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October 2, 1950

Mr. Gilbert McClintock
Glen Alden Coal Co.
Wilkes-Barre, Pennsylvania

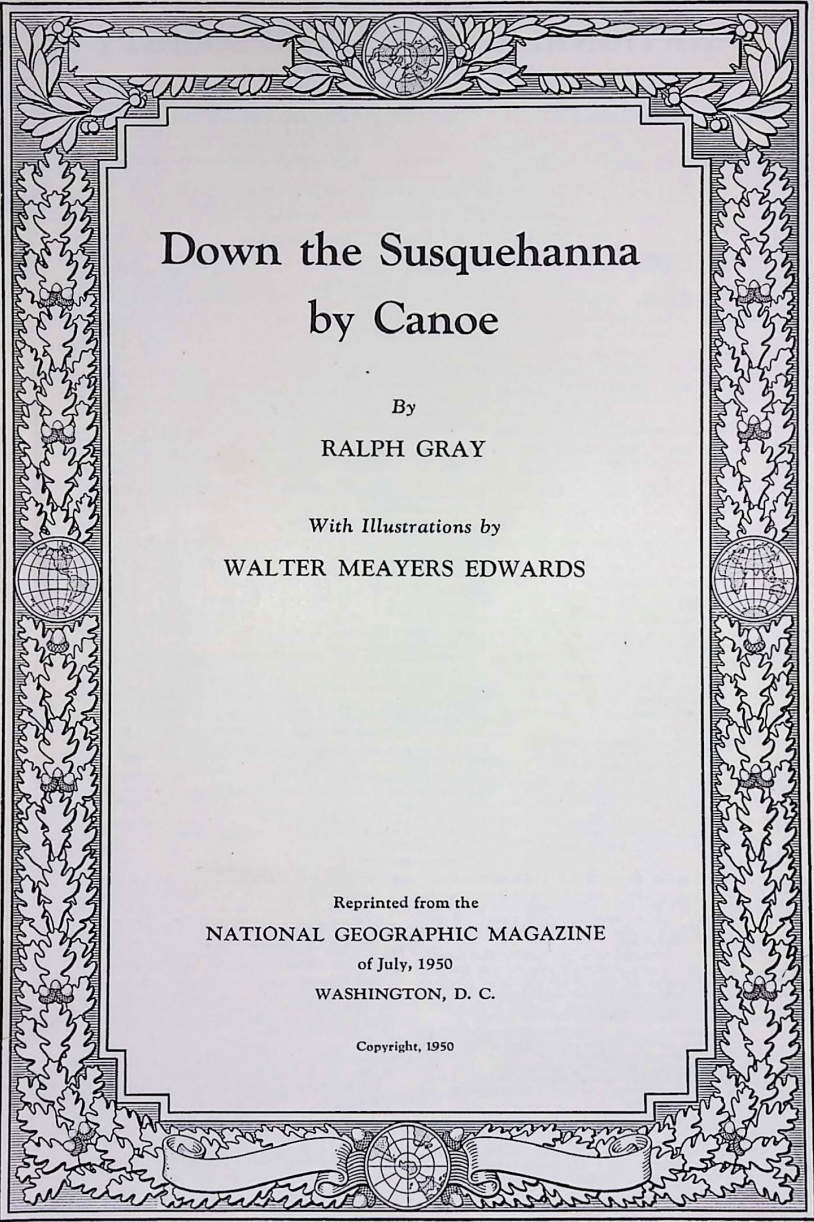
Dear Mr. McClintock:

We wish it were possible to write all of our
Susquehanna friends an individual letter of thanks
for their help and friendly interest in our canoe
"expedition," but we know you will understand how
impracticable it would be.

However, we hope you will consider this as
the equivalent of a hearty handshake, and accept
the enclosed reprint of the article as a small
token of our appreciation.

Cordially yours,

Walter H. Edwards
Ralph Gray



Down the Susquehanna by Canoe

By
RALPH GRAY

With Illustrations by
WALTER MEYERS EDWARDS

Reprinted from the
NATIONAL GEOGRAPHIC MAGAZINE
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WASHINGTON, D. C.

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Start of the Cruise—Canoes Enter the Susquehanna at Its Birthplace, Otsego Lake

Here the paddlers with jaunty strokes send *Susque*, *Hanna*, and *Sonny* along at a fast clip, for the voyage has just begun. Below here, the Cooperstown, New York, dam impounds the river, letting only a trickle pass. So tiny and shallow did the Susquehanna become that the canoeists had to walk their craft over shoals and bars.

C. Chester Lash



Homemade Cable Car Ferries Frank Ball to and from His Susquehanna Island Retreat

The retired railroad conductor (in overalls) gives a neighbor boy and two of the canoeists a free ride on his aerial tramway near Afton, New York (page 78). Mr. Ball, a Nature lover, shares his island with catbirds, wrens, and Baltimore orioles. From his pockets, Babe, a half-tame chipmunk, impudently steals peanuts.

Using Council Rock as a steppingstone, we jumped ashore and entered the town. We felt its charm and colonial dignity as we inspected the sturdy stone homes, high-spired churches, statue-dotted parks, museums, and historic sites.

The flotilla pushed off. We paddled into the Susquehanna (opposite page).

"Next stop, Chesapeake Bay," crowed Harold.

Summer Dry; River Low

"Wait'll you get below the water-supply dam," yelled a man on shore. "You're still in lake waters to there. Below, only the water that leaks through forms the river. Cooperstown uses all the rest for drinking water."

When Dal looked at the brook-sized trickle below the dam, he said, "You'd think they could spare a cup or two a day for the river."

We had known the river would be low.

New York and Pennsylvania were having their driest summer in years. So we were prepared. All our heavy gear, except Toppy's camera equipment, was in the station wagon parked downstream.

Portaging the nearly empty canoes around the small dam was easy. So were the first 30 yards below the barrier. Then the bottom of the "river" came up and smacked us. We left bits of blue, red, and green paint on rocks and gravel. Harold and Alex, setting an example, stepped into the finger-bowl-deep water and slid *Hanna* along.

All that long first day the recurring shallow stretches made us wade and walk our canoes almost as much as paddle them. We carried them across pastures, cut passages for them through driftwood, and actually climbed trees with them.

This part of the Susquehanna is about as wide as a living room and it meanders like the course of a parcheesi game. Trees broken

by spring floods had toppled into or across the river. We hacked our way through or lifted our craft over.

The banks were steep and overgrown. We lashed our canoes together and ate lunch while drifting with the slight current.

"To think that Clinton floated an army south on this river," I mused.

"Who was Clinton?" asked Dal.

"One of George Washington's generals. His job was to destroy the Iroquois (Six Nations) settlers during the Revolution. Supplies and equipment for some 1,500 men went down the river on 208 heavy, cumbersome bateaux."

"And we're having trouble with empty canoes!"

But Gen. James Clinton used brain as well as brawn. At Council Rock he built a dam across the lake's outlet, raising Otsego's level. Then, on August 8, 1779, he broke the dam, and his sturdy flatboats raced through the Susquehanna shallows on a foaming head of water (page 80).

But for us it was tough sledding, literally. As *Susque* or *Hanna* scraped on gravel bars and rocks, dairy cows grazing adjacent pastures looked up in wonderment. Or was it quiet scorn? We began to feel a little foolish before our constant gallery of well-bred herds.

Curious Cows

We made a long portage by station wagon around Goodyear Dam and camped in a cow pasture near the confluence of the Schenectady Creek. The cows, belying the ads, were not at all content until they had sniffed at each of us and our equipment several times.

Cay, Don, and Dal tried to bed down beneath the stars, but the inquisitive cattle drove them in. Several times during the night I was awakened by moist bovine snorts on the other side of the thin tent wall not four inches from my face. Harold, likewise disturbed, muttered, "We must be canoeing down the Chisholm Trail, we've seen so many cattle and so little water."

Next morning we saw more water—lots more. What miracle was this? Had the ghost of Clinton's dam been broken to help us? The river was up to a respectable canoeing depth, and rising still more. For the first time it was singing the gurgling song of fast water—a foot higher than the night before.

Workmen at the N. Y. Highway 7 bridge explained, "They let water through Goodyear Dam every morning. The rest of the day it is shut off."

So we rode the crest of dam-let waters just as had Clinton's men. Riffles and shallow

places were fun today, with the swift water carrying us over shoals and rocks that 24 hours before would have meant wading. But portaging around two of Oneonta's three dams slowed us (page 82).

While we slept in a cow-pasture camp in Otsego, the high water from Goodyear Dam ran out, and by morning we were out of sequence with the river's ups and downs. We shoved off in shallow water again.

"Canoeing Fellows" Make Local News

The Otsego bridge was lined with people waiting to wave good-bye to us. Newspaper and radio accounts of our voyage had caught the popular imagination, and people began looking for "those canoeing fellows."

A lady rushed out from a riverside cabin brandishing an egg and said, "Oh, if I'd only known when you'd get here! I was just starting to bake you a cake."

The pretty Burnside twins raced over a meadow with their dog and box camera and snapped pictures as we passed. At Wells Bridge, Bill Goodrich swung from a giant elm, let go his rope at the end of a 100-foot arc, and plummeted 30 feet into the water between our canoes. Farther downstream a woman swimmer looked up surprised and said, "Oh, are you the Geographical businesses?"

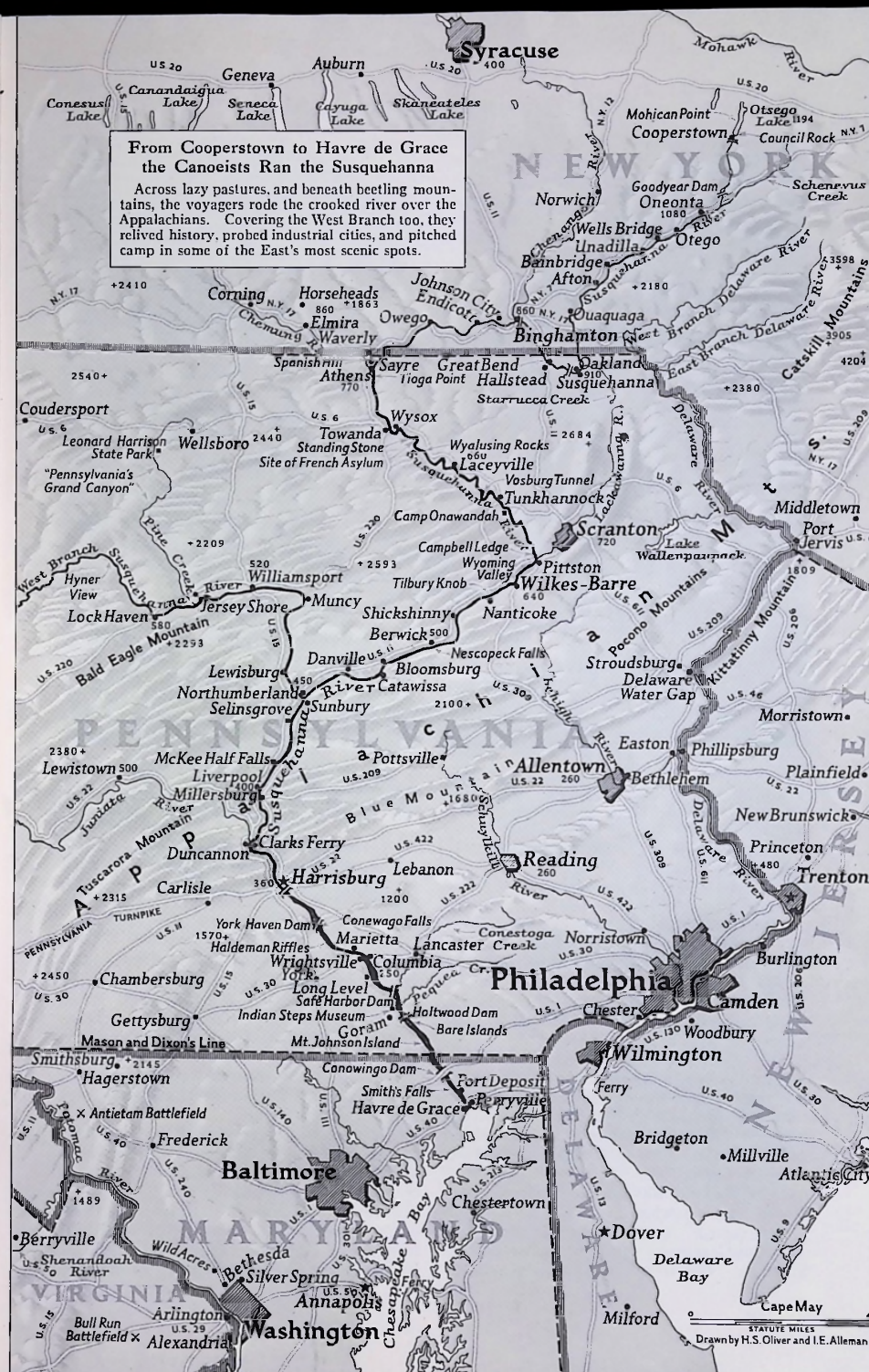
Riffles, or "rifts" as upper Susquehanna people call them, were frequent. Those of us aboard the metal canoes often leaned hard on our paddles and pushed ourselves across the wet rocks. Sonny's crew sometimes had to walk and carry, but even so the canvas bottom took a beating. Oftener than he wished, Cay found himself bailing.

Suddenly it was too much for bailing. Cay beached his craft, turned it over (page 83), and found a hole big enough to put two fingers through. His experienced hands cut out a small piece of spare canvas and with waterproof cement patched the hole. A coat of quick-drying lacquer over the area finished the job.

A mile above Unadilla, where a highway edges the river, a slender, imperious man attracted our attention with windmill gesticulations. "I'm the sheriff of this county," he called, "and you're all under arrest for trespassing on our river! Your sentence is to have dinner with me and camp on the Unadilla park."

When we landed, Charles C. Flaesch, our captor, said, "Usually Unadilla's water front is prettier. I've lived here 52 years and never seen the river so low."

While we were eating, Raymond Enck, an Otsego farmer, walked in with a suitcase full





Harry T. Puhls

Every Day This Dog and Cat Meet the Streamliner to Get a Free Meal

Sometimes other four-footed friends join them at the Owego, New York, railway station when the Delaware, Lackawanna and Western's crack Diesel pulls in and the diner cook throws out scraps for his pets.

of Indian arrowheads. "I found most of these while plowing in the field next to where you camped last night," he announced. He pulled out box after box of classified and mounted arrowheads and other relics—about 400 pieces in all. "Lots of them I found this year."

"I thought most arrowheads had been picked up years ago," Don said.

"No. If Art Foote plowed his pasture, you'd probably find dozens right underneath where you were sleeping last night."

This statement made us feel closer to the Indians than any number of historical markers. We learned that Susquehanna folk are fully conscious of their Indian heritage. Every village has its Indian authority and arrowhead collector. We joined their ranks—in looking, if not in finding.

Next day at Bainbridge, however, Alex "found" an arrowhead. It was attached to a "bon voyage" message posted on shore from National Geographic Society member Earl K. Stillman. The letter described the relic as

"one of several I have uncovered while spading garden. Perhaps it was made by one of the red men whose trail you now follow. Who knows?"

A Dream Come True

Halfway to Afton, we came upon the hide-away of Frank Ball, who, in retirement, enjoys a boyhood dream. He owns an island. When he has business on the mainland, he shoots through the air on a two-way gravity-pulled cable car of his own invention (page 75).

While giving us a ride, he waved at a passing Delaware and Hudson engineer and got a wave and whistle in response.

"Used to work every trick on that line, mostly conductor," he said. "All the boys know me." He pulled out his watch. "That'd be Charlie. Right on time, too."

Shooting over three broken dams was that day's canoeing high point. Just below the third one we pitched camp near Ouquaga, Indian center and one of Clinton's campsites.

It was a good place to look for arrowheads.

Next day we entered Pennsylvania in rain and at the mouth of Starrucca Creek made a soggy camp. Lifting our dampened spirits was the sight, through the drizzle, of Starrucca Viaduct's soaring arches. Every hour or so a Diesel-powered Erie train thrummed across.

A Mormon Shrine

The Susquehanna is the Jordan of Mormonism. In its waters were baptized Joseph Smith, founder of the American church, and his first convert. From 1820 to 1829 the young Prophet lived chiefly in the Great Bend country, where the river dips momentarily into northeast Pennsylvania as if testing the climate. In the township of Harmony, now Oakland, he met his wife, buried an infant son, translated the *Book of Mormon*, attracted his first adherents, and knew his first persecution—some of it coming from his own father-in-law.*

Two days before in Afton we had seen the foundation of the house, just torn down, to which he carried off Emma Hale and married her. West of that town Smith reported he had unearthed one of the golden plates from which he translated the *Book of Mormon*.

Below Susquehanna, Pennsylvania, we scaled the riverbank, crossed the Erie yards, and climbed a hill to McKune Cemetery. It contains the mortal remains of the Prophet's son, family members, and followers, and is the only tangible reminder of the years young Joseph Smith spent on the banks of the Susquehanna.

That night we prepared for bed in a barn near Hallstead, Pennsylvania. "What about rats?" Dal wondered.

"They won't bother you," Adolph said. "In a barn like this the blacksnakes always keep the rats down."

Adolph manages a large nursery with several barns and greenhouses, so his words had authority.

Soon after, Dal and Alex discovered that a bed of sorts could be made in the rear of the station wagon by letting the tail gate down. Don spread his bedroll on the flat canoe rack on top of the station wagon, parked just outside the barn.

Next morning Alex arose with creaks and groans from his cramped position and looked sourly at Adolph, Toppy, Cay, and me stretched on the luxurious hay.

He asked if we'd had any encounters with blacksnakes.

"Well, in the dark we couldn't tell what color they were," Cay admitted.

That day we fought a head wind most of the way to Binghamton and made a walkover portage of Rockbottom Dam. One of the Susquehanna's large cities, Binghamton interested Toppy because of its Ansco plant, manufacturer of photographic materials. The city also makes nationally famous brands of shoes.

A tree-chopping bee in which everyone did his bit started Binghamton on its way in 1788 and provided log cabins for the new settlement.

In the 1880's a shoe-manufacturing business was established here. From the early days, George F. Johnson, a partner with Henry B. Endicott, initiated policies which have eliminated strikes and serious labor disputes.

Good wages, steady work, medical and surgical treatment and hospital care at company expense, and homes built and financed at low cost are some of the benefits enjoyed by its 20,000 workers.

As we paddled past Endicott, the white concrete buildings of the International Business Machines Corporation were at our right. The river for a short distance here was reddened by the waste liquors and dyes from the large tanneries which produce the leather for shoe-making in the Triple Cities.

The American Egret—and Other Birds

The American egret, at home again along northern waterways after its near extinction, seems not to mind this pollution. We surprised 12 of them on an island below Endicott.

Throughout the trip we saw hundreds of water-loving birds, not only egrets but great blue herons, little green herons, kingfishers, killdeer, and ducks.

Migrating red-winged blackbirds often filled the skies.

With each tributary the Susquehanna got wider but little deeper. The continued shallow going by this time had shredded *Sonny's* bottom. At Owego, Cay gave up and went home to repair his canoe. Alex went with him, leaving five of us in our two aluminum craft.

To this point we had traveled in lightly loaded canoes. We chose campsites where we could drive the station wagon to the water's edge, thus using it for hauling our heavy gear. But at Owego, in spite of shallow water, we loaded everything into *Susque* and *Hanna* and paddled independent of the station wagon as far as Wilkes-Barre, Pennsylvania, 120 miles beyond.

* See "Utah, Carved by Winds and Waters," by Leo A. Borah, NATIONAL GEOGRAPHIC MAGAZINE, May, 1936.

A day and a half's work brought us to Athens, Pennsylvania, a highlight of our trip.

The Susquehanna system is a many-branching path through mountains, and Athens is one of the crossroads. Clinton (page 76) had followed the upper river to Athens. There he met Gen. John Sullivan, his commanding officer, who had brought an army north along the Susquehanna from Wyoming Valley (the Wilkes-Barre region).

With combined forces representing a large segment of George Washington's army, the Sullivan-Clinton expedition moved northwest up the tributary Chemung River into the heart of the Iroquois homeland. There it destroyed for all time the fighting power of the Six Nations, traditional allies of the British.

In 1783, George Washington, who had conceived the Sullivan-Clinton campaign, traveled up the Mohawk,* then overland the few miles to Otsego Lake and the source of the Susquehanna. He observed that he "could not but be struck with the immense diffusion and importance of [inland waterways], and with the goodness of that Providence which has dealt her favors to us with so profuse a hand."

The men of Clinton and Sullivan also recognized these favors and returned after the war to help transform the howling wilderness they had marched through into the neat farms that have graced Susquehanna valleys ever since.

One group, moving up the Chemung Valley ten years behind Sullivan, founded Horseheads, New York.

A Tablet Tells a Story

On Hanover Square we saw a tablet inscribed: "In 1779 near this spot General John Sullivan mercifully disposed of his pack horses worn out by faithful service in the campaign against the Six Nations of the Iroquois. The first white settlers entering this valley in 1789 found the bleached skulls and named the place Horseheads."

"That inscription suggests a Coolidge condensation," said one citizen. "There isn't a superfluous word in it."

Even before the Revolution, scattered settlements existed in Wyoming Valley, around Athens, and along the West Branch of the Susquehanna. Many pioneers came from New England, especially Connecticut. By the 1750's Connecticut's agrarian population had soared to a crowded 130,000; so citizens formed the Susquehanna Company for expansion. They felt that Connecticut's charter gave them the right to a westward-extending strip of land as wide as their colony.

Iroquois representatives sold them a huge rectangle which now forms most of the north-

east portion of Pennsylvania—a fifth of the State. But during four decades Connecticut claimed the area and fought three small but fierce wars for it. And before the dispute was settled, about 1803, the fiery Yankee John Franklin even tried to establish "Susquehannah" as a separate State, with Athens as its capital.

A Pioneer of Pennsylvania

Leaving our canoes at the Athens bridge, we drove to Spanish Hill (page 84), the flat-topped rise just northwest of town. This acropolis of a North American Athens broods beside the road, guarding its hoard of New World antiquities. We climbed 230 feet to its mesalike summit.

On the 10-acre crown, once fortified with palisades by an unknown race, we surveyed the area where Etienne Brulé, first recorded white man to enter what is now Pennsylvania, met the Carantouan Indians.

Here the young Frenchman, Champlain's emissary, talked hundreds of braves onto the warpath against the Iroquois. But the attending ceremonials delayed their departure, and they arrived at Onondaga (near Syracuse), the appointed battle place, several days after Champlain and his Huron allies had been defeated.

With Iroquois between him and Champlain, Brulé returned to Spanish Hill, and, for reasons not fully clear, whiled away his time by canoeing down the Susquehanna, to salt water and back.

"And the amazing thing," said Charles Lucy, who helped guide us about the Athens-Sayre-Waverly region, "is that all this took place in 1615 and 1616—four years before the Pilgrims landed at Plymouth Rock."

How did the "Spanish" creep into Spanish Hill?

Dr. Elsie Murray, devoting a lifetime to preserving her valley's place in history, knew the answer. I found her in Athens's Tioga Point Museum, which she directs.

"The legend about gold-hunting Spaniards penetrating into this area before Brulé is more than idle fancy," she said. "The first settlers reported hearing Indians calling the hill *España*, and standing in awe of it."

We returned to our canoes and paddled south three miles to Tioga Point to look for arrowheads.

Surely here, where the Indian-rich Chemung and Susquehanna Rivers join, there must be at least one!

* See "Drums to Dynamos on the Mohawk," by Frederick G. Vothburgh, NATIONAL GEOGRAPHIC MAGAZINE, July, 1947.

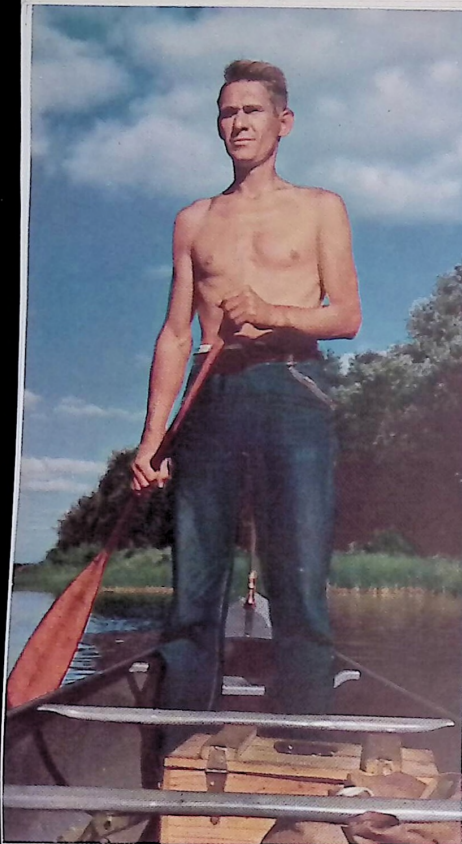


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A 500-mile Canoe Journey to Salt Water Begins at Otsego Lake, the Susquehanna's Source
From their first camp at Mohican Point the voyagers paddled to the Chesapeake in 18-foot aluminum canoes in 36 days. James Fenimore Cooper called the lake "Glimmerglass." His hero, Deerslayer, canoed its waters.



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When He Hears Water Roaring Ahead, Skipper Stands to Scout the River Lest Canoes Be Swept Unexpectedly over a Dam
Paddlers are sliding one boat down a gentle cataract at Oneonta, New York, while others nose *Susque* into fast waters. Such sloping barriers, with convenient platforms at the bottom to stand on, made portages easy, saved weary steps hauling canoes around dams.

"A Mile Wide" but Inches Deep, the Susquehanna Gouged Canoe Bottoms, Causing Stops for Repairs

Near Unadilla, New York, where the river is narrower, drought reduced its level to a record low. Rocky shallows only scratched the aluminum canoes, but punctured their canvas companion, *Sonny*. Here Caleb Hathaway (back to camera) mends a wound with patch and cement (right).

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Kodachromes by Walter M. Edwards





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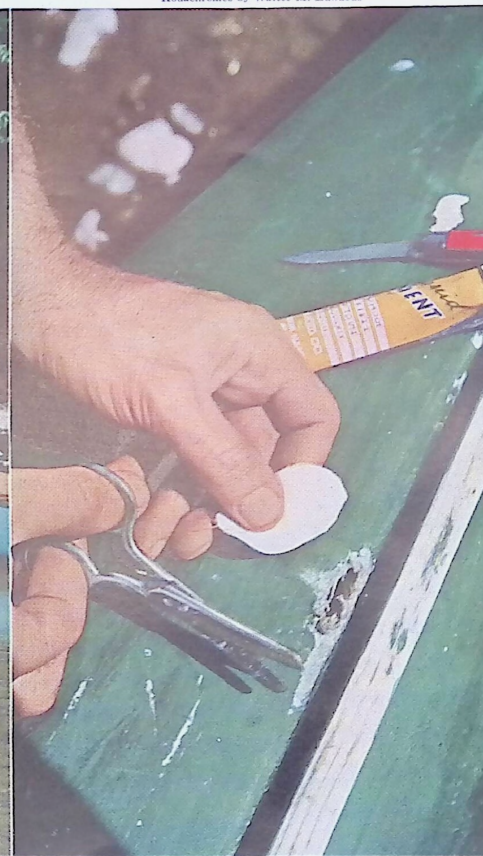
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From This Historic Spot Etienne Brulé Pioneered the White Man's Trail Down the Susquehanna

Brulé, voyaging from Canada, met Carantouan Indians here in 1615-16, four years before the Pilgrims landed in Massachusetts. Shepard Hills Golf Course, Waverly, New York, looks out upon small, wooded Spanish Hill, Pennsylvania, a onetime Indian bastion. John Smith of Jamestown was first to explore the river's mouth (1608).



Susquehanna (Right) and Chemung Squeeze Land into an Arrowhead

Here the rivers join at Tioga Point after missing a confluence at Athens (upper left) by only 190 yards. In the old days, that narrow neck saved Indian portagers a 5-mile paddle around the tongue. Today steel bridges (left) carry motorists across the Chemung and Susquehanna.

The fertile lands to the left of the rivers are called Queen Esther Flats, a reference to Indian days when they were ruled by Esther, a half-French chieftainess. After the Wyoming Massacre she tomahawked 14 captives.

Fort Sullivan was then established at the narrows; it became the base of an expedition that destroyed Iroquois power.

As more settlers poured in, the Susquehanna and Che-



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As more settlers poured in, the Susquehanna and Chemung formed easy paths through the wilderness, and Tioga Point dominated northeast Pennsylvania and western New York.

Athens has memories of young Stephen Foster, who, while at school in 1840-41, composed his first piece of music, the "Tioga Waltz."

Hunting arrowheads is a hobby of farmers hereabouts. The canoeists searched for such relics, but their only success was achieved by photographer Edwards, who found this natural arrowhead while cruising at 1,000 feet in a Piper Cub.

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↑ This Conch-shell Bugle Called Troops to Action in the Revolutionary War

M. Louis Gore of Sayre, Pennsylvania, blows the shell he inherited from his great-grandfather, Obadiah Gore, who marched through the Susquehanna Valley with Gen. John Sullivan's army in the Iroquois campaign of 1779. Later he made it his home.

↓ Take Off Those Indian False Faces; We Know You, Paleskin Paddlers

Jim Evans, Ralph Gray, and Don Blakley visit Indian Steps Museum in York County, Pennsylvania, and try on Iroquois masks. The faces were supposed to help wearers commune with the Great Spirit. In plague times the Iroquois donned them to ward off demons.



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Itinerant Artists, Using Water Colors and Stencils, Decorated This Ceiling 80 Years Ago
Hagerman House stands on the site of French Asylum, a Susquehanna refuge for fugitives from the French Revolution. Built in 1836 by a French family, the house now shows little Gallic influence (page 88).



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French Asylum, a Ghost Site, Calls to Mind the Terror, When Aristocrats Fled the Guillotine to Susquehanna's Peaceful Bend

Pennsylvanians in 1793 looked on in amazement as 50 log buildings sprang up. They whispered that the biggest house was to be Marie Antoinette's; but she was executed in Paris in October, 1793. After Napoleon repatriated the exiles in 1802, the town gradually crumbled. Only memories and local French names are left.

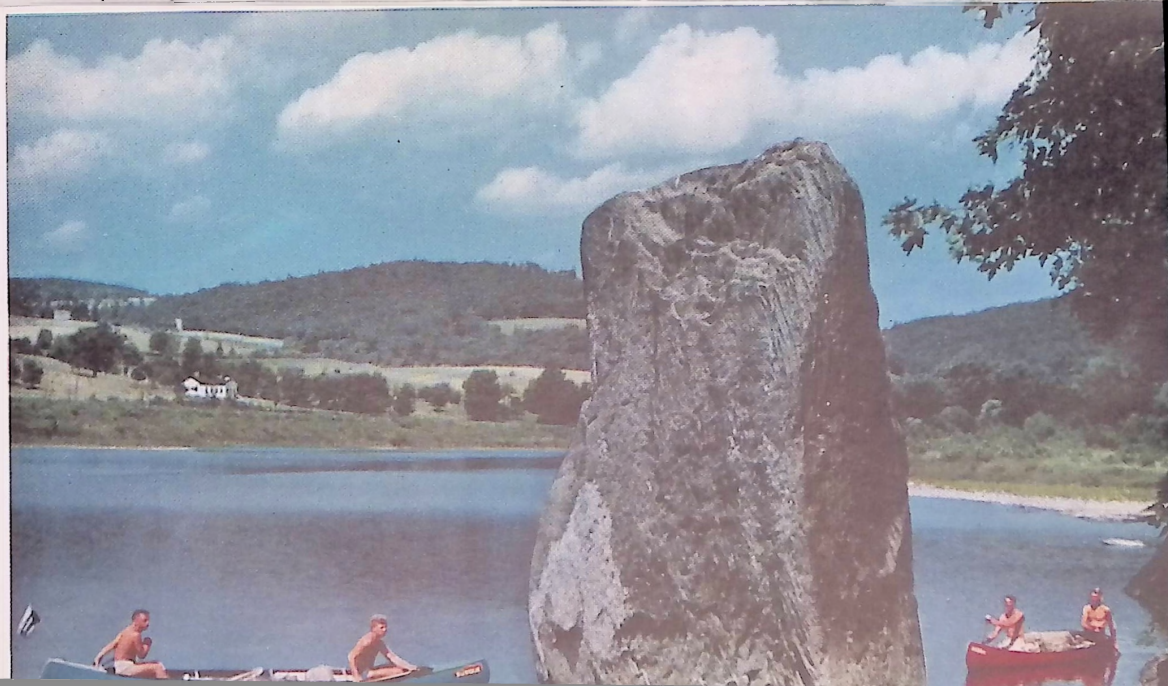
Upended by a Glacier, Standing Stone Made a Natural Cornerpost

Settlers of French Asylum, measuring their 2,400-acre holding from this landmark, built their village at the next downstream bend (opposite page). Robert Morris, financier of the American Revolution, was their land agent.

Talleyrand, the French statesman, visited Asylum in 1795 while traveling north from Philadelphia by horseback. In the wilderness near by he was "struck with astonishment," he wrote in his *Memoirs*, when all trace of man disappeared.

In the forest's gloom he called out occasionally to his companion to make sure he was not getting separated. "When I cried, 'So-and-so, are you here,' and my companion replied, 'Unfortunately I am, my Lord,' I could not help laughing."

Robert Louis Stevenson wrote in *Across the Plains* (Charles Scribner's): "And when I had asked the name of (the) river . . . and heard that it was called the Susquehanna, the beauty of



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Robert Louis Stevenson wrote in *Across the Plains* (Charles Scribner's): "And when I had asked the name of (the) river . . . and heard that it was called the Susquehanna, the beauty of the name seemed to be part and parcel of the beauty of the land. As when Adam with divine fitness named the creatures, so this word Susquehanna was at once accepted by the fancy. That was the name, as no other could be, for that shining river and desirable valley."

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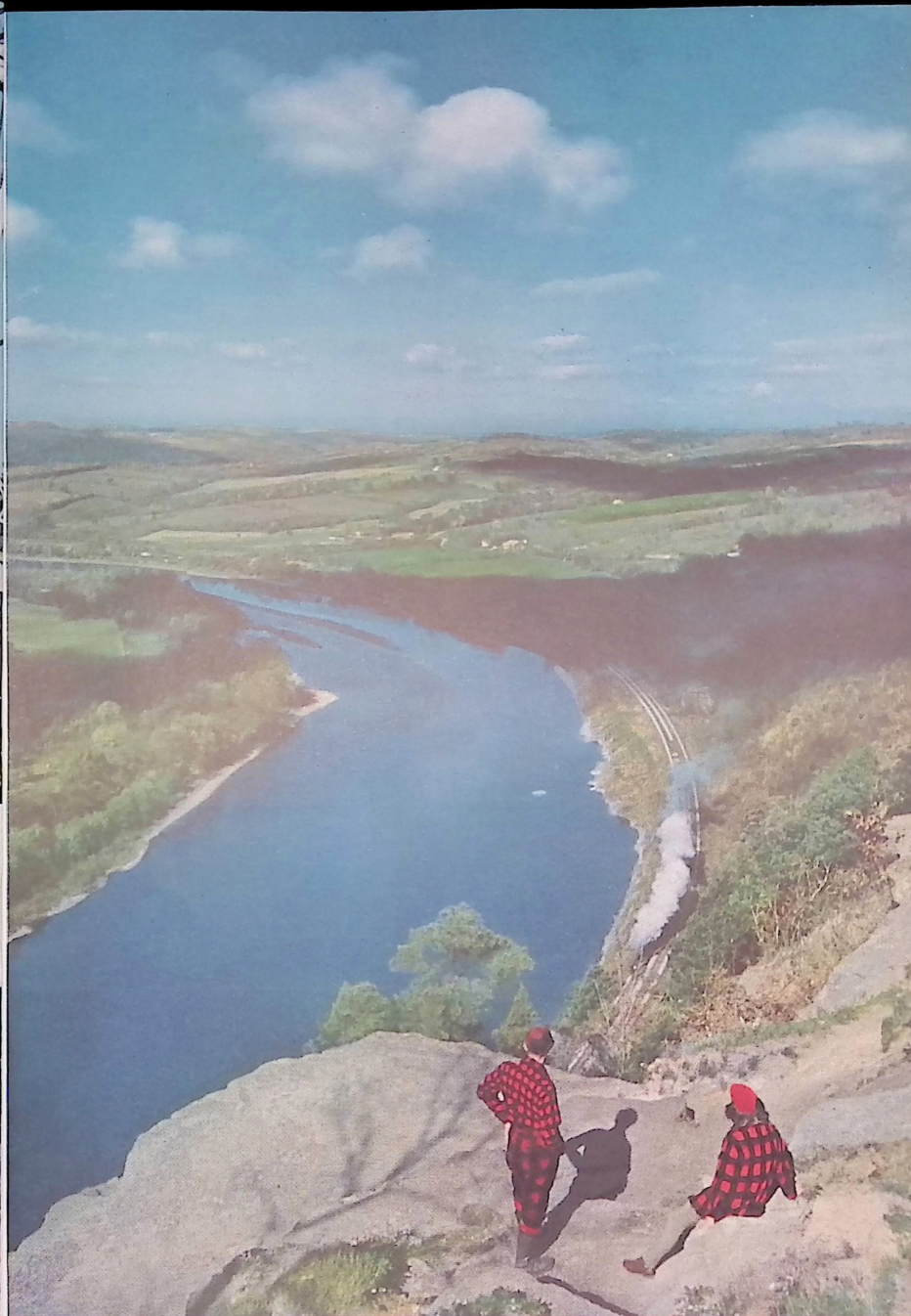
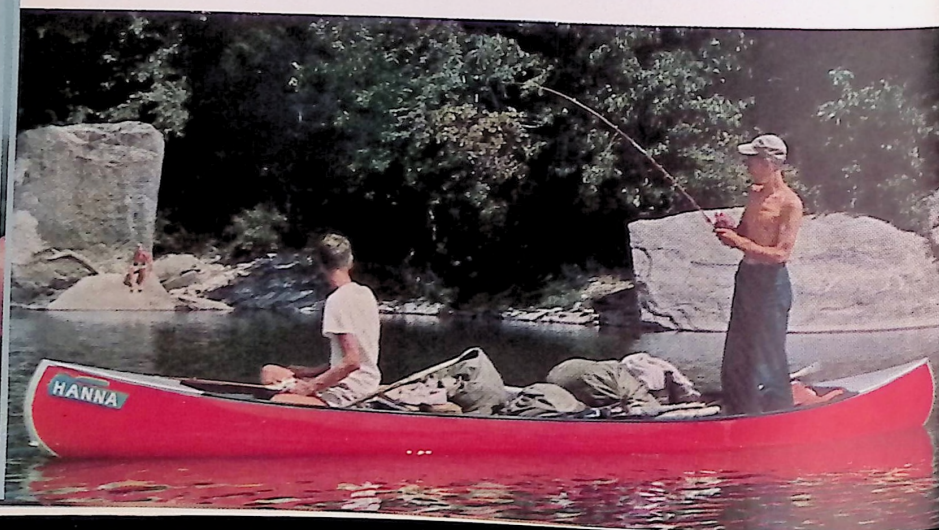
Kodachromes by Walter M. Edwards

↑ Laceyville's Welcome Mat to the Canoeists Is Hung Out on the Bridge

This Pennsylvania town treated the visitors to open-door hospitality. Gordon Morrison, their overnight host, warned them: "Don't hesitate at the door. The dog is trained to nip only those who knock; he welcomes those who boldly walk in."

↓ The Voyagers Caught Just One Fish, a Bass That Jumped in Their Boat

Generally, fishing was poor, but on occasion the travelers saw Pennsylvanians outsmarting bass and wall-eyed pike, the latter sometimes called "Susquehanna salmon." Here the author snags his line close to Standing Stone (left) of page 89.



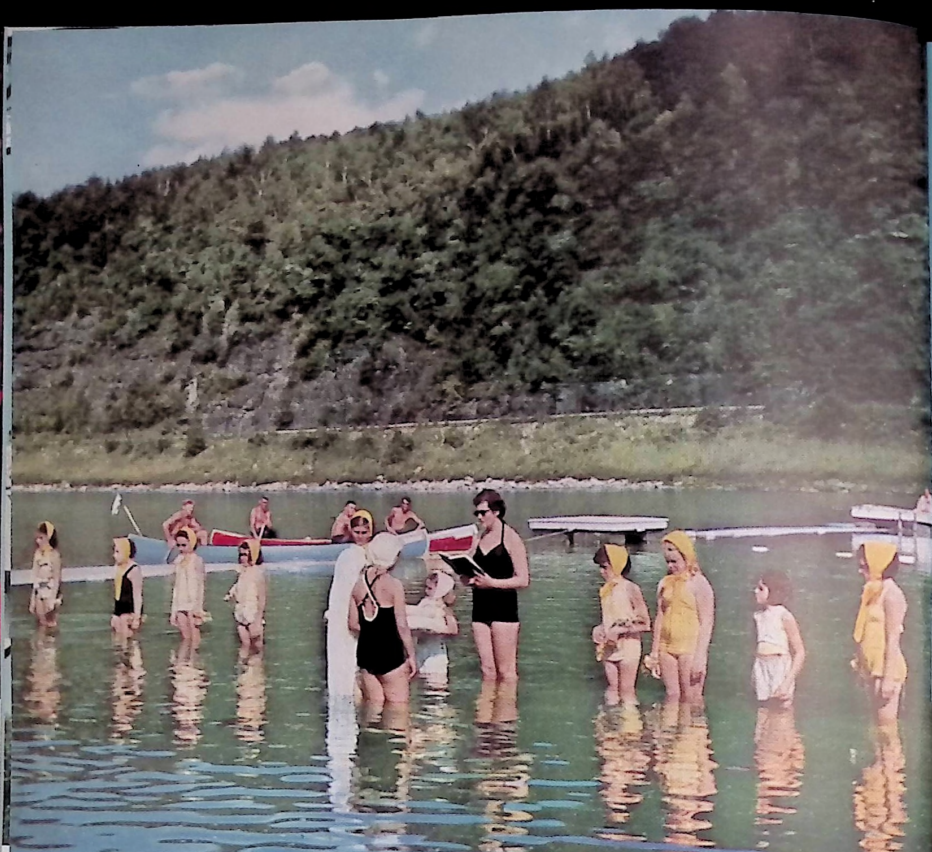
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Indian Sentinels Used to Count Canoe Traffic from 500-foot Wyalusing Rocks

Once the Susquehanna was the eastern Indians' number one highway. Gone are their swift bark canoes. Instead, Lehigh Valley trains whistle and steam around the bend.



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↑ Girl Campers Unite "Mr. H2" and "Miss O" in Watery Mock Marriage

Camp Onawandah's Girl Scout ceremony emphasizes the safety of swimming in pairs. The "preacher" asks: "Mr. H2, wilt thou have this woman to be your good ole buddy . . . ? Wilt thou protect her so long as ye both shall swim?" A life buoy serves as wedding ring.

↓ Girl Scout Counselors Paddled Two Days to Escort the Canoeists to Camp

Invited to be the first men to stay overnight in Camp Onawandah, the Susquehanna voyagers bravely accepted. Here, near Tunkhannock, Pennsylvania, Vida Davis and Fran Heckman, on their knees, demonstrate an Indian style of paddling a canoe.

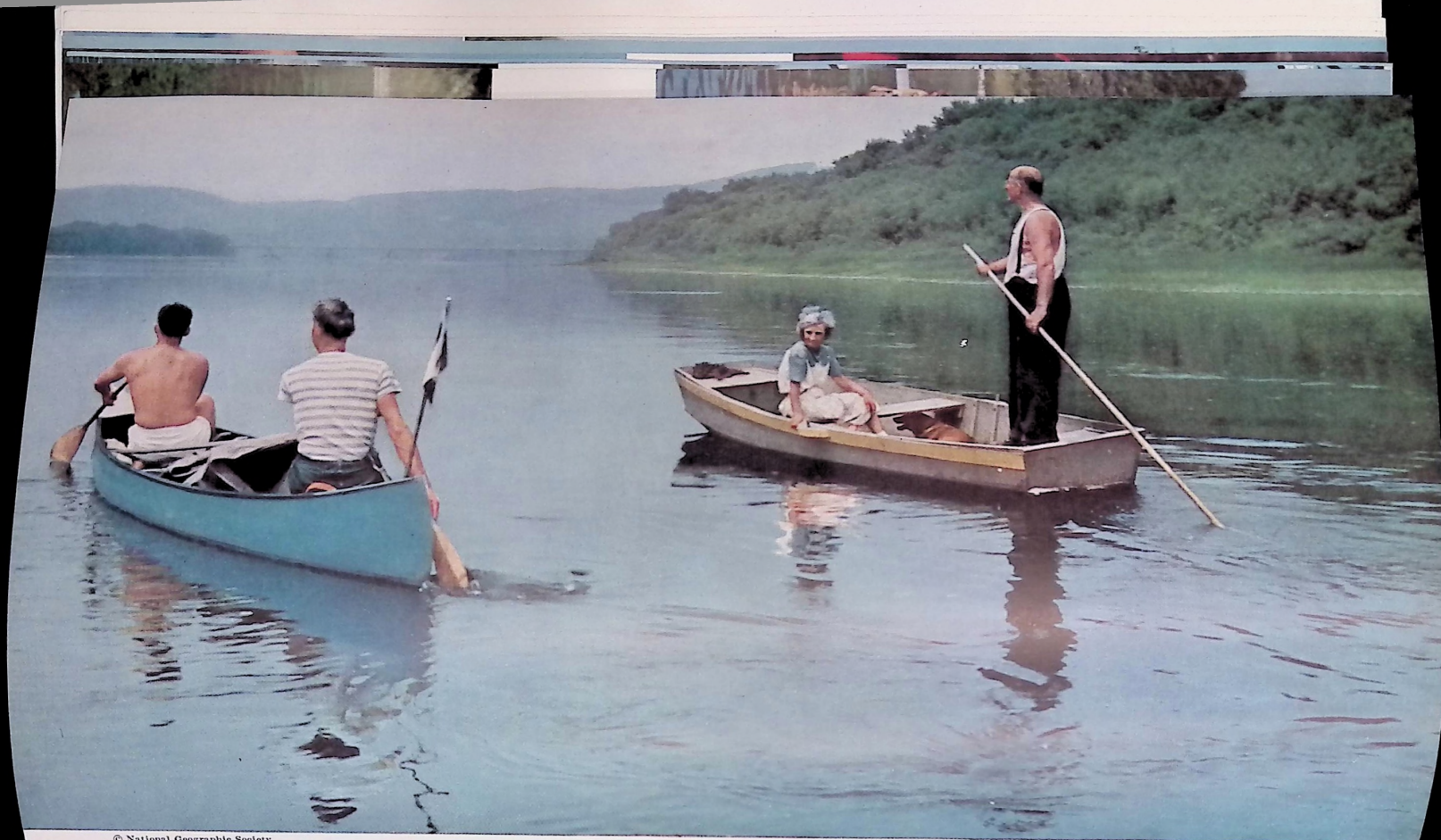


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Trading Paddles for Miners' Lights, the Canoeists Prepare to Explore Huber Colliery
Wilkes-Barre's monuments to King Coal are mountainous culm heaps, huge breakers where fuel is screened and cleaned, and towering shaftheads such as this. Two miners (right) adjust gear strange to the visitors.



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A Danville, Pennsylvania, Couple Meets *Susque* and Guides It Through Rocky Shallows to the Bridge
 Long before the escort appeared, Danville Boy Scouts smoke-signalized the canoeists' arrival. It was a hot day; the panting dog found the only shade beneath the boat's seat. Pole beats paddle or oars in the shallows, which lack depth for a full stroke.

Hundreds, Gathering at Danville's River-front Reception, Surprised the Canoeists by Treating Them as Explorers!

Guns were fired, banners were hung from the bridge (opposite page), and loud-speakers played "Cruising down the River."

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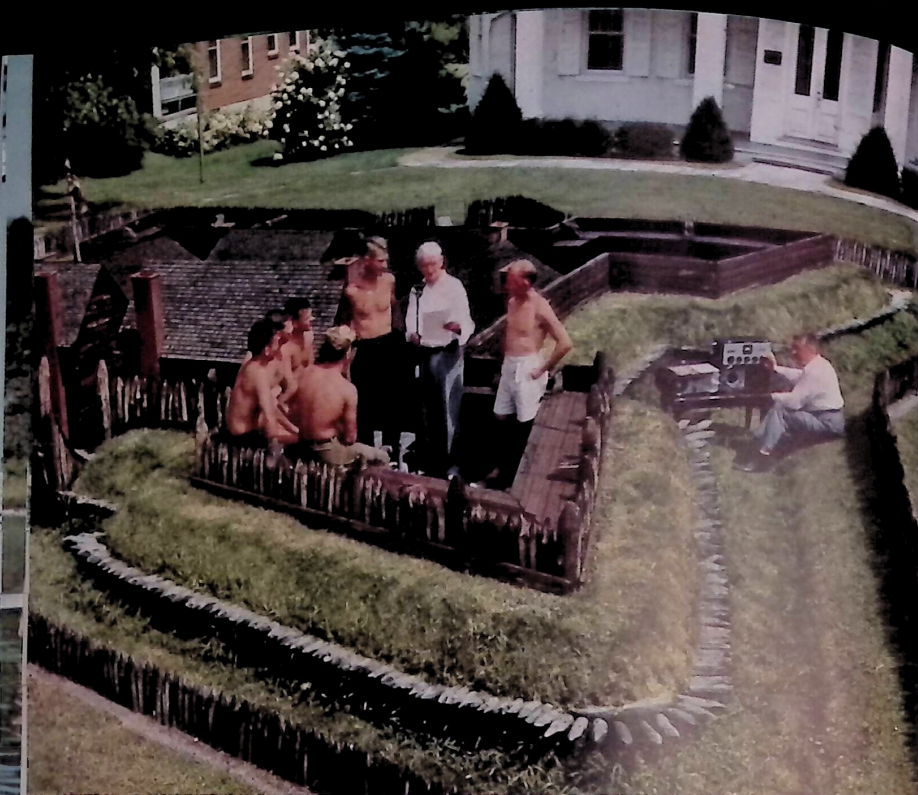
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↑ Fort Augusta in Miniature Stands on the Original Site in Sunbury, Pennsylvania

The stockade protected colonists during French and Indian wars (page 110). Its model serves as the setting for a radio interview with the party. Station WKOK's technician sits in the dry moat. A museum (white building) houses the two exhibits below.

▽ Pioneers Scattered Iron Caltrops to Discourage Moccasined Raiders

Heel traps, one spike always pointing up, were useful too against cavalry, just as explosive mines ambush tanks. American settlers called them "crow's-feet." The barge model suggests the canals which once edged the Susquehanna.



Down the Susquehanna by Canoe

97

And indeed there was. But our eyes were too close to the ground to see it. Toppy, flying high above us in a plane, found the biggest arrowhead of all—the realistically shaped land between the converging rivers (page 85).

The river in Pennsylvania is frequently called the North Branch to distinguish it from the West Branch of the Susquehanna. At Towanda, horseshoe windings begin. The mountains rise higher, at places coming to the water's edge. Distances are greater. Far-away blues and purples appear.

Last to arise at our Wysox camp, I found four guinea pigs waiting for my latest in a continuing series of experiments with pancake batter. In 30 minutes the occasion jokingly referred to as "breakfast" was past. Adolph, conscious of the campers' rule that he who complains is cook next day, said, "Your pancakes are all right, Ralph. Not everybody can make flannel cakes so thick that the inside batter is cool!"

Vanished Retreat of French Refugees

Fishermen were numerous from Athens to the mouth of the Lackawanna. We tried our luck at Standing Stone, but caught nothing.

A natural cornerpost, Standing Stone marked a tract bought in 1793 by highborn French refugees from the Reign of Terror (page 89). We rounded a great horseshoe bend and at the point walked up a tree-shaded lane to the Hagerman House (page 87).

Farms now spread over the acres where stood the French village of Asylum (page 88). Fifty houses, a store, inn, bakery, brewery, and chapel rose here in the wilderness, only to crumble and disappear when Napoleon told the 18th-century displaced persons they could come home again.

The day had been oven-hot. Toward evening, as we stroked along the foot of a mountain slope 400 feet high, the sun suddenly dimmed. The air cooled and began stirring. A downdraft from the mountainside brought us the pungent, pine-scented odor of deep woods.

A white-headed osprey rose from a rock pinnacle and flew off. A deer, one of several we saw on the trip, bounded for cover. Black clouds rolled in from the west.

Rain drenched us. It came down without slackening for 40 minutes. We could not see shore. Gusts blew us sideways. We ran onto a shoal. Our canoes, like basins in a backyard, began filling with rainwater.

We passed under Wyalusing Rocks, not even seeing this Susquehanna "must." But at Wyalusing bridge Mason Browning and

Jack Welles met us in their cars and hauled us dripping to the top of the rocks, where we spent the night in the dry comfort of Log Cabin Inn.

Next morning we looked out to find a sea of fog filling the river canyon. By 10 the sun had "burned off" the mist (page 91).

At the west entrance of Vosburg Tunnel we shot a riffle and crossed the 600-foot contour line, halfway down the ladder from Otsego's 1,194-foot level. This point is also about halfway in distance.

Rounding the Neck, we sighted two girls paddling upstream. They intercepted us and introduced themselves—Vida Davis and Fran Heckman (page 92), Girl Scout counselors from Camp Onawandah, 12 miles downstream. They escorted us to their camp, leading us through rocks and riffles.

We reached Onawandah in time for a scheduled afternoon water pageant in our honor. Miriam E. Pierce, camp director, invited us to stay all night.

"In a Girl Scout camp?" Don sounded shocked, but interested.

"You will be the first men ever to stay in Onawandah overnight. Everything is arranged. Dinner will be ready in 15 minutes."

Needing no encouragement, we accepted. Meals were a joy, with Brownies, Scouts, and counselors joining voices in song after song.

Next morning we overtook two Laceyville boys—Edward Whipple and Charles Houtz—canoeing from Tunkhannock to Wilkes-Barre. Houtz pointed out Campbell Ledge, a high precipice on the left bank. "During the Wyoming Massacre," he said, "a man jumped off that ledge on a horse to get away from the Indians. He lived through it, and his horse broke only four of its legs."

At this point we entered Wyoming Valley, that great industrial pocket seamed with coal deposits and filled with cities. What a difference from the farm villages and stockaded forts that the Iroquois and Tory band burned in 1778 during the raid that killed almost 300 men, women, and children.

Where "Black Rock" First Was Burned

The fires of the Revolution raged above the world's greatest anthracite field. The "black rock" was widely regarded as useless until Judge Jesse Fell in 1808 burned some in an open grate under natural draft and thereby demonstrated its superiority as a domestic fuel. The importance and growth of Scranton, Wilkes-Barre, and a dozen smaller cities stemmed largely from that moment.

The Lackawanna River bears the mark of coal as it flows, black as ink, into the Sus-

quehanna, and the larger stream is never thereafter entirely free of carbon silt.*

We canoed into Wilkes-Barre in a violent squall. Two police squad cars escorted us to our hotel.

Next morning we visited the Huber Colliery of the far-flung Glen Alden Coal Company (page 93). Emerging from the mine, we drove to Prospect Rock on a ridge rising high behind Wilkes-Barre.

Partway up the slope, smoke issues from a "perpetual" coal-mine fire underground. No mines underlie the city's business center, but we were told one can cross under the Susquehanna in mine tunnels.

The rapids near Nanticoke mark the west end of Wyoming Valley. Suddenly a man appeared on shore, waving at the tumbling water and yelling.

"Your canoes will never make it," he kept repeating. We looked the water over and, ignoring our friend's well-meant advice, ran the rapids without incident.

Halfway to Shickshinny we came upon a low zigzag dam of loose stones shaped like a great M. We drifted to one of the points, then back-tracked and fought our way through a narrow rocky corridor, the only break, next to the right bank. Here a couple of men were working on the dam. "What is this contraption?" we shouted.

"It's an eel trap."

"I'd call it a canoe trap," said Gil.

"We're repairing it for the fall run. As the eels come downstream, we stand at the points where you see those wooden racks and pitchfork them by the hundreds into our boats."

Concrete Walls Baffle Spawning Shad

We learned that the young eels come from the sea after being spawned to live in fresh water. Able to slither along on the ground, they manage to get around the five dams in the lower Susquehanna.

The shad, another migrating species, does not fare so well. Its runs, described by old-timers as so heavy that a man could walk across the river on snowshoes, were stopped cold by the building of Holtwood Dam in 1910. Spawning instinct guides a few shad to the base of Conowingo Dam, where they circle dumbly before the mystery of concrete.

Except for slicing through mountains at Shickshinny and Catawissa, the river flows to Northumberland through a rich, narrow valley. Berwick, Bloomsburg, and Danville are the valley's prosperous centers.

Danville rolled some of America's first T rails, and Berwick built some of the earliest

all-steel passenger coaches to be used in public service, for New York City's first subway. Bloomsburg makes carpets. We remembered it for the vines and flowers growing high in lamppost pots on the main street.

Nescopeck Falls, under the bridge at Berwick, spills a great volume of white water through a tortuous, flumelike channel that gave our canoeing ability a real test. It was easy to see why the overloaded boilers of the *Susquehanna and Baltimore* exploded as the steamer tried to surmount these rapids in 1826. Men soon gave up trying to navigate the rocky, shallow, flood-ridden Susquehanna and built canals along its banks.

A Smoke Signal!

Five miles from Danville we spotted a plume of white rising from a ledge 200 feet above the river. A smoke signal! Boy Scouts were telling the Danville crowd we had been sighted. As we rounded the bend, an elderly pole boatman (page 94) guided us through the rocks and reefs to the landing. Amplifiers on shore blared "Cruising Down the River."

While several hundred people looked on (page 95), we landed and were whisked through town for luncheon at the George F. Geisinger Memorial Hospital. Dr. Harold L. Foss, surgeon in chief, showed us through his well-run and expanding institution and pointed out the large clinic under construction.

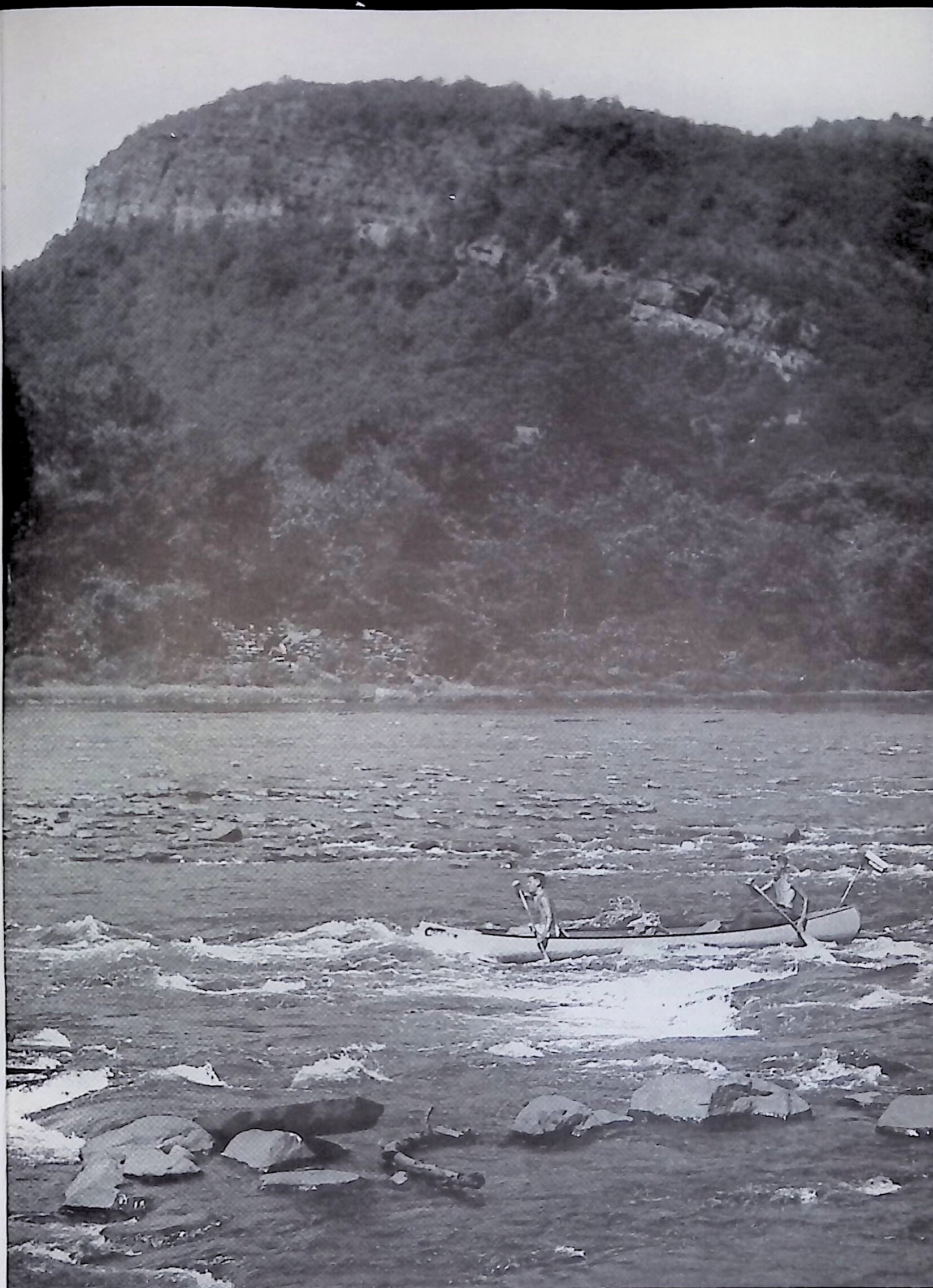
Townpeople said, "Give Dr. Foss time and he'll make Geisinger the Mayo of the East."

Northumberland geographically is Athens all over again, with the West Branch taking the place of the Chemung. The junction of the two great branches of the Susquehanna (page 110)—called "Shamokin" by the Indians—was bound to be a meeting place of peoples as well as of waters.

The Six Nations stationed their wise and respected viceroy, Shikellamy, there to watch over the subject Delawares and to maintain contact with the advancing whites. At Shamokin the settlers built Fort Augusta (page 96) in 1756, and Sunbury grew up around it.

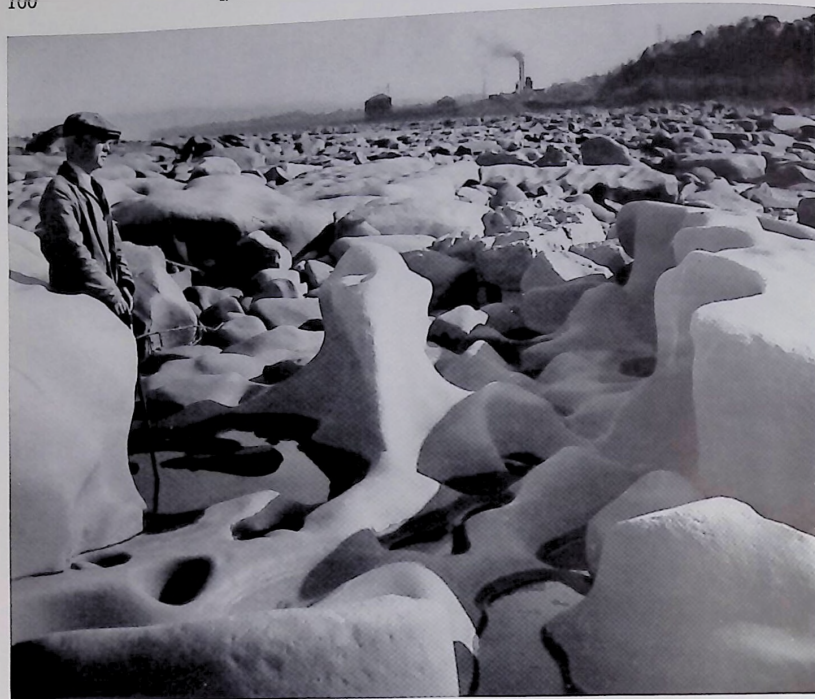
From Sunbury we made a side trip by station wagon and canoes into the West Branch country, which a century ago was a lumber center of the United States (page 105). It still affords magnificent vistas of timbered mountains (page 106). But in Lock

* See, in the NATIONAL GEOGRAPHIC MAGAZINE: "Coal: Prodigious Worker for Man," May, 1944; "Steel: Master of Them All," April, 1947, both by Albert W. Atwood; "Industrial Titan of America," May, 1919; "Penn's Land of Modern Miracles," July, 1935, both by John Oliver La Gorce.



Fast Action Near Nanticoke: *Susque* Gets a Taste of "Water with a Head on It"

White water is a rarity on the summer Susquehanna. Only at two or three places did the voyagers find dangerous rapids. Yet the river's 1,194-foot drop created a steady current which carried them along, provided many a thrill, and at least one spill. Tilbury Knob looks down on the rocky chute where the Susquehanna pours from Pennsylvania's Wyoming Valley.



Lancaster Newspapers, Inc.

Drought Reveals What the Bottom of a River Looks Like: Conewago Falls

Ordinarily, water and small stone "tools" are swirling tirelessly over this hard rock, sculpturing potholes, troughs, pillars, and washboards. Dr. Herbert H. Beck surveys the fantastic scene during low water, 1947.

Haven and Williamsport, the West Branch's leading cities, we found people engrossed in such up-to-date matters as airplanes and "Little League" baseball (pages 107, 109).

We canoed 60 miles on the West Branch, from Pine Creek mouth to Northumberland, drifting around the abrupt end of Bald Eagle Mountain. "You're following the path of the 'Great Runaway,'" Dr. Lewis E. Theiss of Muncy told us. "West Branch folks thought discretion the better part of valor, so they ran away from the Indians, thus avoiding a Wyoming Massacre here."

After a cool respite in the deep shade of Bucknell's campus, in Lewisburg, we stroked off the final West Branch miles. We still had before us the main river's section of water gaps and ledges to Columbia, then the scenic Piedmont portion with its dams.

Because of low water, I had been uneasy about the ledges, unbroken rock ribs extending across the river. In dry season only an inch or two of water clears them. But as we

reached Sunbury, rains upstream raised the river, and the Susquehanna's reputation of being "a mile wide and a foot deep" almost was lived up to.

With ample water we roared down to Harrisburg in three days, becoming part of the many breath-taking riverscapes that have captivated millions of motorists on U. S. 15 and Pennsylvania 14.

He Who Dreams Last Dreams Best

At the Isle of Que, in Selinsgrove, Mrs. Nellie Bergstresser greeted us. "Isn't our river beautiful?" she demanded with a loving sweep of the arm.

"No wonder Conrad Weiser outwitted Shikellamy to possess the Isle of Que. You know, Weiser, the early interpreter and great peace-maker with the Indians, owned a rifle which his friend, Shikellamy, wanted. Etiquette did not allow the Indian to ask for it outright, so Shikellamy said, 'The other night I dreamed I owned your fine rifle, O brother.' Weiser

promptly gave it to him. Next time they met, Weiser said, 'Last night I dreamed I owned the Isle of Que.' The Indian reluctantly gave him the island, but said, 'Brother, let us not dream again!'"

Dr. G. Morris Smith, the president of Susquehanna University, took us to the girls' dormitory to spend the night. "It's between terms, and no one is there," he explained.

That night, in her charming Selinsgrove home, Mrs. Howard Burns showed me a large collection of arrowheads and relics mostly found on the Isle of Que. Mr. Burns, who confessed a slight relationship to Robbie Burns, recited his poems about the Isle of Que and the Susquehanna River. Daughter Barbara periodically said, "Oh, Dad, Mr. Gray doesn't want to hear *another* one!"

Howard Burns had watched the river for many years. "It used to be about half as wide as it is now. When the virgin pine and hemlock forests disappeared, floods gouged into the banks each spring. The islands across from the Bergstressers used to support rich farms before coal silt drifted down to cover the soil. But the river has always furnished livelihood and probably always will," he philosophized.

Next day we reached McKee Half Falls (page 112). We camped on the closely cropped grass of the towpath between the dry Pennsylvania Canal and the river. The falls, a double ledge with a nice drop of water, sang in our ears all night. With a full moon overhead, this was easily our prettiest campsite.

Approach to Harrisburg

The nearer we approached Harrisburg the deeper the water gaps became, the more frequent the ledges across the water, the more sprinkled the river with its myriad "peppercorn islands" and rocks. The Appalachian ridges so crease the landscape that serious geologists make the Jim Bridger-ish statement that 81 miles have been compressed into 66.

Through the folds from the west fights the Juniata, one of the Susquehanna's great tributaries. We camped at the point and sat counting the Pennsylvania Railroad trains pounding through Duncannon and up the Juniata to the west (page 114).

Behind us, cars and trucks rumbled across the two Clarks Ferry bridges to find water-level routes along the banks of both rivers. We marveled at the silent, thankless service the Susquehanna system renders modern transportation, cutting paths through mountains for steel and rubber. We understood the statement that the history of the land has been written very largely in water.

In Pennsylvania's stately capital (page 116) the bridges are so close together that canoeing among the many piers is like walking through the crypt of a cathedral. Pedestrians called, "Look out for the spillway of the sanitary dam." A skeptical crowd was on hand to watch, but we safely shot through the ticklish four-foot drop (page 117).

Pennsylvania Navy Salvages Coal

For days we had looked for "Pennsylvania's navy." This fleet of dredges sucks up "river coal" that has drifted down the Susquehanna.

We caught up with the curious vessels (page 115) as we canoed along Threemile Island in the slack water above York Haven Dam. They were anchored and their boiler fires banked for the night. We camped on the flat top of the dam itself, since no water was going over (page 118).

Early next morning the barges, shifting positions for a new day's work, sent out waves that broke over the dam and rudely awakened us.

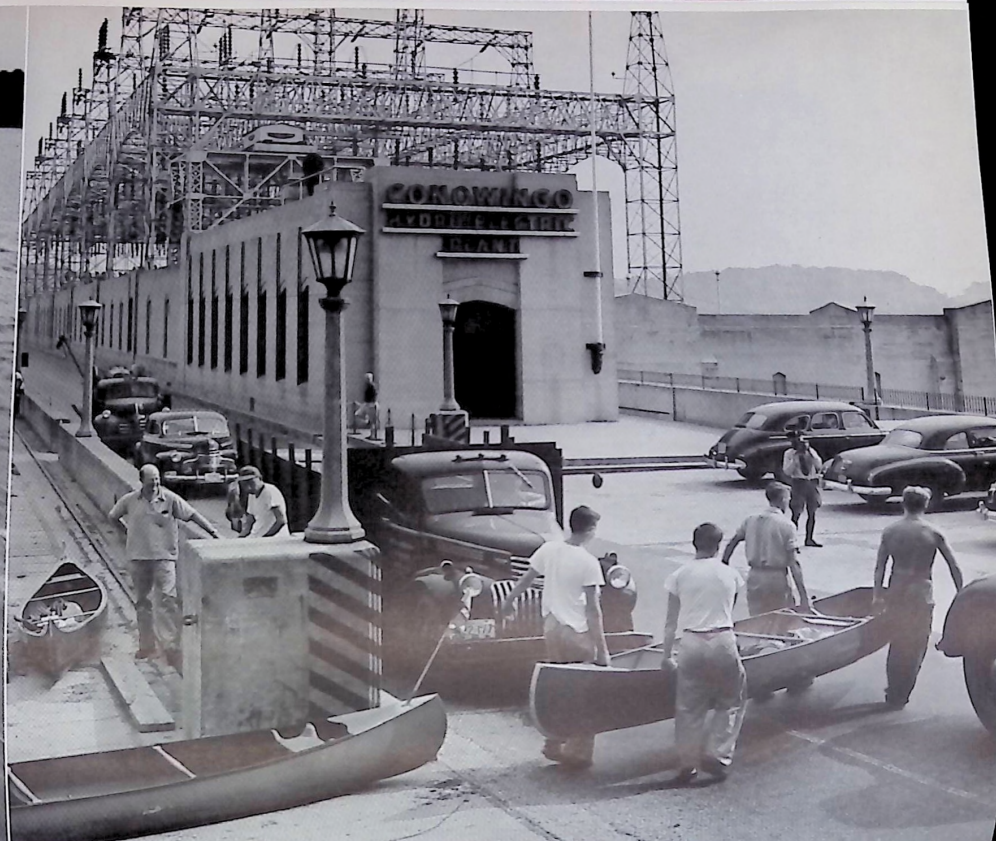
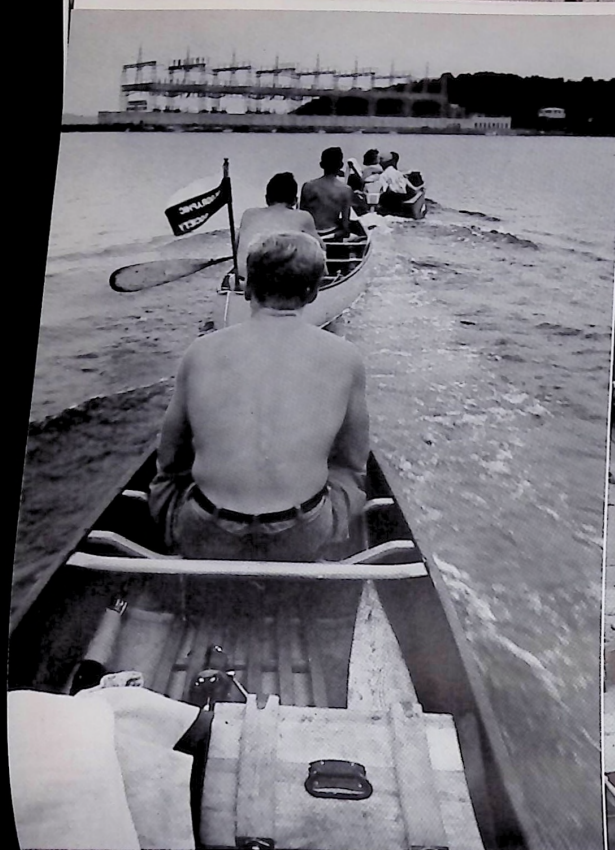
After breakfast—with eggs as a change from pancakes (page 119)—we inspected the nearest dredge, then paddled along the diagonal York Haven Dam brink. We looked with longing at the dry rocks of Conewago Falls (opposite page), wishing the dam had never been built to rob us of a good canoe run. Men of the Metropolitan Edison plant eased our grief by helping us make the portage.

Haldeman Rifles, five distinct ledges, gave us the fun of a sustained half-mile of swift, dropping water. Then below Marietta, at Chickies Rock, the river makes a right-angle turn into the strangest maze of rocks, cross currents, eddies, and dead-end channels that I have ever paddled through. The rocks ran out as we neared the Columbia-Wrightsville bridge.

We camped on an island below the giant span and awoke next morning to begin the long slack-water pull through three man-made lakes to Chesapeake Bay. We learned that there are only eight miles of current from Columbia to tidewater—a mile in the tailrace below Safe Harbor Dam; two miles below Holtwood Dam; and five miles below Conowingo Dam.

Near Long Level, formerly Conejohela, where the river is nearly two miles wide and aswarm with all types of pleasure boats, once stood Susquehanna Fort, a stronghold of the Susquehannock Indians. In 1675 the Iroquois finally destroyed the fort and obliterated the Susquehannocks as a nation.

Safe Harbor is a 62-foot-high, nearly mile-long barrier (page 103). R. L. Bortner and



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Welcome Motorboat Tows the Canoeists to Their "Most Dangerous Moment"—the Portage Across U. S. Highway 1 at Conowingo Dam
Traffic came to a halt as the party carried its three canoes over the busy dam-top road. The impounded lake, largest reservoir on the river, stretches 14 miles upstream.



Safe Harbor Dam Backs a Watery Swath Across Pennsylvania "Dutch" Fertile Farmlands

Instead of farms, Washington, D. C.'s Mall, avenues, and monuments might have covered this rural patchwork. The House of Representatives in 1789-90 favored establishing the National Capital here. Wright's Ferry changed its village name to Columbia, perhaps in anticipation. But Congress finally chose Philadelphia as the temporary Federal City and the Potomac River as the permanent site.

Present-day Columbia lies to the right of the barely discernible bridge in the distance. This mile-long span is the only highway connection between Lancaster and York Counties. Red roses planted at the Lancaster end (right) and white roses at the York approach recall the 15th-century Wars of the Roses between the English royal families of Lancaster and York.

Confederate troops reached their northeasternmost point at



102
Welcome Motorboat Tows the Canoeists to Their "Most Dangerous Moment"—the Portage Across U. S. Highway 1 at Conowingo Dam
Yachts came to a halt as the party carried it—three canoes, over the dam, down the road. The inundated lake's largest reservoir on the river stretches 11 miles in length.



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Confederate troops reached their northeasternmost point at Wrightsville, across the river from Columbia. Finding the then wooden bridge burned by retreating Union forces, they turned west and joined Lee at Gettysburg.

Fairchild Aerial Surveys, Inc.

M. W. Seitz, officials of the Pennsylvania Water & Power Company, met us in the forebay with a crew of men—their usual service bay for passing canoes. They piled canoes and duffel onto a flatcar behind a dinky engine and portaged us down a railroad siding to the tailrace, where Conestoga Creek joins the mother stream.

In Conestoga Valley was born the famous boat-shaped Conestoga wagon, the "vehicle of empire," that carried America and its goods across the Appalachians. And near-by Pequea Valley was the birthplace of the Pennsylvania rifle, often called the Kentucky rifle, the long, true-beaded weapon which helped the frontiersman hold whatever territory he rolled his wagon to.

As in northeast Pennsylvania, the Susquehanna here also flows through scenes of inter-colony warfare. At Long Level we crossed the trail of our old Potomac friend, Thomas Cresap. Before going "west" to Oldtown, Maryland, he was sent north by Lord Baltimore to maintain Maryland's claim to the 40th parallel as its northern boundary. The small "war" he started rankled until the English surveyors Charles Mason and Jeremiah Dixon finished cutting their fateful line in 1767.

Smokestacks on a Hydroelectric Plant!

When Holtwood Dam was completed in 1910, it was America's largest, a granddaddy of American hydroelectric developments. As we paddled toward the power plant, something seemed out of place. Jim Evans put it into words: "Look at those three big smokestacks! Why is smoke pouring out of a hydroelectric plant?"

Mr. Seitz, who also was on hand here, answered Jim's question. "The Susquehanna yields both water power and steam power when you throw a dam across it. That smoke comes from coal-fueled generators, and the coal—fine particles of anthracite—comes from the bottom of the river."

"Are you afraid of the supply running out?" I asked.

"We've already taken out 3,000,000 tons, and we figure there is enough coal to last 25 more years. Then we have the lake above Safe Harbor Dam to tap for coal."

A dozen obliging men made our carry for us here in the same manner as at Safe Harbor. In the Bare Islands, where Holtwood's raging tailrace loses itself in the lake stretching 14 miles north from Conowingo, we studied the fantastic shapes that floodwaters had tooled from solid rock.

At one place Dal and I canoed into the broken side of an enormous pothole and looked

up 15 feet as from a well bottom to a circle of blue sky. During high water unbelievable volumes of water scour the Susquehanna watershed, large as Belgium, the Netherlands, and Luxembourg.

Conowingo lake was glassy quiet. We pointed for precipitous Mount Johnson Island and paddled as if on a treadmill. When we reached it, we loafed along its east side, enjoying the relief from the blazing afternoon sun. We saw no bald eagles, though Dr. Herbert H. Beck of Lancaster had told us the island is a sanctuary for the country's national bird.

On Mason and Dixon's line we took a cooling swim, then paddled into Maryland. Soon hot again, we were glad to get a tow behind a motorboat the last three miles to Conowingo.

To thousands, the Susquehanna is the few miles they see north and south of mighty Conowingo as they motor across the dam top on U. S. 1.

We had often joked that portaging across the busy highway would be the most dangerous moment of the trip. And it might have been if Paul Lefever, plant superintendent, had not recognized our plight and asked highway patrolmen from the near-by Maryland State police barracks to stop traffic while we carried our canoes across (page 102).

A final thrill was running the Conowingo tailrace and Smith's Falls. In 1608 these rock-filled rapids near Port Deposit prevented John Smith of Jamestown colony from proceeding any farther upstream. But the English adventurer antedated Etienne Brulé (page 80) by eight years and gets credit for being the first known white man to see, and travel on, the Susquehanna.

Thirty-six days and more than 500 water miles after leaving Cooperstown, we pulled through the tidewater portion of the river, between Port Deposit and its mouth. A sense of satisfaction crept over us, a feeling that the job had been done. Though it had been fun, we were not sorry that our final paddle stroke was just ahead.

We looked ahead, where the Susquehanna merges with the limitless blue of Chesapeake Bay.* "Wait a minute!" I exclaimed. "We haven't finished yet. The Chesapeake is part of the Susquehanna. It just happens to be permanently flooded by the ocean. We've got to canoe to Norfolk!"

"You and your geographic theories!" said Dal. "For me the Susquehanna ends here at Perryville, and I'm going home!"

* See "Chesapeake Odyssey," by John Maloney, NATIONAL GEOGRAPHIC MAGAZINE, September, 1939.



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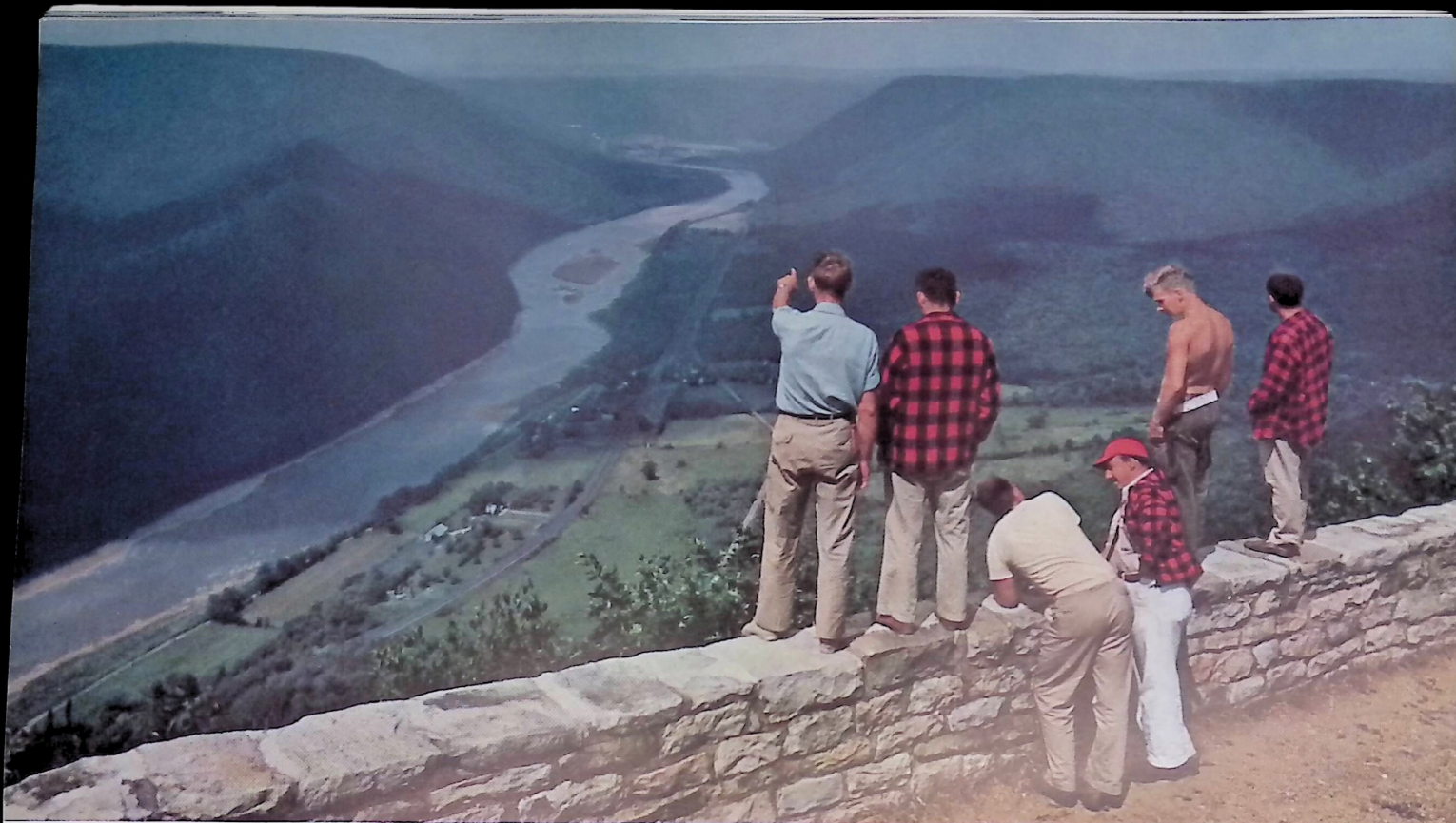
▲ "Pine Creek's So Low that the Minnows Have Sunburned Backs"

Rex Sherman (right), caretaker of Leonard Harrison State Park, refers to a stream flowing through "Pennsylvania's Grand Canyon." In his youth the deep gorge was flooded with water and choked with cut timber. Last year the stream was too shallow for canoes.

▼ West Branch's Bustling Lumber Days Are Shown in an Old Painting

Robert C. Riddell recalls the 19th-century boom extending from his farm to Williamsport, Pennsylvania, seven miles downstream. Logs swirling down the Branch were caught by the boom, tied into rafts, and ridden down the Susquehanna to world markets.





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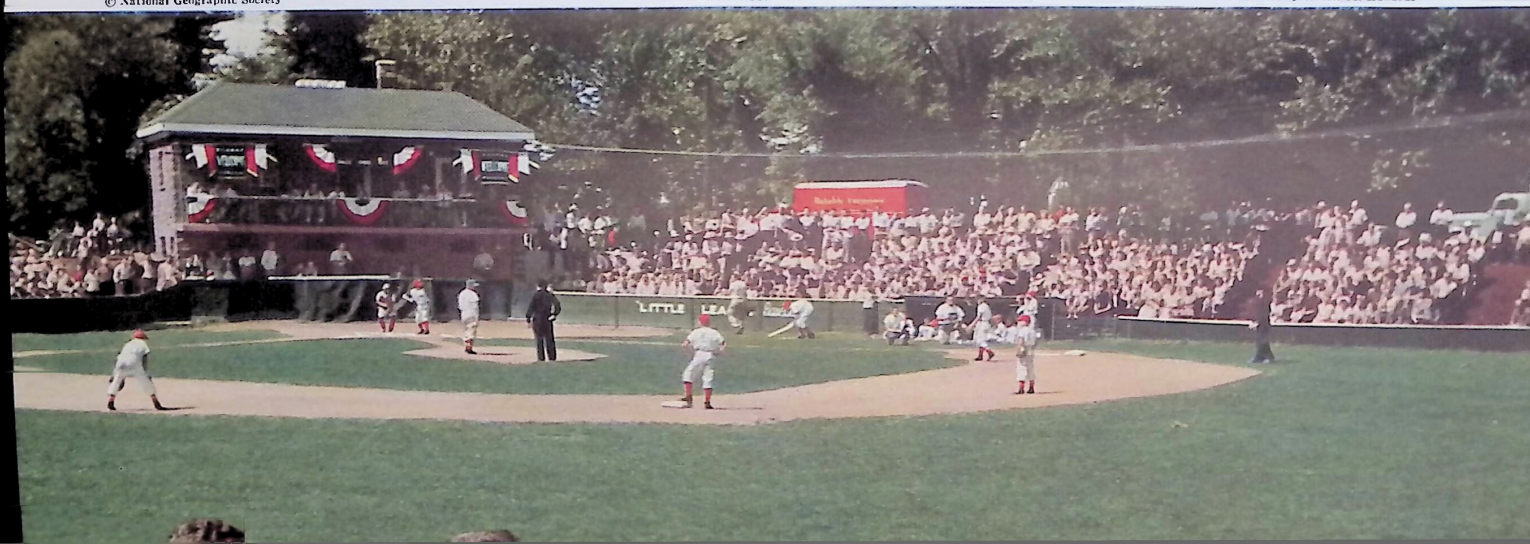
Bucktail Country Drained by the West Branch Gave the Union Army a Regiment of Sharpshooters. Seen from Hyner View
When Pennsylvania woodsmen heard of the shooting war in Virginia, they rafted down to Harrisburg and enlisted. They distinguished themselves at Second Bull Run, Antietam, Gettysburg, Fredericksburg, and Richmond. Their cap badge was the tail of a buck deer.

Little League's Diamonds Are Two-thirds Regulation Size. Games Last Six Innings. Players Are 9 to 12 Years Old
Williamsport, Pennsylvania, the Cooperstown of "Little League" baseball, forgets work when youngsters play their Little World Series. Carl Stotz (left), founder of the 23-State league, explains its system to the visiting canoe party.

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↑ Campers, Puffing Like Bagpipers, Blow Up Air Mattresses

Most preferred the glass blower's technique, but Caleb Hathaway (left) pumped by hand until his arms tired, then switched to footpower. Don Blakley (right) set an inflation record with 15 mighty exhalations.

↓ They Called It "Eating in the Saddle on the Old Susquehanna Trail"

To save midday halts, the party often lashed canoes together and drifted downstream while lunching. Blakley, here salting a sandwich, liked to pass food on his paddle blade.



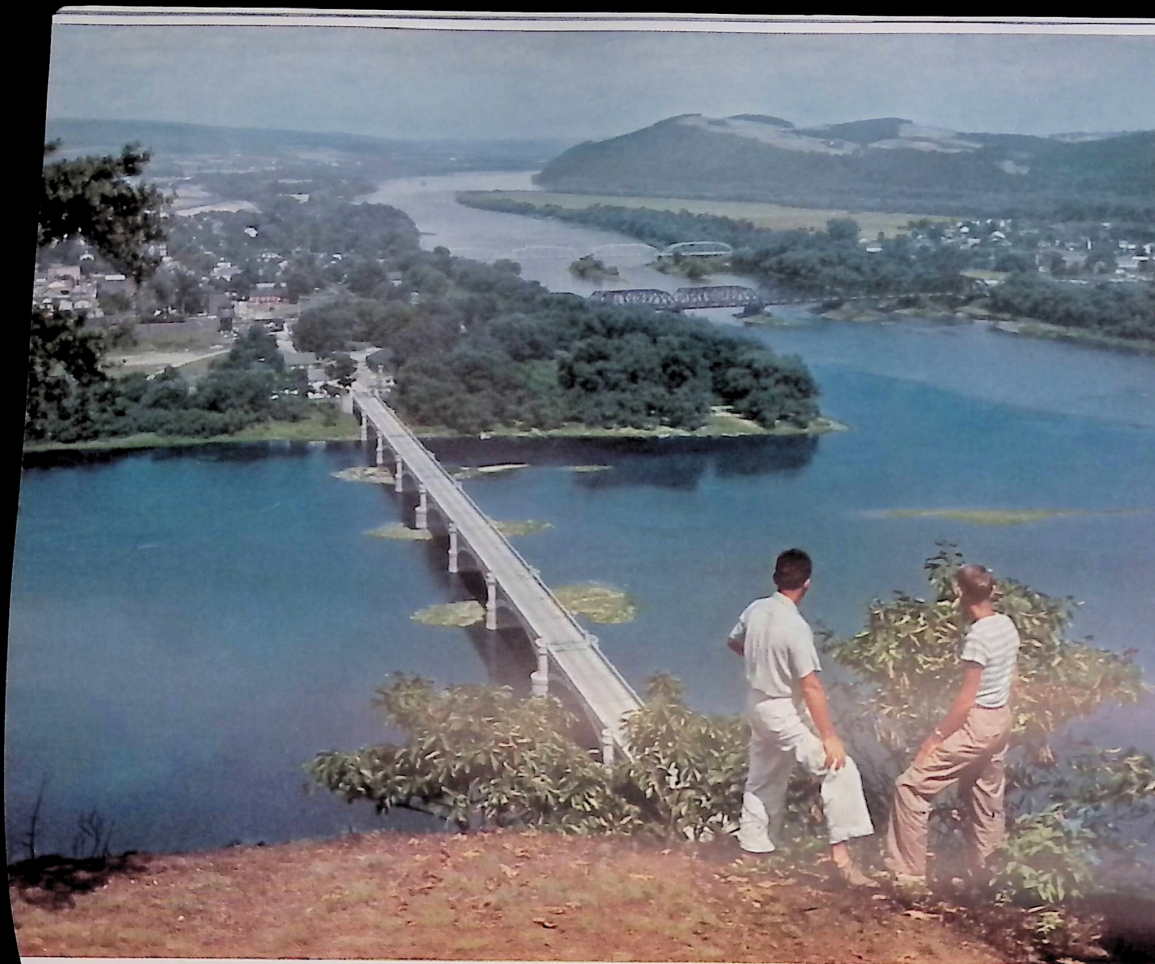
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Piper Cubs Disappear into a C-46's Barnlike Hold for South American Delivery

This flying boxcar, chartered by Aviation International Delivery Service, flew five small planes from Lock Haven, Pennsylvania, home of the Piper factory, to Bogotá, Colombia. The return cargo was race horses.



Twin Cities Rise Where West Branch Meets Susquehanna

Here Northumberland (left) faces the outskirts of Sunbury. Susquehanna, frequently called the North Branch, flows on the right. West Branch passes beneath the concrete bridge.

Indians made this water crossroads a meeting place of the Six Nations; they called it "Shamokin." American colonials established Fort Augusta (page 96) in 1756, and Sunbury grew up around it.

Northumberland contains the old home of Joseph Priestley, the discoverer of oxygen, who moved from England in 1794. Writing home, he said: "I do not think there can be in any part of the world a situation more beautiful. . . . When I compare the perturbed state of Europe with the quiet of this place, I wish all my friends were here."

Thomas A. Edison built in Sunbury the world's first three-wire electric-lighting plant. On July 4, 1883, he turned current into the bulbs, and people marveled at the "funny bottles with red-hot hairpins in them that made light."

The Gray brothers survey the scene from Blue Hill, a point reached by the French during the Indian wars. Seeing the width of the river, then unbridged, and the strength of Fort Augusta, the invaders drew back.

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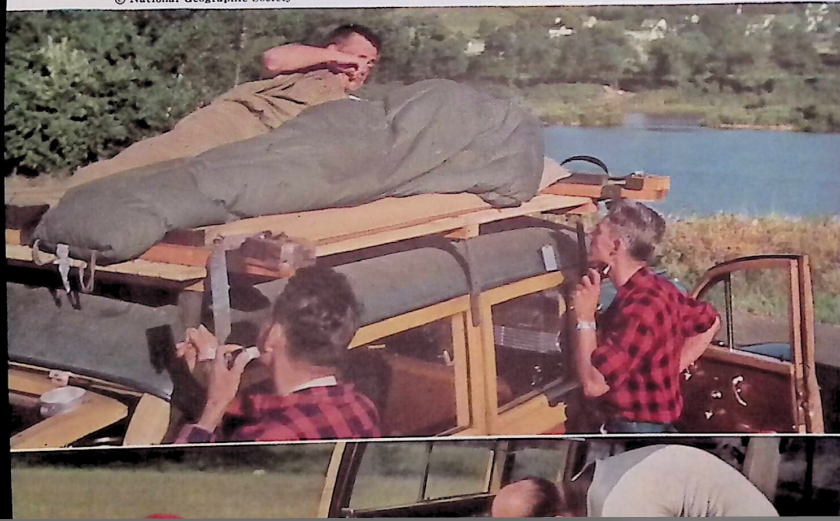
Sun-in-eyes Awakening, Electric Shave, Cold Shower, and After-breakfast K.P. Start the Paddlers' Day

Dal Hoopes shares a berth on the station wagon. Jim Douglass bathes at the farm boy's pump. Douglass and Gordon Irvin do the dishes, an onerous task. If any one complained of the cooking, he had to wash dishes the next day.

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...with electric lighting about the year 1885. He found water in the hills, and made his camp at the foot of the hills, and here he lived for many years in the hills that made light.

The Gray brothers survey the scene from Blue Hill, a point reached by the French during the Indian wars. Seeing the width of the river, then unbridged, and the strength of Fort Augusta, the invaders drew back.

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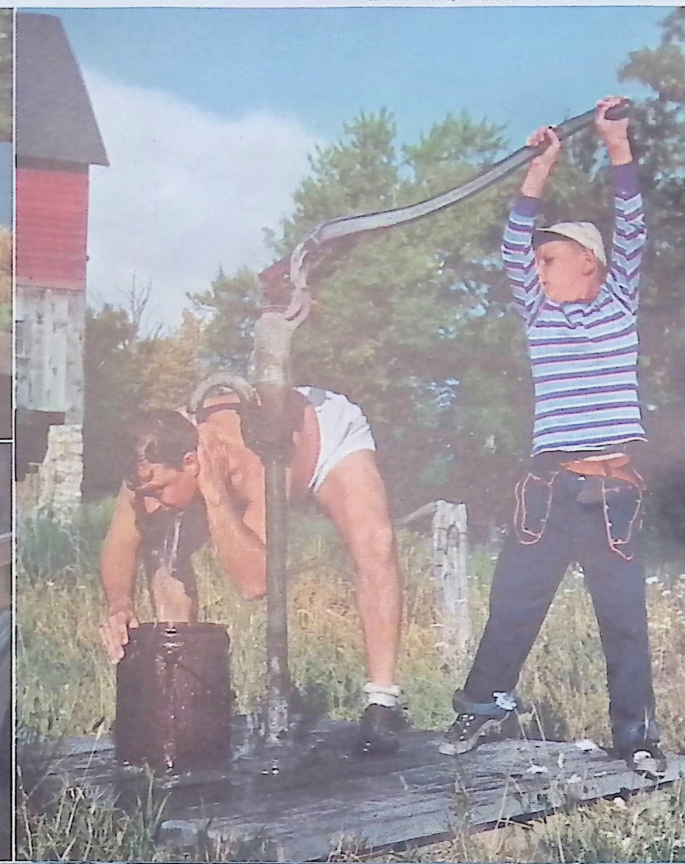
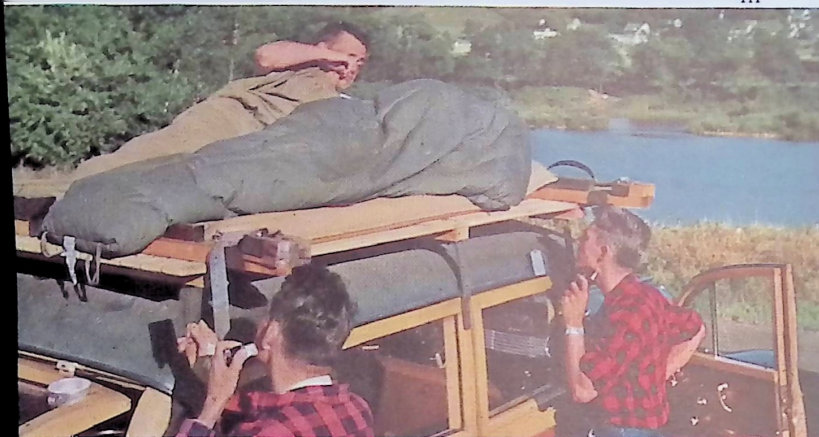
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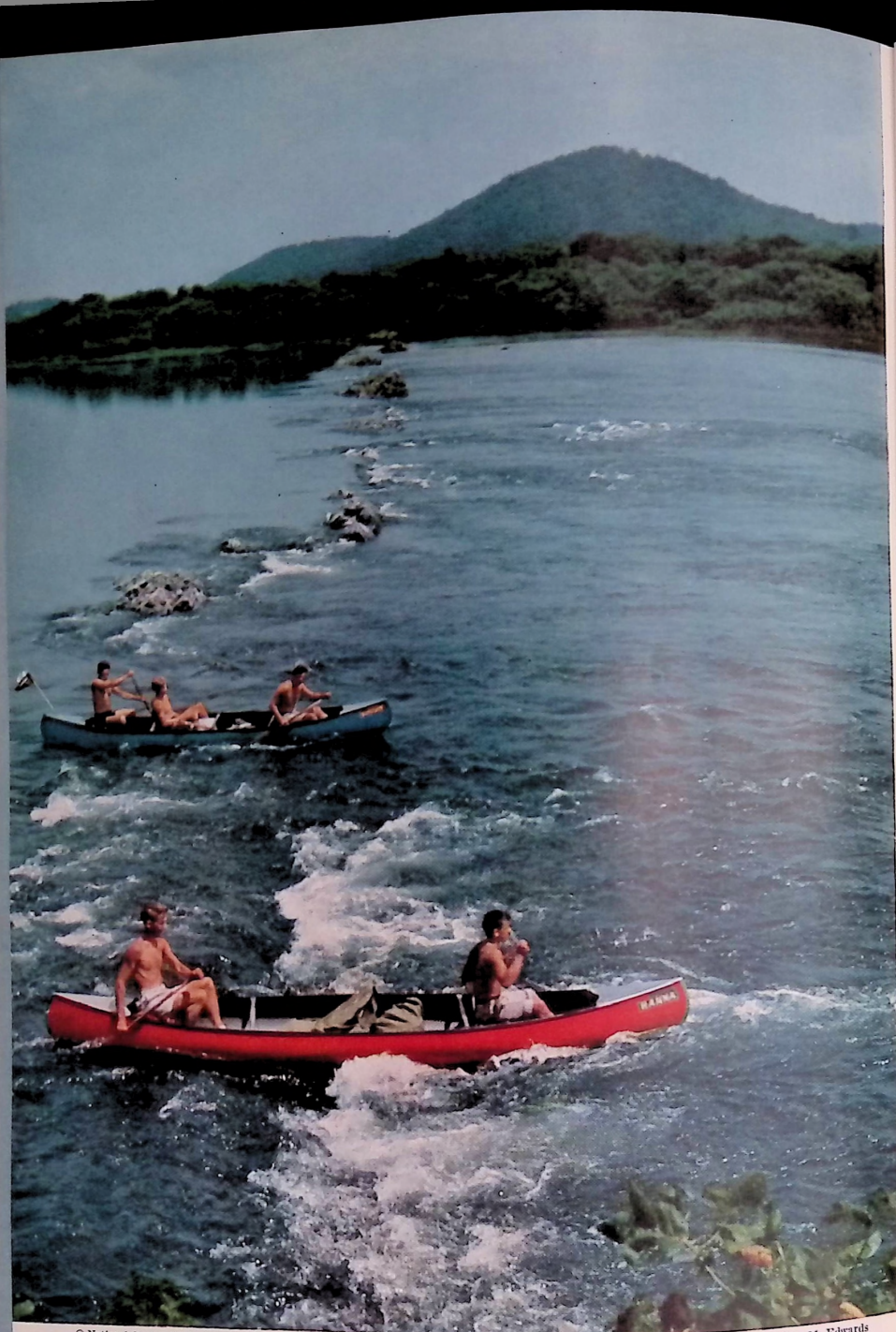
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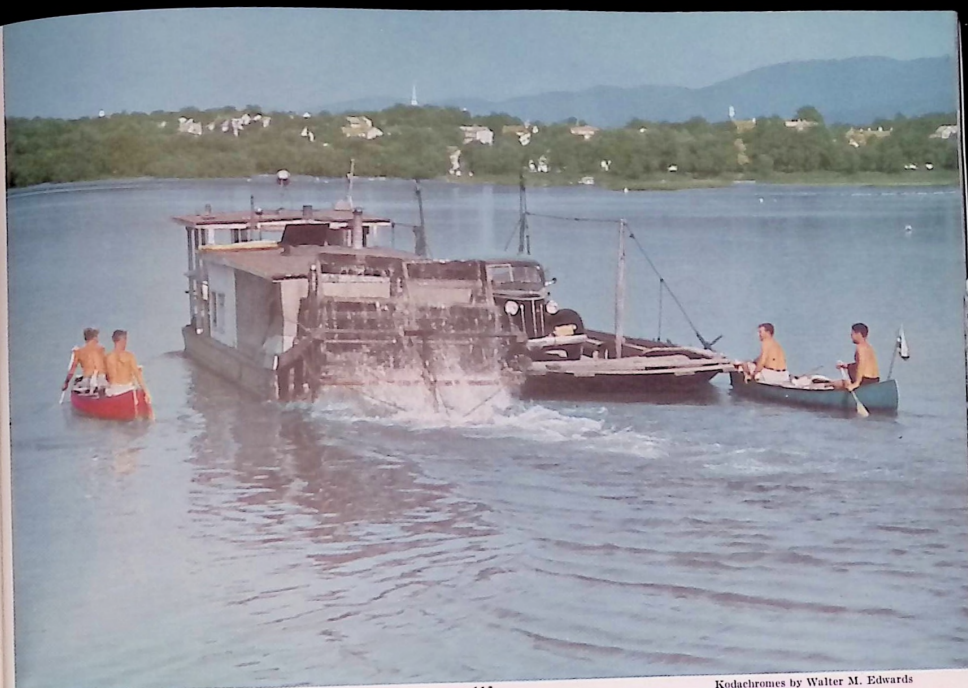


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Safe and Dry, the Canoes Shoot McKee Half Falls Amid a Meringue of Foam
Coleridge, the English poet, never saw the river, but he might have visioned such a scene when he wrote: "Where Susquehanna pours his untamed stream." At one time he planned to set up a utopia on its shores.



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↑ **Paddlers Hitch a Ride on a Ferry**
Heading into Millersburg

This flat-bottomed stern-wheeler, only commercial ferry surviving on the Susquehanna, has just left the berth connecting it with U. S. Highway 15 below Liverpool, Pennsylvania. The canoe on the right was almost swamped when it cut in too close to the paddle wheel.

↓ **Liverpool Farmers Mow Wild Grass with**
Scythe and Cradle

The paddlers, who had inspected old-time cradles in a Cooperstown, New York, museum, were surprised to find them still in use. Owing to drought, the Sweigart brothers neglected no opportunity to lay in hay, even the marshy crop on this tiny river island.





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Juniata's Silted Torrent Mingles with Susquehanna's Clear Blue Waters at Clarks Ferry, Pennsylvania

Here the canoeists camped on a Saturday night. Before Sunday dawned, the fishermen were out casting in the riffles. Pennsylvania Railroad freight puffs along a branch at left; its main line west follows the distant shore at right past Duncannon and up the Juniata's water-level route through the mountains.

A Coal Dredge Mines the Susquehanna for Fuel Eroded and Drained from the Pennsylvania Anthracite Country

Salvaging coal silt is big business, especially in dammed-up pools. This dredge, inspected by the paddlers, recovers about 45 tons a day. A hose sucks up the muck. Shaking meshes (center) sift coal from sand. Powdered anthracite is raked into the barge (page 118).

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Harrisburg, 140 Miles from the Atlantic, Enjoys Aquatic Sports, Thanks to a Dam on the Susquehanna

Two canoe clubs have fun every summer week end. Forster Island (from which the picture was taken) lures hundreds of swimmers and sunbathers. Once a year a regatta covers the river with sails, motors, and paddles. Pennsylvania's domed Capitol Building looks out upon the scene.

The Flagship, Bucking Like a Bronco, Threads a Needle Between Wall and Rocks. Paddle Used as Pole Wards Off a Crash

This dam maintains the river level at Harrisburg (opposite page). Concrete slabs in the gate beat the water into froth. Seconds after the picture was taken, a rocky vise wrenched the paddle from the front man's hands, but the canoe came through safely.

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Turning Out at 7:30, Campers Find Coal Dredgers Already at Work; Air Mattresses Made Concrete Soft as Down

Seepage from mines, not lost cargoes, contributed millions of tons of coal taken from the Susquehanna. As mine owners now try to prevent such wastage, dredgemen face a dwindling supply (page 115). Water here laps over York Haven Dam, Pennsylvania, and trickles down a gutter. Thus the campers remain dry.

Bacon and Eggs Sizzle over a Driftwood Fire on York Haven Dam. Skipper Lays In Supplies at Goram's General Store

Three large power dams—Safe Harbor, Holtwood, and Conowingo—lie in this region astride Mason and Dixon's line. Many rivers lose elevation swiftly in the headwaters, but the Susquehanna saves its greatest drop for the final stretch where it generates electricity for near-by big cities.

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Kodachromes by Walter M. Edwards



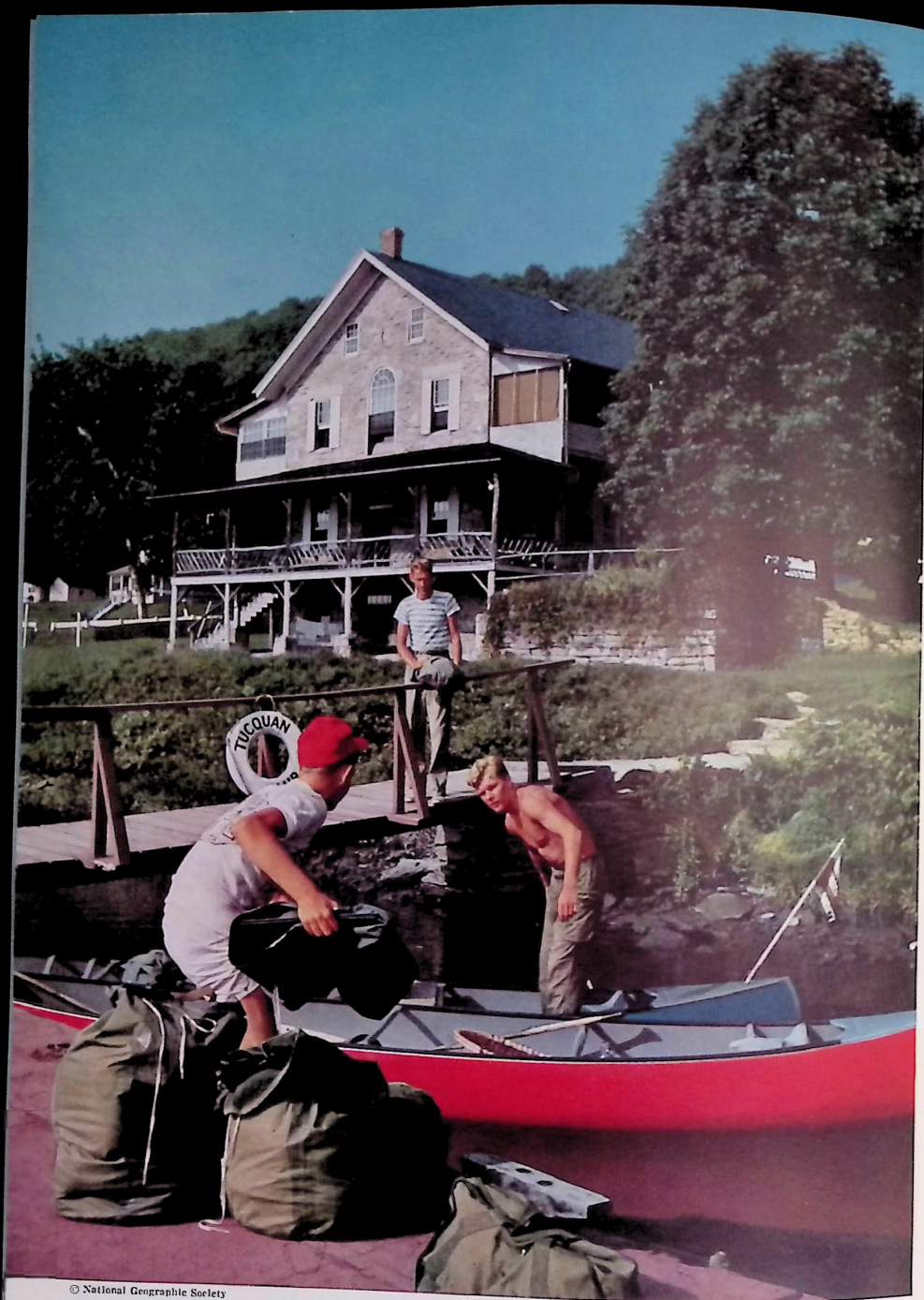
Turning Out at 7:30, Campers Find Coal Dredgers Already at Work; Air Mattresses Made Concrete Soft as Down

Seepage from mines, not lost cargoes, contributed millions of tons of coal taken from the Susquehanna. As mine owners now try to prevent such wastage, dredgemen face a dwindling supply (page 115). Water here laps over York Haven Dam, Pennsylvania, and trickles down a gutter. Thus the campers remain dry.

Bacon and Eggs Sizzle over a Driftwood Fire on York Haven Dam. Skipper Lays In Supplies at Goram's General Store

Three large power dams—Safe Harbor, Holtwood, and Conowingo—lie in this region astride Mason and Dixon's line. Many rivers lose elevation swiftly in the headwaters, but the Susquehanna saves its greatest drop for the final stretch where it generates electricity for near-by big cities.





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Loading Canoes for the Final Run. Journey's End, the Chesapeake, Lies Two Days Ahead
 Here the party spent a night at the Tucquan Club, whose members hunt and fish around Safe Harbor and Holtwood Dams. Until 1869, when the club was founded, its stone headquarters was a canal company's warehouse.

