster, Pa.</td>
<td>Offering and exposing for sale stripped bass less than 18 inches</td>
<td>70.00</td>
</tr>
<tr>
<td></td>
<td>Miller, Ray</td>
<td>1600 W. Market St., Marietta, Pa.</td>
<td>Operating motorboat without displaying license</td>
<td>10.00</td>
</tr>
</tbody>
</table>

**Total Fines:**

- Allegheny County: $510.00
- Beaver County: $200.00
- Bradford County: $510.00
- Butler County: $210.00
- Cambria County: $250.00
- Centre County: $250.00
- Clearfield County: $300.00
- Clinton County: $100.00
- Lackawanna County: $250.00
- Lawrence County: $100.00
- Lehigh County: $200.00
- Luzerne County: $200.00

**Total:** $2,020.00

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**Notes:**

- The fines listed are for violations of the Pennsylvania Fish Law.
- Violations include exceeding creel limits, fishing without a license, and violating rules and regulations.
- The fines range from $10.00 to $25.00 per violation.

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**Discussion:**

Violations were widespread throughout Pennsylvania, with violations ranging from Allegheny County to Lehigh County. The majority of violations involved fishing without a license, exceeding creel limits, and violating rules and regulations. The highest fine was $70.00 for violating the rules and regulations and offering and exposing for sale stripped bass less than 18 inches.
Gutch, George, 15 Mile St., Swowyerville, Pa. Fishing with a borrowed license ........................................... 25.00
Scarranucci, Mallo I., 34 James St., Plains, Pa. Violation of the rules and regulations ........................................... 20.00

Lehigh County
Brow, Curtis, 320 W. Hope Ave., York, Pa. Violation of the rules and regulations ........................................... 20.00
Goff, Raymond E., 2177 Banister St., York, Pa. Violation of the rules and regulations ........................................... 20.00

Northumberland County
Brown, Curtis, 320 W. Hope Ave., York, Pa. Violation of the rules and regulations ........................................... 20.00
Reynolds, William, R. D. No. 3, Delta, Pa. Four game fish in possession in closed season ........................................... 40.00
Sharp, Charles, 330 S. Hope Ave., York, Pa. Violation of the rules and regulations ........................................... 20.00
Stearn, Norman, R. D. No. 3, Delta, Pa. Interference with officer ........................................... 100.00
Sharp, Charles, 330 S. Hope Ave., York, Pa. Violation of the rules and regulations ........................................... 20.00

Fishing with a borrowed license ........................................... 25.00
Reynolds, William, R. D. No. 3, Delta, Pa. Four game fish in possession in closed season ........................................... 40.00
Sharp, Charles, 330 S. Hope Ave., York, Pa. Violation of the rules and regulations ........................................... 20.00
Stearn, Norman, R. D. No. 3, Delta, Pa. Interference with officer ........................................... 100.00

Skish as a Park Activity

(From Page 9)

yellow and green, each being painted a distinct color. All should float about one inch above the surface of the water.

BOATS

All parks planning casting pools with a soil bottom should provide a boat for use when placing targets in the water and for retrieving them. Boats for this purpose should be safe for two full grown men. Normally most clubs use boats of sufficient size for three men who act as judges for the games when the judging cannot be done from the platform or shore. In the event the boat must be removed from the water at the end of the day, make sure it is no heavier than need be.

Fishingmen using wading pools for this sport are equipped with a pair of waders for use when it is necessary to be in the water. Boats should be used when the water has a depth of two feet or more.

HOW TO FORM A CLUB

Park executives who are interested in sponsoring this activity should contact the leaders of the sportsmen’s clubs in their area. These clubs will, without a doubt, appreciate the opportunity to co-sponsor better casting for the benefit of their members. With this a possibility, anyone, with a little cooperation and with notices in the local papers, a great many fishermen will be interested. It is surprising how many fishermen will take advantage of these facilities if informed that they are for their use and there are no strings attached. Too often these facilities are furnished because park officials have been requested to do so by fishermen. But, to get the most from these facilities furnished, the parks should promote interest in the sport among all fishermen.

The parks are well organized, while fishermen as a whole are not. They require leadership to bring this fascinating hobby to the parks. You can give them that leadership by bringing the sport to them. It is, without question, one of the cleanest sports we have today.

With proper planning and a bit of promotional work through your local papers, you can be assured full support from the fishermen in your own area. Why not give them a chance to play at their hobby, even though no fish will be caught? I assure you, fishermen will have only praise for the chance.

—Parks & Recreation Magazine.
and ranching, and our fish and game than nearly all others put together.

In this booklet the problem of silting is discussed, and several accompanying photographs made me think of our local duck pond which is losing ground to the ever increasing silt, which is carried into it. The pond itself is no fishing paradise; it does not contain either huge trout or smallmouth bass, but it does contain an abundance of catfish, which probably managed could provide much recreation and training for the youth of our town. Instead we neglect to take advantage of this opportunity and turn our storm sewers in this direction so that tons of good soil, lost from our lawns and gardens, are being deposited to push the catfish into a smaller and smaller area with their end clearly in sight. We here are not peculiarly negligent in this respect because it is happening many times in many localities, but this is hardly conservation in any sense of the word. There also comes to mind a pond several miles distant, which is called Ten Acre Pond or perhaps which was called Ten Acre Pond because during the war it was necessary to repair a railroad embankment that consequently shut off the supply of water to this area. Today it stands dried and caked with no water and its catfish population gone. When we fight long and hard to gain some water for fishing and recreation in one place, it is rather foolish to be willing to lose something that we already have in another instance. If new ideas in conservation indicate progress, then certainly we are going forward. However, if progress is measured in the gaining of new objectives without sacrificing the old ones, then we are too often dismal failures.

In the following order, the important and fascinating topics of small and large dams, controlling run-off water, farming methods, and keeping streams clear and clean are simply and adequately discussed with many illustrations to develop interest. Truly this little booklet for grades 4, 5, and 6 is an education in itself.

The third booklet is entitled "Plants and Animals Live Together." It serves really as a fundamental introduction to the field of biocology, but the illustrations and topics bring to mind problems of conservation that we, as hunters and fishermen, often overlook. We read about the Dingle Bill and its importance as a measure to secure much needed money for research in our fisheries. We discuss the stocking of fingerling trout in the State of New York and the results that have been obtained, and then we try to evaluate this in light of the results in Michigan. We worry about bait-fish and fish-bait and many other more or less complicated topics worthy of our intellect. But, this little booklet talks about the bees and the flowers; the birds and the insects; the field mouse and the hawk; the squirrels and the acorn; and many other ecological relationships, which exist in the field of conservation. I must confess that I am much concerned with fish conservation but honestly think little about spraying with DDT with its possible future effects on our insect population. I am certain that to kill house flies, the mosquito, the Japanese Beetle, and similar pests is necessary and in the end serves the best interests of conservation, but at the same time we can hardly avoid the killing of certain desirable species of insects as well as other wildlife. It is a known fact that spraying for the gypsy moth leaves a temporary contamination of our streams and lakes, which might actually kill a limited quantity of fish. Tests indicate that the spraying for gypsy moth in the Pocono Mountain area resulted in an 80% loss in aquatic life and a 2% loss in fish. We know also that to spray potatoes with arsenate of lead and other similar toxic substances can and will kill fish in a farm pond if too much of it finds its way there as the result of a hard rain. We know too that there is the ever present danger of killing the bees with DDT, which otherwise would pollinate many flowers in their busy rounds of collecting materials for the production of honey. There is no denying that all of these conditions and many more should occupy a position in our conservation thinking, and yet too often they do not. The thing that I like most about this third booklet is that it vividly brings to mind many of the rather simple and elementary problems of conservation.

Booklet number four is entitled "Nature's Bank—The Soil" and is packed with facts and figures. If you like your conservation expressed in tons and millions, feet and dollars, then this is the book for you. A program of conservation built around the soil could not be wrong, and if we had to concentrate on but one program, this would probably bring the greatest reward. Our soil, with all its implications, is our greatest natural resource. Not only do we live on it, but we feed ourselves with what it produces. The potatoes and corn, the wheat and rice, the sugar cane and pineapple are only several examples of what various civilizations use as staples. Not only do we feed ourselves but also clothe ourselves as well from the soil. Whether it is cotton that we use to make our
dresses or wool to weave our suits, they are in reality products of the soil.

Even the nylon must come from plant products produced thousands of years ago but nevertheless from the soil. Our coal, our oil, and our uranium all come from the soil. Is it any wonder that it can be called our greatest natural resource and warrants our greatest consideration. As a matter of fact, we might make the problem a little easier by concluding that only the skin of the soil is of much immediate value to us.

This top soil is only inches deep in comparison but yet it is most important to us now. In parts of our country water and wind erosion have already eliminated most or perhaps even all of it. Where it was thin to start with, it is gone entirely; and where it was several feet thick, it has been reduced to a mere inch or two. Water has been the biggest culprit in removing this top soil but only because we established the conditions for it to happen. Our floods are man made, too, not deliberately I am sure, but the result of our carelessness and thoughtlessness.

To provide protection for our top-soil, would have the almost automatic benefit of reducing our flood damage. To reduce the flooding damage, we must save our streams from silting and the covering of the natural spawning beds of our fish, and all of this of course would result in better fishing. If the millions of dollars that are spent on dams to control floods were spent instead in adequate protection of our top soil, we would reap a double rate of interest. The evidence indicates that there were always floods, and not all our troubles are man made. De Soto described the Mississippi in flood the first time he saw it, and at that time certainly no one had plowed the land. Yet we have increased our danger and our damages by further contributing to the causes of floods.

Fortunately some steps have been taken in the conservation of certain important minerals found in the soil. In this case their importance has been recognized not primarily because of conservation as such, but rather because as minerals they are important to our age, including our wars. Deposits of potassium in New Mexico and Texas have been set aside to be mined under a conservation plan. Phosphorus has moved into the same category, and some half dozen states are involved with their deposits of this important element. Nitrogen is made synthetically, and its development was a necessity of war rather than conservation. These are the big three of our fertilizer program, and the farmers are applying them at tremendous rates. The prewar figure on the cost of fertilizer used by the farmers of this country was two hundred million dollars, and no doubt this has increased considerably since then. This, it seems to me, can be included in the cost of our present efforts at conservation, and although the farmers of this country may not think they are contributing to conservation, they, as a group, might be contributing the most. Essentially as a result of economic reasons and not because of any forethought of conservation, several other resources are being preserved. The low price of oil per barrel reduces the output of certain wells; the coal strikes save some coal. Although we cannot argue that these things are good from an economic point of view, the fact remains that through them certain natural resources are being conserved—if only for a short time.

As conscious planners of conservation, this would be a negative approach while the correct approach is a positive one. What are we, as sportsmen, doing today in this positive action of conservation? We must roll up our shirt sleeves and get to work with our hands as well as with our words.

Streamside Life

The Cinnamon Fern

By Robert Leo Smith

In wet woodlands, on fat tussocks out in the swamp and on the banks of rocky mountain streams, pale, odd-looking fronds of the cinnamon fern thrust upward into the thin warmth of April. Unmindful of the chilly nights and the cold water about them, happy in the sunlight that shimmers through the leafless trees, the fronds slowly unfold, shedding the yellowish down that covers them.

The graceful fronds of the cinnamon fern rise in clumps from a creeping underground stem. In late spring the fertile fronds, stiff, straight spires with bright cinnamon-brown tops, appear in the center of the clusters. When ripe the fertile fronds shed their spores in a roundabout way a new generation of fern plants.

After they are liberated the spores germinate into small, short filaments, resembling green algae. The filaments develop into small, flat, green structures called the thallus. These are rarely seen even though they are quite common. The thallus bear the sex organs which produce the embryo fern plants. In 3 to 4 years the embryo fern finally reaches maturity.

The cinnamon fern belongs to the genus Osmunda and is a relative of the interrupted and royal ferns. The genus was named after the Saxon god, Osmander, the Waterman, who according to legend hid his family in a clump of these ferns.

From eastern Canada south through eastern United States the cinnamon fern is an old acquaintance of all who frequent the streams. The wooly fiddleheads of April appear about the time the angler seeks the trout. In May, June and throughout the summer the graceful, wand-like fronds often the stern lines of the streambank rocks and creates a backdrop for mossy logs and weathered stumps. And although it probably doesn't benefit the fish at all, the cinnamon fern does add a lot of charm to the angler's favorite stream.

Fishing Folks

It seems that folks who go to fish in ocean, lake or stream, are not, for their veracity, held in very high esteem. Though they may sometimes stretch the truth in telling of their skill, the little yarns they sometimes spin are meant to do no ill.

I know that folks who go to fish have virtues oft untold; and if you'd take the time to look, these virtues you'll behold.

For instance, not so long ago, while fishing down on Manor Lake, I lost the string of fish I'd caught; their weight had caused the string to break.

Then Henry, Sam and Horace said, (These fellows had been fishing too) "You shan't go home without some fish; we all shall share our catch with you." Unselfishness is one good trait that those who go to fish possess.

I know you'd find that very true, as did I in my distress.

So when you think of fishermen I hope you'll give them their just due, and think of them as something more than sellers of tall tales untrue.

—By Charles Schwartz.
Pine Creek Bass are Numerous
(From Page 11)

fact, strikes were more numerous now than before the storm. Just before the storm struck, the farmer from the opposite side of the creek had returned to his boat and engaged him in conversation. We wanted to know if many fishermen visited the hole opposite his place and he replied in the negative.

"Too durn hard to git to," he declared. "Most of the fellers who come up thisaway to fish go to onder hole."

"That's a durn good place to fish, too," offered the farmer. "That there hole down there is a goshawful deep one, so if you fellers can't swim good you'd better stay in this here shaller hole. A kid durn near drowned down there last summer, and if his dad hadn't got hold of him and pulled him out he'd been a-goner.

"He lost his footin' in that there swift water above the head of the hole and quicker 'an a wink was flounderin' around in water far over his head. But his pop got him out afore he swallowed too much creek water."

The hospitable farmer, evidently desiring our company so the holiday wouldn't be lonesome as most of the other days were, invited us to have dinner with him.

"The ole woman'll have ham and eggs and some fried pertaters, so if you like them there kind of victuals I'll yell when dinner's ready and you can wa de over."

We thanked him sincerely, for we were really touched by the earnestness and sincerity of his invitation, but explained we had brought a lunch along with us.

Both Ralph and I had creels of exceedingly nice bass when we started for home early in the afternoon, and I had to admit he knew whereof he spoke when he insisted he knew a hole in Pine Creek that would really yield bass.

New Idea For Creek-Fence

With the thought in mind of better fisherman-farmer relationship Mr. C. W. McCloskey of Bellwood, Pa. suggests the following type of fence to be used on properties abutting streams that are open to public fishing in Pennsylvania. Mr. McCloskey not only intends that the farmer's fence be preserved from abuse by reckless fishermen but contends that a type such as reflected in the above sketch would easily solve the problems of snagged boots, clothing, etc. Mr. McCloskey says "It would take a mighty skinny cow to get through these narrow posts and even a fat man would rather squeeze through than attempt to scale some of the wobbly stiles I have seen along many streams." That the idea has merit is without question but we feel that the project should become one to be promoted by sportsmen in cooperation with farmers and property owners. We certainly can not expect the farmer to construct his fences in this manner without material assistance from the persons for whom the fence is intended.

Here is good food for good club activity.

What's New
Reviewed by Hugh Johnson

In Fishing Books

There is a sort of shallow chaos in modern angling literature, created by the tendency of the average fishing book author to write a little something about everything, and by his inability or unwillingness to select a given phase of angling and develop his book closely and thoughtfully around it. The result is that the sum total of new angling literature coming to us today is largely thin, repetitious and purposeless. Trout fishing is a broad, comprehensive subject with enough special phases to challenge the attention of anglers. Why not a book on nymphs and how to fish them? Or on wet flies? Or on how to catch larger trout. That brings to mind the perfect example of what I mean by specialization—Taking Larger Trout by Lawrence R. Koller (just published by Little, Brown and Co., Boston, Mass. $5.00).

Taking Larger Trout is one of the meatiest, most significant special studies that I've read in years. Mr. Koller not only picked a phase of trout fishing that no one had ever before developed into a book-length presentation, but he hugs to that theme for the entire 282 pages. It seems to me that he has corralled into this one, beautifully organized book all there is to know about how to locate and how to catch the big ones. You won't find out here how to catch 8-inch brookies from mountain streams, how to make trout or how to make lampshades out of trout skin! But you will find authoritative treatment of the special problems involved in bringing big trout to net—which, after all, is the consuming aim of the man who has reached angling maturity. The chapter-heads give an outline-idea of the comprehensive, balanced coverage of the subject: The Lure of Larger Trout, Big Trout in Small Streams, Big Waters and Big Trout, The Dry Fly and Large Trout, Larger Trout on the Wet Fly, Bucktails and Streamers, Baiting for Larger Trout, Spinning for Larger Trout, Big Trout at Night, Tackle and Tactics, Lure Design and Selection.

The fact that most of Mr. Koller's angling experience has apparently been on heavily fished, open water instead of on private and club water, makes him "one of us" and endows his book with an air of work-a-day realism that makes sense to the average fisherman. His book is full of tricks and scores of different procedures and approaches many of which will certainly be new to many fishermen as they are to me, and they all indicate that the author has learned the business of catching larger trout under the same public-water conditions that most of us work under.

Taking Larger Trouts, usefully illustrated—including color plates of important flies (showing some of those beautiful streamers tied by Stuart Longendyke of the Anglers' Roost in New York), is a book that every conscientious angler needs.
Orders to Municipal Authorities

Orders to construct sewage treatment works by Feb. 10, 1952, as another important step in advancing the Clean Streams program, have been issued to three municipal authorities comprising 24 different boroughs and townships in Delaware Co. and having a total population of 136,000 persons. The authorities are Darby Creek Joint Authority serving the following 13 communities: Springfield, Lansdowne, Clifton Heights, Aldan, Yeadon, Darby, Collingdale, Sharon Hill, Folcroft and Colwyn boroughs and Upper Darby, Darby and Haverford townships. Combined population is placed at 70,000.

Muckinipates Authority which serves eight communities: Clifton Heights, Morton, Glenolden, Norwood, Folcroft boroughs and Springfield Upper Darby, Darby and Ridley townships having a total population of 16,000.

Central Delaware County Authority serves eight communities with a total population of 50,000: Morton, Rutledge, Swoyersmore, Prospect Park and Ridley Park boroughs and Ridley, Springfield and Nether Providence townships. Because of location six of the communities will be served by two authorities, one area being in one authority and another area being in a different authority. They are Clifton Heights and Morton boroughs and Upper Darby, Darby, Ridley and Springfield Townships. In addition to being classed as a part of the Muckinipates Authority, the Board also issued a separate construction order to Norwood since it has not definitely decided whether it will proceed as a member of the authority or install sewage treatment works independently.

With completion of Philadelphia's three sewage treatment works now being built, and the construction of the treatment works under way in the three authorities, abatement of pollution of the lower Delaware River will have been accomplished. Chester, Eddystone borough and Tinicum Township now have sewage treatment plants in operation.

Other Communities to Get Orders

Municipalities on most of the tributaries of the Susquehanna River which were not included in the orders recently issued to communities on that river and those on the Juniata River and its tributaries, will now receive orders to construct sewage treatment works and have them in operation by June 1, 1952. This action was taken by the Board in extending its previous policy of requiring construction of sewage treatment works by all municipalities along the Susquehanna River from the Maryland-Pennsylvania line to the confluence of the North and west branches of the river to Sunbury, and those on the West Branch upstream to including Lock Haven, and those on the North Branch to the mouth of the Lackawanna River, which only is within the scope of the Clean Streams law. That order also included the municipalities along the Juniata River and its tributaries.

Under the new policy, however, all communities along the tributaries of the Susquehanna River and its two branches up to and including Lock Haven on the West Branch and up to the confluence of the Lackawanna River on the North Branch, which have sewers and therefore come within the scope of the Clean Streams law, will be required to build sewage treatment works. The deadline for them to be placed in operation is the same as that for the Communities along the main river. The communities along the Juniata and its tributaries must be in operation not later than May 1, 1952.

Communities along acid mine streams are excluded under the orders being issued. Up to the present time construction orders have been issued to 22 communities along the Susquehanna River, including Lock Haven on the West Branch, in the scope of the Clean Streams law, and to 13 communities along the Juniata River and its tributaries, including Altoona.

Clean Streams Violators Cited

Charged with being in violation of the Clean Streams law were the cases of 18 coal mine operators who have been referred to the Attorney General by the Sanitary Water Board for appropriate action, Dr. Norris W. Vaux, Health Secretary and Board Chairman, announced. A total of 24 violators were found in the latest investigation made during the immediate past by the Health Department Bureau of Engineering, which is executing the Clean Streams drive, showed there is a probability that operation of the mines would cause the formation of acid mine water and that it would be discharged to the stream.

Applicants Turned Down

The Sanitary Water Board has refused to grant a permit for the reopening of a deep coal mine so that the stream along which it is located may be rehabilitated for recreational purposes. It is the first time a permit has been refused for that purpose under the Clean Streams program.

Application for the permit was made by Smeal & Dufour Coal Co., for the reopening of a bituminous mine along Enigh Run, tributary of Moshannon Creek, in Boggs and Morris townships, Clearfield Co. The Morrisdale dam, located about two and one-half miles downstream from the mine, has been taken over by the Morris Fish and Game Protective Association and is being developed for public recreation and bathing. Investigation made by the Health Department Bureau of Engineering, which is executing the Clean Streams drive, showed there is a probability that operation of the mine would cause the formation of acid mine water and that it would be discharged to the stream.

Applicants, including those applying for the operation of bituminous coal mines because they are located along clean streams and the discharges of mine water would go to those streams in violation of the clean stream law. In addition to refusing the permits all applicants appealing the decisions were also ordered by the Board to cease the discharge of acid mine drainage to the streams.

Orders to Municipal Authorities

Orders to construct sewage treatment works by Feb. 10, 1952, as another important step in advancing the Clean Streams program, have been issued to three municipal authorities comprising 24 different boroughs and townships in Delaware Co. and their combined population is 136,000 persons. The authorities are Darby Creek Joint Authority serving the following 13 communities: Springfield, Lansdowne, Clifton Heights, Aldan, Yeadon, Darby, Collingdale, Sharon Hill, Folcroft and Colwyn boroughs and Upper Darby, Darby and Haverford townships. Combined population is placed at 70,000.

Muckinipates Authority which serves eight communities: Clifton Heights, Morton, Glenolden, Norwood, Folcroft boroughs and Springfield Upper Darby, Darby and Ridley townships having a total population of 16,000.

Central Delaware County Authority serves eight communities with a total population of 50,000: Morton, Rutledge, Swoyersmore, Prospect Park and Ridley Park boroughs and Ridley, Springfield and Nether Providence townships. Because of location six of the communities will be served by two authorities, one area being in one authority and another area being in a different authority. They are Clifton Heights and Morton boroughs and Upper Darby, Darby, Ridley and Springfield Townships. In addition to being classed as a part of the Muckinipates Authority, the Board also issued a separate construction order to Norwood since it has not definitely decided whether it will proceed as a member of the authority or install sewage treatment works independently.

With completion of Philadelphia's three sewage treatment works now being built, and the construction of the treatment works under way in the three authorities, abatement of pollution of the lower Delaware River will have been accomplished. Chester, Eddystone borough and Tinicum Township now have sewage treatment plants in operation.

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