

West Virginia Conservation



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The Commission examines **Strip Mining**

By JOHN W. HANDLAN



—Photo by Division of Education

This is not a bomb crater—it's part of a strip mine operation on the headwaters of Big Clear creek in Greenbrier county. This operation has spoiled for fishing one of the best known trout waters in the section.

(Editor's Note:—This is the first of a series of articles on stream pollution which will appear, from time to time, in West Virginia Conservation. A second article which will present a different aspect of strip mining than here offered will appear in an early issue. —J.W.H.)

Hundreds of trout fisherman in West Virginia know Big Clear Creek in Greenbrier county. Thousands of West Virginians traveling Route 60 have crossed the stream near Rupert. Its name has fitted it aptly until recent months but a strip mine operation on its headwaters has changed all that.

The mine is an operation of the Standard Ore and Alloy Co., which has offices at 120 Wall St., New York City. The value of the coal being stripped from the once-forested area in which the operation is based; the expensive and elaborate machinery required for the job; and the work provided for the men engaged in the project have no part in this story.

This is about what a single stripping operation has done to a trout stream. Perhaps the case is exceptional, in that those responsible for the work apparently have made an honest effort to prevent drainage from the strip area entering the small feeder streams which form Big Clear Creek. Incidentally, there is noth-

ing in the law to prohibit drainage of this water into the stream and efforts made by those in charge of the operation to avoid—or at least to minimize—this drainage has been purely voluntary.

Game Protector Jesse Bryant, of Greenbrier county, reported early this spring that the waters of Big Clear Creek were carrying considerable silt or sludge which obviously derived from stripping operations on the headwaters. At the request of J. W. Heslen, chief of the Conservation Commission's division of fish management, Bryant secured water samples from various points along the length of the stream and sent them to the Commission offices in Charleston for analysis.

It did not require a laboratory assay of the samples to be certain that trout would not, or could not, long tolerate water of the type collected. A coin suspended in the sample water in an ordinary quart jar was not visible through the glass.

In the meantime, Heslen and others from the Commission headquarters visited the stripping operations on Big Clear Creek. They were met by K. M. Quigley, superintendent of the work, who escorted them over the man-made wilderness of cuts and spoil banks and pools of impounded water. The stripping machinery was idle at the time because of the mine strike.

Anyone who has seen a stripping operation knows what the visitors saw. The pictures which accompany this article may give a faint idea of what strip mining leaves in its wake for the benefit of those who have had no chance to see it for themselves.

Tree, undergrowth, forest litter and soil give way to the giant scoops which remove them to reach the coal seam. The coal may be very near the surface or it may necessitate cuts as deep as 40 feet or more such as some of those in the Big Clear Creek workings. Heavy bombing or shelling of the area probably would not produce as complete a job of apparent destruction.

Water collected on coal exposed to the air is drained or pumped off and must flow somewhere—in this case eventually into Big Clear Creek. This particular working, laboratory tests showed, produced drainage of a very high iron content and a full measure of the other impurities which spoil streams for fresh water life.

That's the story, so far as Big Clear Creek is concerned. If, and just how soon the creek will regain its former purity and again support trout in the years after the coal has been stripped and the operation ended remains to be seen. At any rate several miles of excellent trout waters are now, and for several years to come, completely "blitzed."

Rules and regulations governing strip mining in West Virginia have been jointly drawn up and adopted by the State Department of Mines and the agricultural experiment station of West Virginia University.

Upon completion of the stripping operation, the operator is required to cover the face of the coal seam to a depth of not less than one foot and shall bury "as far as practicable" all roof coal and pyritic shales. He must seal off with earth any break-through to underground working in the coal. Drainage of all surface water is *not* required where it is determined by all parties concerned that a permanent pond be left. Removal of all metal, lumber and other foreign refuse is required. Finally, there *must* be regrading in a manner approved by the mines department and the experiment station "so as to refill any ditches, trenches or excavations made in the stripping operation in order to minimize the hazard of floods, pollution of streams and water, accumulation of stagnant water and the loss of the soil for agricultural or grazing purposes."

But, and it's a big "but," such regrading is *not* required on lands which *are not and have not been cultivated*.

The operator may plant trees, shrubs,
(Continued on page 19)



Strip mine machines have made deep cuts to reach the coal vein on the headwaters of Big Clear creek in Greenbrier. The size of the cut and height of the spoil banks is indicated by the figures of the men beyond the impounded water.



Feeder streams like the one above supply abundant, cold "trout water" to Big Clear creek. This is Sam's Branch, near its mouth. Strip mine pollution enters the main stream well above the point of junction of this tributary.



A forest once stood here, helping to control rainfall and filter runoff. Strip mining has transformed the site into what appears above.



One of the big scoops used in stripping coal from operations of the Standard Ore and Alloy Co. in the upper watershed of Big Clear creek. Pools of standing water, like that shown here, rest on or near the top of the coal or gather in areas where the coal has been removed.

We take to the streams

Opening Day



—Photo by Arthur Kenna

Dewey Howes, of Grantsville, obligingly agreed to cast at the spot shown above for the benefit of photographers. On his second cast he actually hooked a fine brook trout which he subsequently landed, as shown above. An account of the catch is given in the article which begins on this page.

Cold and snow conspired in an effort to spoil West Virginia's trout season opening on April 27, but failed to prevent thousands of anglers from taking limit-to-good numbers of fish and creeling better-than-average trout.

That's general concensus from scattered reports of Conservation Commission personnel and others, with many of the trout stream counties literally still to be heard from as this copy is prepared for the printer. A few reports concerned poor fishing and scant catches. Others veered from "average" to "very good" in their descriptions of stream conditions and angler's successes. But they all agreed

on one thing—it was cold!

Temperatures below freezing occurred on opening day in most of the higher counties. On numerous streams ice formed on casting lines and collected in the guides of fishing rods. For the most part the streams were reported high and fairly clear. Conditions emphatically favored the bait fishermen and those using under-water artificials. Dry fly casters were at a distinct disadvantage.

That trout fishermen are a hardy breed is borne out by numerous records of streams crowded by anglers. For examples, 200 anglers were issued permits at Babcock State Park, according to

Custodian Jennings Boley and District Game Protector B. L. Tate, of Fairmont, counted 158 cars parked along White Day Creek in Marion county early on opening day.

Boys not yet in their 'teens and white-topped grandfathers were on the streams as well as a sprinkling of feminine Walt-onians and booted, warmly clad anglers overflowed county seat hotels, tourist homes and camps and the residences of hospitable friends in the trout country. That fishing "pays off" regardless of the age of the fisherman was demonstrated by various good catches of which these two are typical. James Parsons, 73, of Parsons, W. Va., took four brook trout which averaged 13 inches in length from the headwaters of Slip Hill Mill Run, according to Game Protector F. H. Kyer, Tucker county. James Chester, 12, exhibited a 12-inch rainbow trout, the best checked by Protector J. W. Powell, Taylor county, along Valley River.

R. B. Stump, Hacker Valley, took his limit on opening day from the Laurel Fork of Holly River, Holly River State Park. His catch, reported by Arnold Anderson, park custodian, included two rainbow each above 13 inches long and another 10¾ inches in length plus three brook trout which averaged better than nine inches. From the same stream George W. Britton, Huntington, took 11 fine brooks and 3 rainbows on opening day. Holly River Park, by the way, checked out 201 brook and 29 rainbow on opening day and just about duplicated that on the following Sunday.

Anglers at Babcock Park checked out 201 rainbow and two brown trout on opening day and 145 rainbow on April 28. The two browns averaged 10½ inches and the rainbow nine and one-half inches. No unusually large fish were reported there.

Protector Clay Messinger, of Monongalia county, reported the largest turnout of trout fishermen he ever has seen on opening day and noted a number of limit catches of good trout. Protector Ed

Kaufman, Marshall county, on patrol along the Blackwater river checked a 15-inch brown taken by H. J. Hindman, Mogantown, and a 14½-inch rainbow which was creeled by Robert Ray, of Elm Grove, Wheeling. Protector Herb J. Moore, of Ohio county, reported several limit catches near the head of Elkwater Fork where he was on patrol for opening day.

And, since part of the fun of a fishing trip is the unexpected, humorous incidents which often occur, here are a couple for the book.

Dewey Howes, of Granstville, was about to leave the Laurel Fork of Holly River when he was approached by Arthur Kenna, Road Commission photographer, and J. W. Handlan, of the Conservation Commission, who asked him to return to the stream and resume casting while pictures were made. Mr. Howes agreed and, on his second cast, hooked a nice brook trout which he brought to creel.

And then there's the story about Clyde Vallandingham, of Marlinton, who was fishing in the east fork of the Greenbrier River, just below a steep, sloping bank. He was startled by a resounding report, like a gunshot, immediately behind him and the rush of a full-grown beaver which literally swam between Mr. Vallandingham's legs!

Presumably, the angler was between a bank den and the beaver's best approach to water. The loud report was the smack of the beaver's tail on the water surface as the animal dived from the bank. At any rate, the angler left that section of the stream as not being conducive to the tranquil and peaceful enjoyment of fishing!

The not-uncommon belief that a snake never dies before sunset is untrue. The sun's position has no bearing on the condition of a decapitated snake. When his head is cut off he is simply a dead snake. Reflex action leaves the nervous system slowly, making it appear that the snake is still alive.

Paragraphs from Field Notes

by R. S. Harris, Chief Game Protector



—Photo by Division of Education

Many West Virginia sportsmen didn't know about it, but for one hour this spring there was a new "director of conservation" at Charleston. Students of the various high schools in Charleston took over principal elective and appointive posts for one hour and Director Jack Shipman, left above, yielded his desk and duties to Miss Louise Corey, Charleston high school sophomore. The roses on the director's desk were for Miss Corey's benefit.

The highway killing of two doe deer, each of which soon would have become the mother of twins, occurred in Taylor county within a period of three weeks, Game Protector J. W. Powell reported. One deer was hit by an automobile and the other by a bus, both accidents occurring at night.

Protector M. F. Eye of Raleigh county

checked a Walleyed Pike caught early in April that weighed 5 pounds, 2½ ounces.

Richard Billy McFall, Greenbrier county farmer who lives at the Forks of Turkey Creek, has in his spring a brown trout that is between 8 and 10 years old, according to Game Protector Jesse B. Bryant who quoted Joe Kessler. The lat-

(Continued on page 16)

General approval greets

New Fish Trucks



—Photo by Division of Education

One of the big trucks employed by the Division of Fish Management for transfer of fish from hatcheries to streams of the state. This truck is at Babcock state park, Fayette county, with a load of legal-sized rainbow trout for Mann's creek. The glass panels in the sides of the tanks are "crowd stoppers" wherever the truck appears. The Commission operates three of these glass-sided tank trucks and is constructing another.

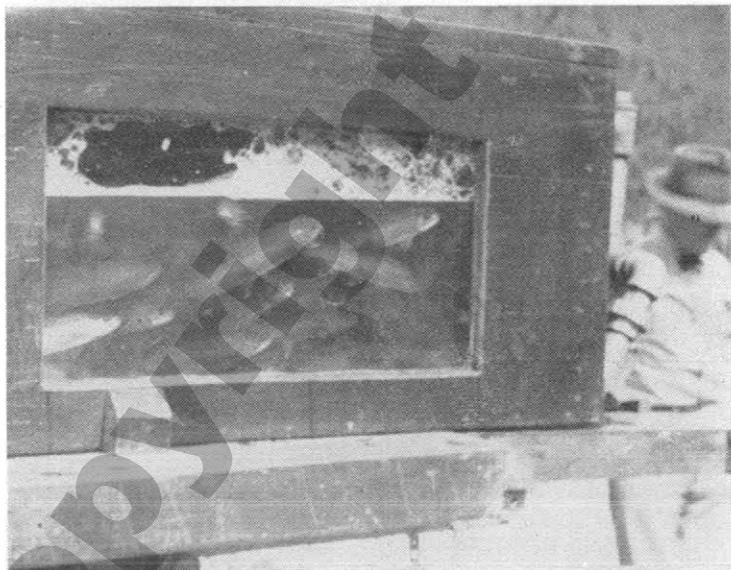
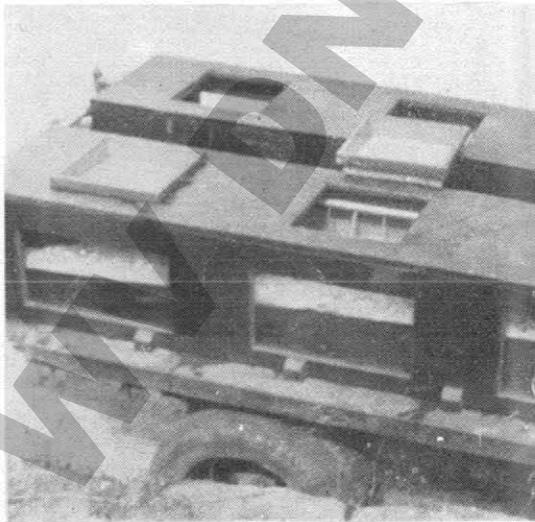
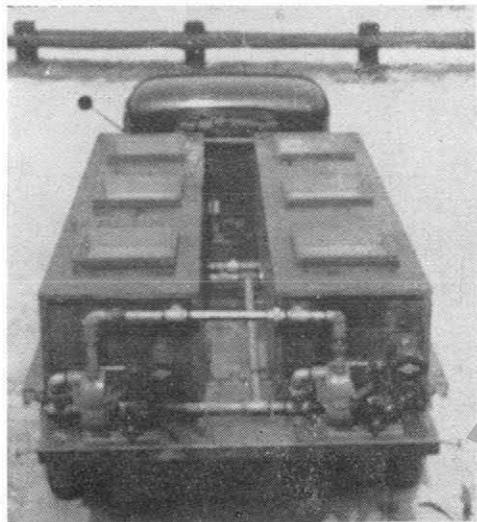
Distribution of approximately 170,000 legal-sized trout from State and federal hatcheries to West Virginia streams this spring is a feather in the caps of personnel of the Conservation Commission's division of fish management and sportsmen have been prompt to recognize the fact.

But the Commission's new glass-pannelled fish distribution trucks have added a circus touch to the hard work which such a stocking program entails and scores of West Virginia cities and towns have turned out to see the trucks and their finny contents this spring. On more than one occasion traffic in smaller towns has been thoroughly disrupted by

the presence of the glass-sided trucks and their audiences of hundred of interested spectators.

There is nothing especially new about tank trucks equipped with pumps and motors to aerate the water, thus permitting long-distance hauling of live fish. But glass-sided trucks? That's something else!

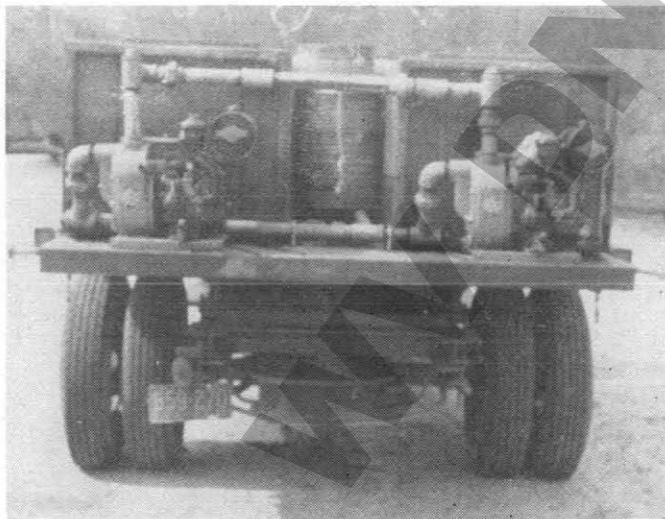
So far as the Commission knows, West Virginia is the first State to use transportation equipment which permits the public to see the contents without having to beg permission, climb onto a truck bed, lift the lids from tanks and catch an unsatisfactory glimpse of what's inside. (Continued on page 18)



Here are some closeups of one of the Conservation Commission's glass-panel fish distribution trucks.

The photo top center shows the same truck with some of the tank lids removed. In the center section nearest the camera may be seen the pipe which permits aerated water to spray back into the tanks.

Top left shows the arrangement of the twin tanks on the truck body. The twin gasoline motors at the rear of the tanks operate mechanism which draws water from the bottom of the tanks and redistributes it as aerated spray from pipes running along the inside of the tanks at the top.



—Photo by Division of Education

Top right is a closeup view of the pumping mechanism. The space between the twin tanks accommodates the fish pails which are used in actual transfer of the fish from the trucks to the streams.

Closeups of some legal rainbow trout (some up to 15 inches in length) appear at left and right in the bottom row. And, just as a reminder that manpower is needed for fish distribution regardless of the amount of machinery available, the center picture in the lower row shows 15 boys from Lookout high school who volunteered to assist in the stocking of Mann's creek.

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MAMMALS OF WEST VIRGINIA

V. NATIVE RATS AND MICE

By L. WAYNE WILSON

Teacher of Biology, Moorefield High School

From the standpoint of numbers the rats and mice are the most abundant of all our mammals. However, our native species must not be confused with the imported rats and mice, which came to this country sometime during the Revolutionary War period. In spite of the fact that this family is popularly known as rats and mice, the two names refer to the same type of mammal, the distinction being chiefly one of size.

We are all well acquainted with their destructiveness, yet few of us really appreciate the useful role they play in the web of life. So small, so numerous, and so widely distributed are they that at times their control is a problem. Nature has partly provided for this, however, in making them the favorite prey of hawks and owls, as well as an important article of diet for weasels, skunks, and foxes. The abundance of some species runs in cycles, being brought about by a type of epidemic plague.

Our species of native rats and mice, with two exceptions, are generally very small. An examination of their teeth reveals that they never have more than three molars on a side. These have either flat crowns or small projecting knobs known as tubercles; if the latter, they are always arranged in two longitudinal rows. For the most part they are nocturnal (active at night), clean in habits, and essentially omnivorous (feed on both animals and plants). In West Virginia there are eleven species.

1. Eastern Harvest Mouse. *Reithrodontomys humulis humulis* (Audubon and Bachman)

In general, this rodent resembles a small brown house mouse, with a long

tail and a deep groove down the middle of the upper incisors. He should be looked for in waste fields of matted grass and sedge, patches of brier, and roadside ditches. His nest of shredded plants may be placed several inches above the ground in a small shrub or under a fence.

Since he feeds mostly on seeds, he causes little destruction. Only ten specimens have been recorded from Greenbrier and Wayne counties.

2. Cloudland White-footed Mouse. *Peromyscus maniculatus nubiterrae* (Rhoads)

The white-footed mice (also called deer mice), of which we have three species, may be easily recognized by their white feet and white underparts. Our species may not be easily separated by the layman unless a series is at hand. So rather than attempt descriptions, it might be better to point out a few characteristics along with their preference of habitat.

This species is larger than the others, with a clearly defined dusky dorsal (back) area, large ears, and long tail (3.5—4 inches). They are most plentiful in the higher altitudes of the Allegheny Mountains. They may be trapped around rock crevices, stumps, rotten logs, brush piles, and rock slides. This animal is exclusively a mountain forest form.

3. Prairie White-footed Mouse. *Peromyscus maniculatus bairdii* (Hoy and Kennicott)

Since there is but one published record for West Virginia, its range within the State is not well known. Two specimens were collected in Ohio county in 1937.

In appearance it is similar to the next

species, but its short tail (2—3 inches) coupled with the fact that it lives in open fields, may serve as distinguishing characteristics.

4. Northern White-footed Mouse. *Peromyscus leucopus noveboracensis* (Fischer)

This mouse may be found throughout the State at all altitudes. It is our most common native mouse, living in a variety of situations. Visitors using the cabins at our various State parks are well aware of its destructiveness. No article of food, clothing, linens, or baggage, is safe unless placed in an inaccessible place.

The upperparts are fawn to bright tawny and the tail is 3—3.5 inches long.

5. Allegheny Wood Rat. *Neotoma magister* (Baird)

This is a large rat which superficially resembles the common house rat, but it differs in having large naked ears, very long whiskers, and a hairy tail which is dark above and white beneath.

The wood rat is found over most of the State in caves and rocky cliffs. It is abroad mostly at night feeding on the fruits of dogwood, ash, cherries, and fungi. The nest is rather large, open at the top and composed of twigs and shredded bark. This is an interesting animal and once tamed makes an attractive pet.

6. Stone's Lemming Mouse. *Synaptomys cooperi stonei* (Rhoads)

This mouse is a small, thick-bodied rodent with short legs and a very short tail. The pelage, which is brownish intermixed with gray and black, is long and shaggy. The broad, heavy, upper incisors are orange with a shallow groove on their outer surface.

These mice may be found in bogs and swampy land or in old fields and hillsides. They generally are found in small colonies. Since they feed largely on plant material, they do little damage.

7. Carolina Red-backed Mouse. *Clethrionomys gapperi carolinensis* (Merriam)

The red-backed mouse occurs in the eastern and southern mountainous portions of the State. It is a medium-sized mouse with small eyes, a short tail, and long fur, which is characterized by a broad rusty or reddish band down the back. The underparts and feet are grayish.

I have found that these mice are most easily trapped under logs and among boulders in moist woods. They are active throughout the year, usually occupying the tunnels or paths made by moles and shrews.

8. Pennsylvania Meadow Mouse. *Microtus pennsylvanicus pennsylvanicus* (Ord)

This is the "bull mouse" so commonly found under corn shocks and in meadows. At first glance it might be mistaken for a lemming mouse, but a closer examination of its upper incisors reveals that they lack the groove so prominent in the other species. The chestnut brown fur is long, lax, and unkept in appearance. The tail is short; the sole of the hind foot has six little raised knots or tubercles.

These mice are very prolific, becoming very abundant every three or four years, but they are quickly checked by epidemics. Normally they are preyed upon by practically every predatory animal. They are of considerable economic importance because they damage fruit trees and nursery stock by girdling.

9. Smoky Mountain Rock Vole. *Microtus chrotorrhinus carolinensis* (Komarek)

In general appearance these voles are similar to the preceding species but can easily be distinguished by the orange color of the fur around the nose.

This species is rare in collections. The twenty-four specimens collected in Pocahontas county appear to comprise the

(Continued on page 21)



—Photo by Dist. Protector Max Casto

Mr. and Mrs. Harry Brand, of Weston, with 19 rainbow trout they caught in the Left fork of the Buckhannon river near Alexander.

FIELD NOTES

(Continued from page 10)

ter said the fish is about 24 inches long and that McFall feeds it only whole grain corn.

Game Protector Millard F. Haynes reports that recently he has seen an unusually large number of dead rabbits along highwaps, victims of motor cars. He adds that a white robin is making its home in Ellenboro. Although other robins seemed to dislike it, he says, the albino had a mate and was preparing to nest.

One of the largest bears he ever saw was killed in Tucker county recently, according to Game Protector F. H. Kyer. Weighing 450 pounds, the animal was killed by A. B. Cooper within 500 yards of the Cooper home on Dry Fork after

the bear had killed one of Cooper's sheep and another belonging to Harrison Bennett, a neighboring farmer.

Game Protector Walter McCrea of Hancock county took particular pains, on receiving a shipment of quail for release in his county, to give the birds a good start. Carrying them to a site which he regarded as exceptionally favorable territory, he released them. Returning to the place a few days later, he noted in his weekly report, "I found feathers scattered all over the place. It looked like the foxes had had a good meal."

Encouraging reports on grouse come from Morgan and Monroe counties. Protector Earl A. Kidwell says that from the number of birds he has seen on recent patrols, this species of game should be fairly numerous in Morgan county next fall, given a good nesting season. Pro-

pector V. L. Crosier says grouse seem "plentiful" in Monroe county.

Tucker county now has topped Wetzel in the reported size of deer herds within their respective borders. Game Protector F. H. Kyer reports that John Hall counted 42 in a herd on Beaver Creek. This herd contained one more animal than the herd which Protector Everett V. Price, a few weeks previously, had reported seen in Wetzel.

Barbour county comes forward with the report of a black deer—the first ever seen in the State, as far as conservation commission officials are able to determine. Protector Marvin J. Gainer says he saw the animal on Middle Fork River. Several albinos have been killed in the State in recent years, and Game Protector S. A. Saville recently reported that two albinos were ranging the forests of Hampshire county.

Protector Millard E. Haynes reports that while on a recent patrol on Spruce, he saw some fine bass that appeared to be about 16 inches long.

Shortly before the pike season closed on April 30, Charles Rywount, of Alum Creek, caught a 33-incher in Coal River, according to Game Protector George Williams. The catch was made on a plug at Lock 4. The pike weighed 11¼ pounds.

Catching a beaver with his naked hands was the somewhat exciting experience of W. R. Polly, of Hershaw, Kanawha county, as described by Game Protector Noah Payne. Seeing a dark animal swimming in Lens Creek, he at first thought it was a muskrat. When the swimmer struck shallow water, Polly dashed in and grabbed it. He realized then that he had hold of a beaver. After much splashing and wrestling, he finally dragged the animal ashore. Aided by others who had come up, he got it into a barrel. Then

he telephoned Game Protector Noah Payne, who transported it to the backwaters of Elk River and released it. Where the beaver came from, and why, puzzled conservation officials. The nearest known colony was said to be in Nicholas county.

Many adult anglers tried their hands at trout fishing for the first time at the opening of the season in Grant county, according to Game Protector Harrison Shobe. Shobe said he checked eight, including five women, who reported catching their first trout. "From their enthusiasm," added the protector, "it will not be their last similar experience." Out-of-State fishermen, Shobe said, almost equalled the number of natives on the streams.

District Game Protector Wayne Stalaker reports rescuing a deer that had become crippled by being chased by dogs into a wire fence. He carried the deer to his home and doctored it but the animal died two days later. Another deer was found dead, about the same time, as result of becoming entangled in a wire fence.

There are some big bass up Cheat Lake way waiting for lucky fishermen when the season opens on June 29. Game Protector Clay Messinger of Monongalia county tells of two nice ones recently caught by a Pennsylvania angler while trolling for pike in Morgan Run inlet of the lake. The first one pulled out measured 29 inches. Half an hour later he got a 19-incher. Both were returned to the water unharmed, said Messinger.

Game Protector Edward Kaufman think automobiles are killing more rabbits in Marshall county than are foxes. Sheriff Peter Richards, he says, reported counting 14 dead rabbits one night on Route 250 between Moundsville and Cameron.

Students of the division of forestry, West Virginia University, reported seeing a white deer on Coopers Rock State Forest on April 19, while they were on a field trip. The deer was about half a mile north of Route 73 on the Sand Springs Fire Tower road. The albino, apparently a yearling, was accompanied by another deer normally colored. The albino was said to be solid white. The students who saw it were Ben Stout, Harry Matheny, Raymond Lockwood and Bob Richardson.

One trout caught by Lacy Jenkins during the early part of the season cost Jenkins a little more than \$6.57 an inch, according to Game Protector Clyde R. Townsend of Pocahontas county. Charged with catching a short trout, which measured only 3½ inches, said Townsend, Jenkins was fined \$20 plus \$3 in costs when tried before Justice of the Peace W. S. Morrison.

Grouse appear to be plentiful on Peter's Mountain in Monroe county, says Game Protector V. L. Crosier. "Lots" of them are being seen on his patrol trips, he reports.

Notes from the May 11 weekly report of Game Protector Harrison Shobe of Grant county:

Unless a late frost should come, said Protector H. J. Moore of Ohio county, in a report dated May 11, indications are for a bumper mass crop in Ohio county.

Game Protector W. F. Rexrode of Pocahontas county reported that up to May 5, the most successful fishermen he had contacted this season were S. A. Spence and Mr. and Mrs. A. S. Butcher, of Weston, and Woodrow Dobbins and Paul Frame, of Jane Lew. Fishing four days, said Rexrode, the party caught 207 trout, about 80 per cent of the total being native brook.

High and muddy water slowed up trout fishing this week, yet several fishermen took their limits on worms, minnows and wet flies. In the Saltblock Run section a sheep-killing bear is operating. Elk Horn section reports deer raiding the strawberry patches. Deer are coming down to graze within the corporation limits of Petersburg almost every morning. I saw four the other morning on the high school grounds. Bob white quail are to be heard in most sections, and it's hoped they have a good hatch this season for they have been very scarce for two years.

GENERAL APPROVAL GREET'S NEW FISH TRUCKS

(Continued from page 11)

The United States Fish and Wildlife Service has addressed letters of inquiry concerning the glass-sided trucks. The glass manufacturing concern (Libbey-Owens-Ford) which made the panels is, naturally, vitally interested in the proved success of the new trucks. The conservation departments of other States are dispatching wistful letters of inquiry. In fact, the Commission is ready to concede that the trucks probably are the agency's best advertising medium in both the home and foreign fields.

J. W. Hesen, chief of the division of fish management, and B. D. "Cy" Wills, superintendent of hatcheries, briefly sketched the history of the State's use of pump trucks and described the mechanism which operates them.

Hesen found an unused tank stored at the Edray trout hatchery in 1941 and, following a lead supplied by other Conservation agencies, installed a small, motor driven pump on the tank which was placed on a pick-up truck. By 1942, this small truck and another large one were in use—with pumps chugging away satisfactorily.

In the meantime, the pumps occasionally were detached and used to aerate

water in sizeable aquaria in which the Commission exhibited fish at fairs, festivals and the like. This worked so well that the fish management division made plans to install a small glass panel in each of the two tanks mounted on the large fish distribution truck.

This was to have been used in the parade scheduled for "the forest festival that wasn't held" when the war compelled cancellation of the annual event at Elkins.

The war likewise swept up Heslen, and Wills was transferred from the Commission's division of education to act as head of the fish management division. Wills promptly saw the educational value of the glass-sided trucks and, hampered though he was by wartime shortages of materials and equipment, went to work on the idea.

By the spring of 1945, one of the larger trucks owned by the fish management division was equipped with a single panel in each of its two tanks of a new glass which carries the trade name of Tufflex. By spring of this year, two more large trucks had been completed, each with three glass panels in each of the two tanks, the larger trucks carry. Panels in the newer trucks, and those in a fourth one now under construction, are of half-inch plate glass.

Each truck carries two long tanks which extend the length of the truck bed. Each tank, which is divided into three compartments of equal size with screening at top and bottom of partitions, is equipped with a motor driven pump, which can handle 1,500 gallons of water an hour. The water is moved from the bottom of the tanks and piped back to spray into the tanks again from the top.

For the average haul of 50 to 60 miles each truck can handle as many as 2,500 legal-sized brook trout and can carry as many as 1,000 rainbow trout on an extended trip. Average hauls permit handling of 2,000 brook or 1,250 rainbows in each truck.

A remarkably low rate of fish lost for JUNE, 1946

during the exceptionally heavy stocking program of this spring attests to the efficiency of the trucks. Wills says that loss of the 170,000 legal-sized fish handled this year has amounted to less than one-tenth of one per cent—or approximately 160 trout.

THE COMMISSION EXAMINES STRIP MINING

(Continued from page 5)

grasses or vines upon the lands affected. The department of mines and the experiment station may prescribe the time and manner of planting and the type and quantity of fertilizer and lime to be used.

The two State agencies have drawn up lists of materials to be planted in soils of various degrees of acidity, slope or roughness of surface. The land owner may have his choice of recommended species depending upon their availability.

If the operator elects not to plant the land he must pay to the State department of mines the sum of \$50.00 an acre, level measure, as a fair average cost of planting or seeding such lands.

The list of recommended planting materials includes red pine, Scotch pine, Virginia pine, black locust, aspen, cottonwood, shortleaf pine, Austrian pine, European larch, arbor vitae, red cedar, yellow poplar, and walnut among the trees. Such shrubs and vines as grape, Kudzu, Jap honeysuckle, dwarf hackberry, bittersweet and trumpet vine are suggested. Forage plants recommended include various lespedezas, clovers, and grasses.

Bounties Pass \$32,000

Up to May 1, the Conservation Commission had paid out a total of \$32,120 in bounties on gray foxes and wildcats since January 15. Of the total, \$31,453 went for foxes and \$667 for cats. Bounties were paid on 8,818 foxes and on 146 wildcats.

Most cabins rented as **State Park Season Opens**

With most of their cabins engaged weeks beforehand, West Virginia's five vacation State parks open on June 1 for their 1946 season with the busiest period of their history in prospect.

All recreational facilities had been made ready for operation, kitchens and dining rooms had been fully staffed and lifeguards employed for duty at the swimming pools.

"Everything is ready," said Chief Watt Powell of the Parks Division of the Conservation Commission several days before the opening. "for what is expected to be the best season ever experienced by the parks. All cabins are clean and ready for occupancy, kitchens and commissaries are well stocked, the personnel is made up of trained and courteous employees, and everything has been done to assure guests comfort and recreational enjoyment."

The parks will remain open with all recreational facilities in full operation until Labor Day. Between Labor Day and Thanksgiving, cabins may be rented, but the occupants will have to do their own cooking and no recreational facilities will be in operation.

It is the hope of the Parks Division that this period eventually may see enough guests attracted to the parks to make it practical to keep everything in operation. From a scenic standpoint, the fall is the most attractive part of the year in the State forests. It is then that the woods are aflame with color and there is a crispness in the air that adds to the zest of outdoor exploration.

With the exception of the period between June 1 and June 15, practically all park cabins have been engaged for the season. There are only a few vacancies during the first half of June.

Cancellations of some reservations for the remainder of the season are likely,

but the Parks Division already has a waiting list and expects no trouble in re-renting cabins that may be affected by cancellations. Immediately after September 1, a large number of cabins will be vacant.

Many improvements have been made in the parks since last season. Among the more important of these is the establishment of a recreation area in Watoga.

Horseback riding will be available this season in three parks—Lost River, Cacapon and Watoga. There is a possibility also that horses may be at Babcock.

Recreational director at Watoga will be Mary Lois Garrett, of Kenova, who, during the war, was a WAVE stationed at Norfolk, Va. Two West Virginia co-eds, Colleen Marie Jacquet, of Morgantown, and Dorothy L. Weiford, of Marlinton, will serve as lifeguards.

At Cacapon, the lifeguards will be Daniel Brown, of Elkins, and Robert Lee Haevermale, of Berkeley Springs. Both are high school students. James Batt again will have charge of the bath house.

Donald Wayne Gregory, Cowen high school student, will be one of the lifeguards at Holly River. At the time this article is being written the other has not been selected, but Chief Powell said he would choose one of several applicants from Morris Harvey College.

Recreational leader at Babcock will be Corgia Haynes, of Russellville. One of the lifeguards will be George M. Rariden, Jr., of Charleston, a medical student at Wabash College. Another guard will be chosen from among Morris Harvey students.

Marion H. Deahl, Lost City school teacher, will be recreational director at Lost River. The lifeguards remained to be chosen.

Mrs. I. C. Hume, of East Rainelle, again will be in charge of the commissary at

POISON IVY TREATMENT AS USED BY PHYSICIAN

To paraphrase a bit "Now that spring is here poison ivy is close behind." And this means a lot of suffering for many youngsters and adults, too, who are allergic to the plant.

The best cure for poison ivy is to avoid the stuff. The waxy three-leafed vine-like plant is easy to identify but once you are affected by it you are in for plenty of discomfort. On summertime tramps through the woods it is best to wear high shoes or boots. If you know you've walked through poison ivy clean your footwear carefully before removing it. Bathe feet and ankles or other exposed parts in warm water and laundry soap. Swab on alcohol.

The following treatment is one recommended by Dr. McNair of the Field Museum. "Procure at a drug store one ounce of Tincture of Iron, containing approximately 15 per cent ferric chloride. Dilute this with one-half ounce alcohol and one-half ounce water. This makes two ounces of remedy with a ferric chloride content of about 7 or 8 per cent, which is the maximum strength advised. Paint this liquid on the infected parts with a camel's hair brush."

Babcock, where in this capacity last year she was popular with park guests. In 1944 she held the same post at Cacapon.

Fishing will be available again this year at Watoga. There was no fishing last year because the lake had been drained for cleaning. The lake now is in fine condition, reports Chief Powell, and has been well stocked in preparation for the opening. Fish placed in it included bluegill, crappie and bass. Guests, said Powell, will be permitted to keep everything they catch up to the legal creel limits, all restrictions as to size being removed, and guests may have fish fries to the limit of their ability to provide the raw material.

In addition to fishing and horseback
for JUNE, 1946

riding, recreational facilities at the various parks will include: swimming, boating, hiking, bicycle riding, croquet, tennis, volley ball, badminton, archery and horseshoe pitching.

MAMMALS OF WEST VIRGINIA

(Continued from page 15)

West Virginia records. This collection was made from a mixed, fairly open forest of beech, maple, and oak, near Cranberry Glades, by E. A. Preble in 1909. If more recent records exist, I am not aware of them.

10. Northern Pine Mouse. *Pitymys pinetorum sceloposoides* (Audubon and Bachman)

This species is distinguished from the meadow mouse by its close glossy fur and short tail. Above it is dull brownish chestnut with sides paler and feet of brownish gray. The total length is about 5 inches, with the tail less than 1 inch.

Pine mice seem to prefer an environment where open patches alternate with stands of brush or trees. They make tunnels just below the surface of the ground with occasional openings to the outside. When abundant, these mice may be especially destructive to orchard trees. They are possibly statewide in distribution.

11. Common Muskrat. *Ondatra zibethica zibethica* (Linnæus)

The general color of the muskrat is a rich brown. It constructs a house of water plants just below the water level, or where conditions are unsatisfactory, a tunnel is dug in the banks. It is statewide in its distribution and is important fur bearer.

No report of an eagle carrying off a child has ever been substantiated. Scientists estimate the lifting power of an eagle at not more than seven pounds.

A primrose is not a rose. It is a member of the herb family.

As 1946 season nears

Good Bass Fishing Is Seen

The 1946 fishing season, which opened on trout April 27, will hit its full stride June 29 when the taking of bass, pickerel, muskalonge, wall-eyed pike, frogs and protected non-game fish becomes legal. The non-game species are rock bass, crappie, bluegill and red-bellied sunfish, channel and blue catfish, white perch, white or yellow sucker and red horse.

Opening at 12:01 a. m., June 29, the season on largemouth and smallmouth bass and Kentucky or spotted bass will continue through Nov. 30. Pickerel, muskalonge and wall-eyes may be taken through April 30, 1947, as may also the protected non-game fish.

The frog season will end July 5.

Minimum lengths are: largemouth, small-mouth and Kentucky or spotted bass, nine inches; pickerel, muskalonge and wall-eyed pike, no limit; rock bass, crappie, bluegill sunfish and red-bellied sunfish, five inches; channel and blue catfish, 10 inches; white perch, white or yellow sucker and red horse, 10 inches.

Creel limits are: bass, eight a day or 80 for the season; frogs, 10 a day or 50 the season; rock bass, crappie, bluegill sunfish and red-bellied sunfish, 15 a day or 30 aggregate; white or yellow sucker and red horse, 10 a day, all species; channel and blue catfish, 10 a day, aggregate; white perch, 10 a day.

Weather conditions being favorable, indications are that bass fishermen will fare well, say Conservation Commission officials. Similar prospects face anglers seeking the other warm water species.

Important among factors indicating a good bass season this year is the fact that during the drouth periods of 1945 and 1946, the streams carried more water than they had for the last four or five years. More forage fish were stocked last year, also, than usual, which in-

creased the food supply for bass.

A total of 79,448 bass were stocked last year by the Conservation Commission. These ranged in length up to five and six inches. Some of these, but not a great many, will be of legal size this season and ready for the frying pan. Most of this season's legal catch, however, will come from those stocked in 1944, when a total of 126,602 were placed in the streams, and from the carryovers of previous years. Unlike the case with trout, comparatively few adult bass are stocked. Most of the bass distributed are fingerlings. The cost of raising bass to legal size in large numbers in hatcheries would be prohibitive.

In addition to bass, the Commission last year stocked 12,652 channel catfish and 779,249 sunfish, bluegills, crappie and forage fish.

Building Trapping Staff

H. E. Hefner, of Philippi, professional trapper, has joined the conservation commission's predator control staff. He began work May 1 under Frank Johnson, assistant game technician in charge of predator control and fur management. Doy Rollyson, former field assistant in the division of game management, also is a member of the trapping staff. By fall, said Johnson, he plans to have five professional trappers, who, in addition to their trapping operations, will instruct 4-H members and other groups in the art of catching foxes and other predators.

Superintendents of zoos say that a tiger or grizzly bear can defeat a lion in combat any day.

Deer, elk and moose have no gall bladders.

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