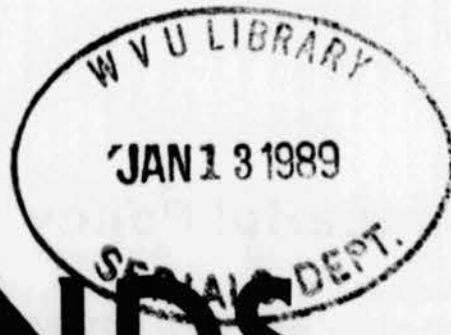


WV



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## Clouds Without A Silver Lining

Twenty-thousand feet over the ocean, a propeller-driven plane plows through stygian skies somewhere between Greenland and the Arctic island of Spitsbergen. From the roof of the plane, laser pulses shoot upward into the winter stratosphere, searchlights seeking something called polar stratospheric clouds.

Despite their unassuming title, polar stratospheric clouds, or PSCs, have a dark side that is drawing the attention of dozens of atmospheric researchers. "I would say that right now, processes associated with PSCs are probably the most exciting area in stratospheric chemistry. That's where most of the research is going to be focused in the next couple of years," says Mark Schoeberl of the NASA Goddard Space Flight Center in Greenbelt, MD.

Experts are now convinced that these clouds in Earth's stratosphere play a fundamental role in the alarming disappearance of ozone from the skies over Antarctica — a phenomenon known to the world as the Antarctic ozone hole. Although human pollutants are clearly destroying stratospheric ozone near the South Pole, PSCs are collaborating in the dirty work. Moreover, new findings suggest PSCs may also be jeopardizing Arctic ozone.

PSCs are a relatively new addition to science. Before satellites started snapping revealing pictures of Earth, clouds in the extremely dry stratosphere were rarely sighted — mostly because they form near the poles only during winter and early spring, when darkness eclipses the sky and few spectators are around to take notice. M. Patrick McCormick from NASA Langley in Hampton, Va., coined the term PSC only recently, in a 1982 paper published in the *JOURNAL OF ATMOSPHERIC SCIENCE*.

PSCs first drew the attention of McCormick and his colleagues in the late 1970s, when measurements from a weather satellite revealed that the stratosphere held far more clouds than meteorologists had supposed. Aircraft with radar-like lasers that detect particles then confirmed the satellite measurements. Populating the coldest parts of the stratosphere over the poles, the clouds seemed to come in several varieties. Some were small and thickly opaque, while others spread like thin veils across the vast sky.

The discovery sparked no immediate fires in the scientific community. "At the time, it was pretty much academic interest," says McCormick. But PSCs did not remain in obscurity for long.

In 1985, members of the British Antarctic Survey brought the ozone hole to the world's

attention. Measurements from Halley Bay showed that for more than five years, vast quantities of ozone had disappeared from the Antarctic stratosphere each spring — alarming news that mobilized researchers from all segments of the atmospheric sciences. Chemists, wind experts, solar scientists, cloud researchers and others entered the search for an explanation, each branch suggesting theories to explain ozone's annual disappearance and reappearance.

Stratospheric ozone in the Antarctic is part of a global ozone layer that surrounds Earth and absorbs ultraviolet solar radiation harmful to animals and plants (SN: 10/10/87, p. 230). The stratosphere is one of the middle layers of the atmosphere that starts some 15 kilometers above Earth's surface and extends to a height of about 50 kilometers.

While the journals began to fill with theories soon after news of the ozone hole reached the world, several research groups immediately focused their attention on chlorine, which turns out to be the real culprit responsible for most of the ozone loss. (Bromine, a chemical cousin to chlorine, is believed to cause 15 to 20 percent of the depletions.) Since the mid-1970s, scientists have warned that a class of widely used chemicals known as chlorofluorocarbons could transport chlorine to the stratosphere, where it would catalytically break apart ozone around the globe. But at the time, investigators thought ozone would remain safe for several decades. They theorized that when chlorine reached the stratosphere, most chlorine molecules would form relatively inactive compounds that do not break down ozone.

Unfortunately, PSCs have invalidated this scenario near the poles. Several research campaigns to the Antarctic in 1986 and 1987 have convinced scientists that clouds in the polar stratosphere radically alter the chemical reactions involving chlorine. "Without PSCs, I don't think you would have the ozone hole," McCormick says.

Earlier this year, researchers meeting at the Polar Ozone Workshop in Snowmass, Colo., devoted two half-day sessions to work on PSCs. News from that meeting and reports of other research appear in a special section of the August *GEOPHYSICAL RESEARCH LETTERS*, which contains a half-dozen articles concerning PSCs and their effect on ozone loss. What is emerging is a complex portrait of PSCs. The evidence indicates that these cloud particles contribute to the ozone problem in several different ways.

(continued on page 2)

## Coal Is Organic

We accept without question the mountains, valleys, streams, air and rocks that are so intimately bound to each other — simply because they are so familiar. And when we do ponder them, we view them in varying ways, according to how they affect us. A lump of coal is a good example: some see it as a black rock, others see the rock, but at the same time visualize large industrial furnaces. Still others see only tired husbands or fathers as they slowly wend their way home from the pits. And a few, in their mind's eye, may fade back through the ages to the time when coal was being formed . . .

Coal is formed from chemically and physically altered plant debris; in many ways, it is analogous to a gigantic fossil plant. It is also a sedimentary rock, as are sandstones or shale. The difference is in the kind of sediment from which coal is formed — organic, instead of mineral.

(continued on page 7)

## MON National Forest Budget Looking Good!

by Mary Wimmer

WV Sierra Club Conservation Chair

A National Forest Management Plan can be excellent on paper, but without the money for implementation it can be rather worthless. Good news for the Monongahela: not only do we have that excellent Forest Plan, but also due to the interest and efforts of Senator Byrd and his staff, we are getting the money to implement it.

Past budgets on virtually all National Forests stressed accomplishment of commodity-oriented goals, primarily timber harvesting, at the expense of recreation and wildlife programs. Typical percentages of goals reached per year reflected the budget imbalance: over 90% of timber programs achieved, over 100% of proposed roads constructed, and only 25-35% of recreation, wildlife, and soils and water goals reached. Those of us who have spent time recreating on MNF trails can attest to the lack of maintenance

there.

Since our Forest Plan was instituted in July 1986, we have been informing our Congressional delegation that not only did the public support the Plan, but they also wanted the money to implement it. Realizing that not all funds needed per year would likely be available, we made it clear that we wanted more balance. If 80% of the funds arrived, then 20% of all programs should be trimmed, not just 70% of non-commodity ones. Fortunately, our key Senator on Appropriations, along with Representative Alan Mollohan on House Appropriation, listened and responded.

The Mon N.F. budget for FY 1989 which began October 1 includes the following:

\$6.73 million as the MNF's portion of the total National Forest System budget for Operations and Maintenance;

\$2.34 million additional Operations and Management funds. These monies go to

## OTA's Advisory Role

Public Law 92-484, 92d Congress, H.R. 10243

"Findings and declaration of purpose Sec. 2. The Congress hereby finds and declares that:

(a) As technology continues to change and expand rapidly, its applications are —

(1) large and growing in scale;

and

(2) increasingly extensive,

pervasive, and critical in their impact, beneficial and diverse, on the natural and social environment.

(b) Therefore, it is essential that, to the fullest extent possible, the consequences of technological applications be anticipated, understood, and considered in determination of public policy on existing and emerging national problems."

(continued on page 7)

## WINTER MEETING

The Winter Meeting of the Board of Directors is scheduled for January 14, 1989, 10:30 a.m. at Jackson's Mill in Weston, WV.

items such as land surveys; recreation site operation, maintenance, and information services; wild and scenic river studies; cultural resource activities; wilderness management; road maintenance; and wildlife management.

\$1.96 million for Construction, including a White Sulphur Springs Ranger District Office; a Ranger District warehouse at Marlinton; \$814,000 for recreation facilities; and believe it or not, \$718,000 for trail construction and reconstruction;

Finally, \$500,000 for land acquisition on a willing-seller basis in the Spruce Knob-Seneca Rocks National Recreation Area.

Let me give you more good news! The MNF finally has hired a person whose full time responsibility is Recreation (at least we now have one on our 900,000-acre Forest whose Forest Plan places a very large emphasis on Recreation). Mike Herth, MNF Recreation Staff Officer, is located in the Supervisor's Office in Elkins, replacing Joe Tekel who retired a couple years back. Please stop by, meet him, and don't hesitate to convey to him your ideas about recreational needs on the MNF. We look forward to working closely with him, and hope he multiplies into each Ranger District!

## Wild and Wonderful Policy

by Karen S. Farris

*"Sometimes the progress of man is so rapid that the desert reappears behind him. The woods stoop to give him a passage, and spring up again when he is past. It is not uncommon, in crossing the new states of the West, to meet with deserted dwellings in the midst of the wilds; the traveler frequently discovers the vestiges of a log house in the most solitary retreat, which bear witness to the power, and no less to the inconstancy of man. In these abandoned fields and over these ruins of a day the primeval forest soon scatters a fresh vegetation; the beasts resume the haunts which were once their own; and Nature comes smiling to cover the traces of man with green branches and flowers, which obliterate his ephemeral track."*

*Democracy in America, Alexis De Tocqueville*

A national policy describing and implementing a system of evaluating and protecting rivers was passed in 1968. The original components of the National Wild and Scenic Rivers System, established by the Wild and Scenic Rivers Act, included eight (8) rivers: Clearwater, Middle Fork, Idaho; Eleven Point, Missouri; Feather, California; Rio Grande, New Mexico; Rogue, Oregon; Saint Croix, Minnesota and Wisconsin; Salmon, Middle Fork, Idaho; and the Wolf, Wisconsin. The newest additions of West Virginia rivers has been carefully followed and reported in the Voice.

Many other rivers have been studied for inclusion. Some, like the Greenbrier, have failed to become a part of the system and undergo additional evaluation. The sisyphian task before the Conservancy continues.

A review of the mechanics reveals a familiar process. Like any good insurance policy, different types of protection are available. Three categories are defined for rivers. (1) Wild river areas — Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent the vestiges of primitive America. (2) Scenic river areas — Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads. And, (3) Recreational river areas — Those rivers or sections of rivers that are readily accessible by road or railroad, that may have undergone some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

The classification is generally done in sections. The portion of the Bluestone recently designated as scenic and the Gauley as recreational are examples of an application of these guidelines in West Virginia.

Rivers presently being studied by Department of Agriculture in West Virginia include the Greenbrier, Bluestone, Cherry, Potomac, Birch, Gauley, and Cacapon. Protection is extended to rivers being studied for inclusion into the system. If a study determines negatively for any given river, the limited protection is suspended following proper notification to federal agencies.

Documentation for a typical study must include accurate maps and narration showing characteristics, history, and land ownership status. Projections of future funding and administration of the area and an estimate of cost to the federal government is circulated through the Departments of Interior, Agriculture, Army and the Chairman of the Federal Power Commission.

When the study and review is complete, a report is submitted to the President on the suitability or nonsuitability of the river as an addition to the system. The President reports his recommendation to Congress where the final decision for the river or river segment is determined.

Eligible rivers, defined as "a flowing body of water or estuary or a section, portion, or tributary thereof, including rivers, streams, creeks, runs, kills, rills, and small lakes" must realize one of many of an intangible yet demonstrable embodiment of scenic, recreational, geological, fish and wildlife, historic, cultural or other cherished value to be protected. Classification as wild, scenic or recreational is assigned accordingly.

Certainly more meaningful than movie ratings, these classifications, like the cinema evaluation, are designed to provide informed communities with the information necessary to make informed decisions. Past actions by the Conservancy and actions it supports demonstrate a record that rejects convenient cliches. Repeated emphasis upon a grass-roots community involvement have characterized each issue with the peculiar insights and concerns of the community involved.

Advocacy for an informed decision has been the common strength behind all successes and the motivating force behind all issues examined. Continuation of the task of defining and applying community policies to a changing environment will evolve and take on new issues in the West Virginia to come.

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## ATTENTION: WVHC'S NEW ADDRESS

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## Clouds Without A Silver Lining (continued from page 1)

Perhaps foremost, particles are thought to provide a surface for certain chemical reactions necessary for the destruction of ozone. The scenario goes as follows: Normally, stratospheric chlorine becomes trapped in what scientists call reservoir compounds, such as hydrogen chloride (HCl) and chlorine nitrate (ClONO<sub>2</sub>), which do not destroy ozone on their own. However, when temperatures drop to the point where frozen cloud particles form in the stratosphere, the reservoir compounds can suddenly react chemically on the particle surfaces. These reactions release active chlorine that can then attack ozone.

The damage from PSCs doesn't end with the surface reactions. When PSCs form, they pull nitrogen out of the atmosphere because certain classes of cloud particles contain frozen nitric acid. With less nitrogen gas in the atmosphere, there are fewer nitrogen molecules to protect ozone by locking chlorine into the reservoir species, chlorine nitrate.

(continued on page 3)

## Clouds Without A Silver Lining (continued from page 2)

For all their work in recent years, scientists are still sorting out the details of PSC formation. Originally researchers assumed that all clouds in the stratosphere were made of pure water-ice particles. In the extremely dry stratosphere, where the air is 10 to 20 times thinner than at the planet's surface, water vapor will condense and form ice only when temperatures drop below the frost point, which is around  $-85^{\circ}\text{C}$ . Yet PSCs develop at temperatures well above the frost point, indicating the particles contain something other than pure water.

The link between nitric acid and PSCs emerged in 1986 as two independent groups of researchers attempted to explain the severity of the Antarctic ozone destruction. Gaseous nitrogen compounds were known to hinder chlorine's attack on ozone, so several scientists thought something in the stratosphere must be taking nitrogen molecules out of the picture. Suggesting that PSCs contain nitrogen seemed to be a good solution, says Owen B. Toon from NASA's Ames Research Center in Mountain View, Calif., one of the researchers who first raised this theory. Toon says airborne measurements over the last year now prove that some stratospheric clouds contain nitric acid particles.

Researchers have taken to distinguishing among several types of PSCs. Type I are diaphanous sheets containing small particles with a diameter on the order of 1 micron, or one-millionth of a meter. The denser Type II clouds have particles five to 100 times larger than Type I particles.

Present theories on the growth of PSCs suggest that Type I clouds develop first, when the stratospheric temperatures reach  $-80^{\circ}\text{C}$ . They are thought to contain nitric acid trihydrate—crystal made of three molecules of water for every one molecule of nitric acid.

Type II clouds appear when the stratosphere cools several more degrees and pure water can freeze out of the atmosphere. While the exact composition of Type II particles remains unknown, researchers suggest that they are mostly pure ice with a trace amount of nitric acid. Some Type II particles may simply be Type I particles wearing a thick coat of ice, McCormick says.

For ozone destruction, the difference in particle size between the two cloud types is crucial. Type I particles are light and fall slowly, while Type II particles are massive enough to drop several kilometers in a matter of weeks. Both pull nitrogen from the atmosphere, but Type I particles are thought to evaporate and release the bound nitrogen before they can fall far. Conversely, evidence suggests Type II particles remove nitrogen permanently, by falling several kilometers below the region where chlorine destroys ozone, before they evaporate.

A computer model by Ross Salawitch and colleagues at Harvard University reveals that ozone destruction is quite sensitive to the amount of nitrogen permanently removed from the atmosphere, suggesting that Type II particles are necessary for acute ozone destruction. Another important factor in ozone loss is how long PSCs last before they evaporate in the springtime.

In both respects, the Arctic cannot compete with the Antarctic. In each area during the winter, a vortex of winds circles the polar regions and cools the stratosphere by blocking out warmer air currents from more temperate zones. The northern vortex, however, is much less stable than its southern counterpart. During the winter, invading winds break through into the Arctic stratosphere and keep temperatures from falling quite as far as they do in the South. Therefore, Type II particles are rarer in the North, observations reveal. As well, the northern vortex collapses much sooner, which means the Arctic stratosphere warms earlier in the springtime.

While this type of unruly air motion helps protect ozone in the Arctic, it also hinders research aimed at determining whether chlorine and bromine are actually eating Arctic ozone.

"The nice thing about trying to look at these kinds of problems in Antarctica is that you have the world's most stable part of the atmosphere to deal with. It's just rock steady," says Susan Solomon from the National Oceanic and Atmospheric Administration (NOAA) Aeronomy Laboratory in Boulder, Colo. "You go down there every year and you know exactly what to expect and where it's going to be and how cold it's going to be, to within a few degrees anyway. In the Arctic, you just don't have that luxury. [Stratospheric] temperatures can fluctuate by tens of degrees, and where the coldest temperatures are can move around from Siberia to western Canada."

Ozone levels all over the globe swing naturally from year to year, making it difficult to detect any unusual drop in concentration, unless the change is dramatic. Through extensive study of satellite and ground measurements, an international panel of experts detected hints earlier this year of a drop in wintertime Arctic ozone levels over the last decade. Scientists are now trying to determine how much of that drop, if any, was caused by chlorine chemistry—the same type of reactions depleting ozone in the Antarctic. Since ozone loss in the Arctic could affect major population centers in the North, answers are eagerly awaited.

In January and February of this year, Solomon and her colleagues spent two weeks in northern Greenland probing the Arctic stratosphere with ground-based spectrographs. These machines measure atmospheric chemicals by analyzing light from the sun and moon that must pass through the atmosphere on its way to the Earth's surface. The group detected elevated levels of chlorine dioxide and depressed concentrations of nitrogen dioxide, a suggestion that surface reactions might be occurring on PSC particles (SN: 6/11/88, p. 383).

Scientists have only a snapshot of what happens in the Arctic stratosphere. To help fill in the details of the picture, NASA, NOAA and a handful of other agencies and universities are planning a six-week-long Arctic aircraft campaign, similar to last year's Antarctic Airborne Ozone Expedition. Next January, more than 100 international researchers and support crew will descend on Stravenger, Norway. The expedition will use two planes: a converted spy plane, the ER-2, that takes measurements within the stratosphere; and a DC-8 that skirts the bottom of the stratosphere carrying scientific investigators and their research equipment.

One of the major quests of the aircraft project will be assessing how clouds affect ozone in the Arctic. "In fact, the focus of the next ER-2 mission in the Arctic is really going to be PSC chasing," says NASA's Schoeberl. "The idea is to fly the aircraft into PSCs and air that's gone through PSCs."

As implied by the popularity of the term PSC, researchers have thought that stratospheric clouds are limited to Earth's polar regions. Most believe that the skies covering the rest of the world are too warm to form frozen particles. However, a new study challenges this belief. Patrick Hamill from San Jose (Calif.) State University and Giorgio Fiocco of the University of Rome report in the October *GEOPHYSICAL RESEARCH LETTERS* that, at least theoretically, the stratosphere over the equator is occasionally cold enough for frozen particles of nitric acid to form.

"That does not mean that they are forming," Hamill told *SCIENCE NEWS*. He adds that even if tropical stratospheric clouds do exist, they might have little effect on ozone since the tropics, with their heavy supply of sunlight, are continually producing ozone.

Some researchers, however, think ozone outside the poles may face another form of threat. Tiny droplets of sulfuric acid are found in the stratosphere all around the globe, and recent laboratory experiments indicate they can support surface reactions involving chlorine reservoir compounds—the same reactions causing problems in Antarctica (SN: 9/3/88, p. 148).

Earlier this year, scientists announced that Earth's average ozone levels have dropped 2.5 percent over the last decade as a result of both natural effects and reactions with chlorine and bromine (SN: 3/19/88, p. 183). Some experts suggest reactions on the sulfuric acid droplets may be causing part of this decline by speeding chlorine's normally slow destruction of the global ozone layer. "That's a topic of intense research right now—to find out exactly how effective these reactions are at lower latitudes," says atmospheric chemist Jose Rodriguez from Atmospheric and Environmental Research, Inc., in Cambridge, Mass. "Chances are they're not going to be as effective as in the Antarctic. But the question is how much less effective will they be, and what are their implications. That is definitely something people are concerned about."

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## Profile Of A Professional Trail Crew

by Doug Wood

"Stand clear!" Charlie yelled as he prepared to animate the strange looking combination of pulleys, cable, chains, 2 x 4's, and a chain saw minus the cutting chain. The harsh, staccato buzz of the motor dropped in pitch as the cable grew taut and the anchor chain stretched to its full length. Then, with the strength of a team of horses, the "Rube Goldberg" contraption dragged a chunk of granite as heavy as three of the onlookers for 30 yards over a 45° slope to the flat trail surface where it came to rest. "Yihaaaa!" we whooped. Some of us had underestimated the contraption's capability—now we were believers. We were going to whip this project lickety-split.

You may ask "What project? What in the world are you writing about?" The project was the Crabtree Falls trail renovation on George Washington National Forest in our neighboring state of Virginia. The subject of this article is the can-do trail construction crew headquartered near Barboursville, West Virginia at the Tri-State Area Boy Scout Council's Camp Arrowhead. You may wonder why those West Virginia scouts were working on a trail in Virginia. Well, here is the story.

The United States Forest Service wanted to improve portions of the Crabtree Falls

trail in order to make the recreation area more safe and to prevent further deterioration of the resource. Hurried hikers were cutting switchbacks, causing erosion on the steep slope which lies parallel to the Falls. The Tri-State trail crew needed work. At that time no trail projects were being funded in West Virginia and the crew was just itching to do what they do best; trail construction.

I should say "we were itching to do what we do best," for I was fortunate enough to be a part of the crew for one week of the 3 month project, completed in 1987, and let me tell you, we did our best! We had underbid the few other serious contenders for the project, including one trail crew from California, and we had staked our future reputation on this project. For while we had over 50 years of trail construction experience between us all, we were just beginning to get into the realm of contracting our services. Almost all of our trail experience had been gained as volunteers. We amazed the Forest Service Engineers with our ingenious contraptions, our unusual equipment, and our clear strategic approach to moving materials and completing individual jobs that comprised the whole project.

One of the most rewarding moments for Charles Dundas, a veteran of the Viet Nam Conflict and the master-mind of our work strategy, was when we were visited at the site of a major switchback reconstruction job by a particular Forest Service Engineer. This fellow had kept a doubtful countenance during the project-showing, the bid-acceptance meeting, and the several explanatory meetings that preceded start-up. Thanks to the chain saw-powered wench, pulley, and cable system described at the beginning of this article, we had completed the switch back in less than two days. As the doubting Engineer came down the trail toward the switchback, Charlie saw him smile for the first time; a Chesire Cat, ear-to-ear grin no less. The last doubter had become a believer.

Most rewarding to me were the comments offered by hikers as we worked (a challenging stipulation in the contract required us to keep the trail open to the public while we worked). Comments like "You mean you carried those timbers up here on your shoulders... WOW?!" and "Thanks for the good work. This is a beautiful place to visit and you are making it even more so," eased the strain of our labor.

Crabtree Falls is a beautiful spot. The cold, clear water of Crabtree Creek tumbles down 1100 feet over granite cliffs in less than ¼ mile of horizontal distance through a series of spectacular falls and waterslides to its confluence with the South Fork of Tye River. Native brook trout haunt the pools between falls. Huge hemlocks and poplars rise majestically above Crabtree Creek, shading its twisted course down the steep flank of the mountain. During the course of the project the beauty of Crabtree Falls was enjoyed by many associates of the Tri-State Area Council, including Karen Dundas, Charlie's wife, who bolstered the crew's ranks on weekends by providing fellowship as well as labor. The chance to work in such pleasant surroundings with folks who truly appreciate the outdoors was reward enough in itself for me, but we were paid well and with the profit made from the project the Council will be able to continue its mission of developing character in young people.

The motivation behind each worker's participation in the crew is not merely monetary gain, it is also his/her love of being outdoors. Trail construction is very hard work, but it is wholesome work usually located in a clean and pleasant environment.

(continued on page 6)

# The Kanawha Trace And The Adahi Trail: The Mountain State's Backpacking Surprises

by Doug Wood

Whenever West Virginia is discussed by backpackers, the conversation inevitably centers around the trails located in the eastern highlands where Monongahela National Forest dominates the landscape. This forest along with portions of George Washington and Jefferson National Forests provide most of West Virginia's backpacking and long distance hiking opportunities. The Allegheny Trail (the completed portion is now about 250 miles long) lies mostly within the boundaries of these three National Forests.

The Big Blue Trail traverses the Ridge and Valley physiographic province in West Virginia's eastern panhandle and the Appalachian Trail enters the Mountain State at two places along its eastern border, i.e. near Harpers Ferry in Jefferson County and on Peters Mountain in Monroe County.

Among backpackers in West Virginia and surrounding states the wilderness areas of Monongahela National Forest are famous for their solitude. On any holiday weekend, out-of-state license plates dominate the trail heads. Pull-offs around Cranberry Wilderness and Cranberry Backcountry are often full of vehicles from Ohio and Virginia, while Dolly Sods, Otter Creek, and the two Laurel Fork Wildernesses usually have a good mixture of automobiles from Washington D.C., Maryland, Pennsylvania, Virginia, New Jersey, and Delaware. All of these wildernesses and long-distance trails make the eastern mountains of West Virginia a backpackers wonderland.

When compared to these mountains, the western Allegheny Plateau region of West Virginia is almost never mentioned in backpacking circles. Certainly many a lad in this region has climbed the hill near his home with sleeping bag, sandwiches, cookies, and a few friends to camp-out in a rock shelter or a lean-to made of tree branches, but a weekend of backpacking here is almost unknown. Even the public lands in western West Virginia which have hiking trails are not oriented toward backpacking. Army Corps of Engineers Lakes are obviously designed for water-based recreation, State Parks and Forests appeal to the day-hiker, and State Public Hunting and Fishing Areas are geared toward those activities for which they are named. However, in this backpacking desert an oasis can be found in the trail system built around the Kanawha Trace and the Adahi Trail.

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The trail system is known as sort of a maverick among trail-building enthusiasts for not one inch of its trails are on publicly owned land (except for portions on West Virginia's road system) and yet the private landowners which have granted permission for its location on their properties have for the most part been very easy to deal with. Part of this good relationship is due to the fact that the scouts keep close tabs on use of the trails. While the system is open to the public, all hikers are required to contact the council to give advance notice of a trip and to get assistance in planning camping sites to and watering stops. A 50¢ user fee is required to hike on the trails. This fee is used to maintain the trail system. The council's address and phone number are listed at the end of this article. No hunting is allowed along the trails, nor can you pick wildflowers or remove other vegetation. The trails are designed for foot travel only. This close oversight has allowed the scouts to develop a trail system in an area rich in history, scenery, flora, and fauna and yet nearly devoid of public land. The landowners appreciate the scouts' vigilance in overseeing trail use.

Another unusual feature of this trail system is its diverse landscape. In just over 50 miles of trails you can trek through: mountaintop pastures affording beautiful views of the rolling, forested hills of the Allegheny Plateau; steep-sided, narrow ravines, shaded by huge cove hardwoods and carpeted with wildflowers; wide creek bottoms densely wooded or dotted with small farms or abandoned homesteads; hillside woodlands sporting water-carved rock overhangs which once sheltered Indians living or hunting in this wildlife-rich area; high knobs some of

which present views of the ancient Teays Lake bed, now called Teays Valley; and dry, wooded ridgetops populated by hickory-hungry squirrels and tangle-loving ruffed grouse.

It is fitting that the trail system has been developed in the triangle of land bordered by the Ohio River valley on the northwest, the Great Kanawha River valley on the northeast, and Teays Valley on the south, for since the time native Americans first found their way into the region (probably some 10,500 years ago) these three valleys have been major travel corridors for succeeding generations of Indians, French explorers colonial British surveyors, Virginia frontiersmen and pioneers, and West Virginia citizens. The Kanawha Trace and Adahi Trail have one terminus each in the vicinity of Teays Valley. From this ancient lake bed the Adahi Trail heads north for 20.7 miles terminating at the Ohio River valley and the Kanawha Trace winds its way for 31.7 miles in a northeastward direction to the Great Kanawha River valley. Two other trails have been developed in recent years to connect with the longer trails. These interconnecting trails make it possible to plan several loop hikes from Camp Arrow head ranging from 6 to 23 miles. Blue paint blazes, 2" x 6" with the long axis placed vertically, mark the interconnecting trails, but the two longer trails have more interesting blaze. The central 2" x 6" blaze has a 2" x 2" blaze placed about 1" above it and one placed about 1" below it. Important junctions or turns are indicated by placing another 2" x 2" blaze above and below the others. In addition to this unusual placement, the color scheme is a bit odd. On the Kanawha Trace, northeastbound blazes have a yellow, central, central 2" x 6" blaze with the 2" x 2" blazes in white. Southwestbound on the Kanawha Trace has a reversed color scheme, the central blaze is white while the peripheral blazes are yellow. On the Adahi Trail, northbound blazes are orange in the center with white peripheral blazes. Southbound is the reverse of that. If for some reason you should become confused as to which direction you are headed in, the blazes can be used as direction finders as well as trail markers.

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## Autumn Hike

In October, 1987, when the American Lung Association of West Virginia used the scout trail system, all of the participants were surprised to find that such a pleasant backpacking experience was possible in southwestern West Virginia. Beautiful weather enhanced our trip. We were blessed with blue skies throughout the weekend. On our first day, our initiation to the Kanawha Trace was a relatively short, but steep climb up Wildcat Ridge. Once on top, the ridge walking was very pleasant. A short descent into Newman Hollow brought us to the remains of the stone chimney of the Newman family log cabin. Soon we were on the ridge-line again and an extensive mountaintop pasture unfolded a scene before us a green hills bordering pastoral Teays Valley. A large shopping mall visible in one corner of the valley was a stark reminder that Teays Valley is one of the most rapidly developing pieces of real estate in West Virginia. Farming in the valley will soon be only a memory just as the ancient buffalo trails which once followed the gently-rolling valley floor are now only memories stored in history books and old surveyors' logs. On our trip however, the scenery from the pasture was still largely pastoral and quite lovely.

The trail guidebook gave insight into the history of the valley. I was glad I had carried it along, not only for assistance on trail data, but also because of its informative stories about points of interest on the Kanawha Trace. Notes on wildlife observation areas and wildlife facts are found throughout the guidebook, evidence of the part which the Nongame Program of West Virginia's Department of Natural Resources has played in improving the trail system. The program's Cooperative Grants Project funded the purchase of materials for many of the stiles located at fence crossings on the trails. I noted other trail improvements such as side-hill cuts and rock stairways along the way, but what really stood out were the suspension bridges over Little Cabell and Big Cabell Creeks. These bridges were built quite high above the streams' normal surface levels in order to avoid being snagged by trees carried in flood waters. The waterways in most of West Virginia are flood-prone and the clayey soils prominent in the western half of the state do not hold streambank trees very well. Any bridge is therefore in danger of being damaged by flood-carried debris. Presently one bridge on the Kanawha Trace is missing due to flood debris. The bridge over Bear Hollow Creek was wiped out by a snag in 1987. Clayey soils make a lug-soled shoe or boot the best choice for hiking Troop 42's trail system.

When our trekking group reached the Williams shelter at Camp Arrowhead we rested, ate lunch, and filled our canteens. The well there is one of the few tested water sources alongside the Kanawha Trace. Other, untested springs abound during the wetter seasons and are described in the trail guide, but purification techniques should be used. If you get desperate, you can ask for water from folks who live at road crossings and on farms scattered throughout the trail system. Most are happy to help out and chat a while. While weekend trips usually do not call for food resupply points, there are a few small country stores located along or very near some of the trails. Water can also be

obtained at these groceries. Directions to stores located near the Kanawha Trace are given in the guidebook.

Trekkers noted that the Williams shelter was a well constructed adirondack type shelter with an outside fireplace and grill, an outhouse, and a registration box... it looked like a great place to spend the night, but our chosen campsite lay another 8.7 miles away so off we went again. Over the next few miles we crossed Big Cabell Creek on the cable bridge previously mentioned, passed the old Webb log cabin, wound our way through some very interesting rock outcrops (probably exposed and weathered at the ancient shoreline of Teays Lake), joined the Adahi Trail (both trails follow the same route for about 1.4 miles), and climbed Gobbler Knob.

After ascending 480 ft. in elevation, the trace reaches its highest point as it skirts Gobbler Knob. While 1000 ft. above mean sea level may not seem very high to the backpacker who is familiar with the high Alleghenies further east, the elevation of this knob relative to the surrounding landscape makes it a prominent topographic feature. Folks who intend to hike Troop 42's trail system should be aware that it is not unusual to ascend or descend 200-300 ft. within ½ mile of horizontal distance 5 times in 10 miles. For novice backpackers a 10 mile-per-day trip can be grueling. When planning a hike on the Kanawha Trace, you can take advantage of the guidebook's trail profile which shows elevation changes per unit of horizontal distance. Without a guidebook for the Adahi Trail or the blue-blazed trails, you can simply count on several relatively steep climbs and drops every 10 miles.

After crossing Big Cabell Creek a second time (this crossing has no bridge and is therefore difficult during high water) the trekkers climbed a spur of Barker Ridge and made camp about ½ mile on out the spur. Just before reaching our chosen campsite we passed amidst a tangle of fallen Virginia pines. Fortunately a scout trail crew had carved out the trail corridor with chainsaws previous to our arrival. The mass of blow-downs reminded us that weather conditions can be extreme in western West Virginia. Twisters are more apt to occur here than in the eastern highlands and while snowfalls of more than 6 inches are uncommon, they can topple the shallow-rooted pine trees which have become established in groves along the trail where pastures and fields once grew.

It is best to avoid the temptation to camp in these aesthetically pleasing, pine groves. Hardwoods in the area typically have deeper roots and are much more stable during high winds and snowstorms. The sky was clear on our first night out and a barred owl announced its presence in the hollow north of us. Shortly thereafter, a high-pitched squall informed us that some small mammal had become the owl's late-night meal.

We arose around first light, ate breakfast, broke camp, and made a dewladen hay field just as the sun was rising over the eastward hilltops. The dawn was gorgeous as we plodded through the wet grass listening to the warbling of blue-birds preparing to head south. When we reached Barker Ridge Road we left the Kanawha Trace and headed west on a newly opened blue-blazed trail. Descending through a magnificent stand of beech and tulip-poplar in a moist, steep-sided hollow, we eventually reached Bryan Creek Valley. This is a very picturesque place. Other than a tobacco patch located where the trail first enters the valley, there are no signs that the upper reach of Bryan Creek is farmed any longer.

The open areas covered with fall wildflowers and the abandoned barns and houses indicate that the valley was once cultivated extensively. Ironically this American Lung

Association fund-raising trek passed through the heart of West Virginia's tobacco producing region. We passed by several patches of the plant which is used mostly to produce cigarettes, one of the major contributors to lung disease in America today. After a couple one of miles of hiking along Bryan Creek we followed the trail out of the secluded valley and up a slope covered in spicebush just changing color from green to yellow. The shiny, scarlet berries set among the yellow and green leaves gave the shrubs a bejeweled appearance and the spicy fragrance was very pleasant. Upon crossing a stile we found ourselves in a park-like area with very little undergrowth lying beneath a dense canopy created by huge tulip-poplars. Apparently livestock grazed that area. My hiking partner, Lu Schrader of the Lung Association, and I grazed on our lunches there.

Once out of Bryan Creek's valley, we connected with the Adahi Trail and headed south. A short hike on an asphalt road took us past a small, country church to a ridgetop farm. Leaving the hard-surfaced road we followed a dirt, farm road to a hay field where we again entered a forest on a footpath. Presently over the entire trail system about 35% of trail is on some type of road surface, about evenly divided between bituminous and dirt/gravel. Most of the stretches on road are very short. These roads are not heavily travelled and the rural setting makes the road walking a not unpleasant diversion from walking the footpaths. The numerous road crossings diminish the wildland feel of the trails, but they do provide diversity and the opportunity to "chew the fat" with country folk if your pace is leisurely enough to allow for that. Slowing the pace is often what backpackers hike the Kanawha Trace and Adahi Trail for. A total escape from civilization is not what these trails provide, but rather an opportunity to slow down on the weekend in the woods after a hectic work week at the job.

Other hikers choose the trails for introducing their children to backpacking. While many places along the trails appear quite wild and secluded, trail-users are never more than a few miles from a residence should an emergency arise. No medical emergencies occurred during the Lung Association's trek although we had to pamper a few blistered feet and a few sore muscles, especially for the novice backpackers.

On our second day of the three-day trek skirted around the edge of a forested area that had burned the previous fall. Greenbriers and other undergrowth species were relatively thick in this area and we picked our way along the trail gingerly. Noticing a swarm of what looked like honeybees around a knot hole located about four feet up from the base of an oak tree, I moved closer with my camera to snap a photograph.

Fifteen feet was too close and the bees let me know that they were not honeybees, but yellow jacket wasps. Fortunately I had removed my pack before attempting to catch the entomological wonder on film so I only sustained two stings before busting through enough brush to divert the angry hornets from my escape route. Had I been wearing my pack I would have proved the benefit of the quick-release hip belt. I had never seen such aggressive yellow jackets, but I figured the hot air temperature and my sweaty stink had something to do with their protective behavior. Slowly sneaking back to retrieve my pack, I removed myself from the hotly disputed territory after deciding to abort my photographic mission.

The remainder of that day was not as eventful, but it was nonetheless quite interesting. We joined the Kanawha Trace again just a few miles from our selected campsite at about mid-afternoon. Retracing some of

the previous day's steps we camped along Big Cabell Creek in the old Webb cabin. Early in this century, "Pat" Webb operated a grist mill beside this log cabin. The cabin was utilized as storage for the grain ground at the mill. Our arrival in late afternoon allowed us time to soak our feet, replace wrinkled blister pads, and catch a few crawdabbers (crayfish or crawdaddys) for supper.

After feasting and exchanging our stories about the day's events, we stretched out on our sleeping pads on the few remaining floorboards of the old cabin. Since this structure is still fairly solid, the scouts plan to restore it for use as a trail shelter, but that night we were precariously positioned between gaps in the flooring. An early morning nature call required a flashlight and a balancing act to get outside. a barred owl called from a tree beside the cabin that night and a great-horned owl hooted in its deep and deliberate manner early the next morning. Surrounded by such hostile forces in the forests and fields it is no wonder that every white-footed mouse in the Cabell Creek watershed has moved into the Webb cabin fortress.

When the sun had set that evening and the mice's "fowl" enemies began to prowl, the rodents commenced their maneuvers. First order of business; send out a foraging party to gather food. Our packs were pillaged, but the loss was not great. Second order of business: secure the fort, post sentries at every gap in the chinking, and change guards every 10 minutes. The pitter patter of little feet might have been annoying if the chirping cricket chorus under the floorboards beneath our ears had not drowned it out. Truthfully though, I slept well and when nature beckoned thrice before dawn (I should lay off the water at my evening meal) I enjoyed the night sounds and the starry sky.

Another bright day began with a heavy dew and a countdown of the top autumn bird songs. Waking up to the lovely strains, I found that my eyes were treated by the beautiful fields of flowers just as my ears were pleased by the feathered troubadors. Fall wildflowers are so beautiful when they are moist with dew drops. Spiders webs festooned between wildflower stems and bejeweled with crystal droplets are a reminder that the arachnids are busy collecting their last meals before the cold of winter diminishes the activity of their flying insect prey.

Leaves change colors here in western West Virginia during September and October just as they do in the eastern highlands, though a few weeks earlier, but here the hues are more subdued. Owing to the large proportion of oaks in the Allegheny Plateau region, purple-reds and purple-pinks domi-

nate the landscape, but hickories, black oaks, and tulip-populars splatter the hillsides with bright yellows. What the tree leaves lack in brightness, the flowers of the Composite Family make up for. Golden rods, dandelion, and crownbeard cover fields with yellow. Purple, white, and all shades between are royally displayed by the abundant asters. Last, but not least, the daisy brightens the green of old pastures with its showy white and yellow bloom.

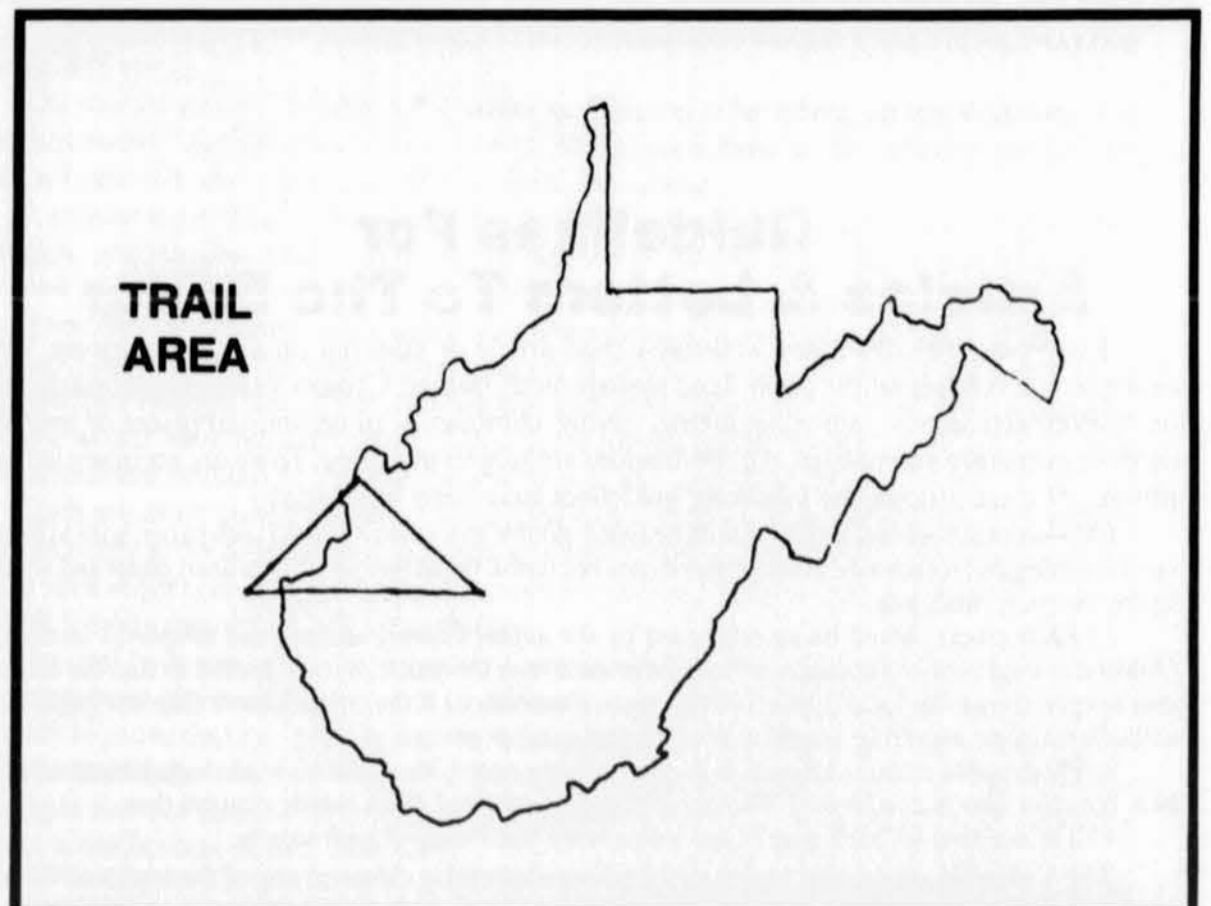
A few moments spent in the sensual delights of bird songs, wildflowers, and crisp, autumn air refreshed my slightly sore body and prepared me for the last leg of our Trek For Life And Breath. Those last few miles were relatively easy so I took time to collect the nuts of various species of hickory to add to my collection. The mast was abundant that fall and squirrels were busy everywhere cutting and collecting the crop. As we climbed through a very beautiful hollow between slopes forested with huge beeches I wondered if that place had ever been anything other than forest.

The larger trees looked to be over 100 years old. The first settlers in the area came during the years around the change from the 18th to the 19th centuries. It is likely that the hollow in question was timbered in the early 1800's, but from all appearances it had never been pastured. Contemplating the narrow ravine's history I wondered about the stories each of the ridges, hollows, rock overhangs, and abandoned farmsteads could tell.

The names of places we had hiked that weekend paraded through my mind; Tag Hollow, Blue Sulphur, Mud River, Howells Mill, and Ol' Baldy to mention a few. What tales lie behind the names? I may never know, but those names make hiking the Adahi Trail/Kanawha Trace trail network even more interesting. Every trekker said that he/she would backpack on the trail system again because it was so interesting. The diversity of scenery and the convenient location of the network to much of West Virginia's urban population make it a prime choice for backpackers in the mid-Ohio River valley area. I will hike it again soon. I like surprises.

**The Guidebook To Hiking The Kanawha Trace (1986)** is available for \$7.00 postpaid from Tri-State Area Council, B.S.A., Inc., 733 7th Avenue, Huntington, WV 25701.

Permission to hike on the trail system must be obtained from the Council by writing to the above address or calling 304-523-3408. A 50¢ user fee is required to hike on the trail system.



# The Kanawha Trace And The Adahi Trail: The Mountain State's Backpacking Surprises

by Doug Wood

Whenever West Virginia is discussed by backpackers, the conversation inevitably centers around the trails located in the eastern highlands where Monongahela National Forest dominates the landscape. This forest along with portions of George Washington and Jefferson National Forests provide most of West Virginia's backpacking and long distance hiking opportunities. The Allegheny Trail (the completed portion is now about 250 miles long) lies mostly within the boundaries of these three National Forests.

The Big Blue Trail traverses the Ridge and Valley physiographic province in West Virginia's eastern panhandle and the Appalachian Trail enters the Mountain State at two places along its eastern border, i.e. near Harpers Ferry in Jefferson County and on Peters Mountain in Monroe County.

Among backpackers in West Virginia and surrounding states the wilderness areas of Monongahela National Forest are famous for their solitude. On any holiday weekend, out-of-state license plates dominate the trail heads. Pull-offs around Cranberry Wilderness and Cranberry Backcountry are often full of vehicles from Ohio and Virginia, while Dolly Sods, Otter Creek, and the two Laurel Fork Wildernesses usually have a good mixture of automobiles from Washington D.C., Maryland, Pennsylvania, Virginia, New Jersey, and Delaware. All of these wildernesses and long-distance trails make the eastern mountains of West Virginia a backpackers wonderland.

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In October, 1987, when the American Lung Association of West Virginia used the scout trail system, all of the participants were surprised to find that such a pleasant backpacking experience was possible in southwestern West Virginia. Beautiful weather enhanced our trip. We were blessed with blue skies throughout the weekend. On our first day, our initiation to the Kanawha Trace was a relatively short, but steep climb up Wildcat Ridge. Once on top, the ridge walking was very pleasant. A short descent into Newman Hollow brought us to the remains of the stone chimney of the Newman family log cabin. Soon we were on the ridge-line again and an extensive mountaintop pasture unfolded a scene before us a green hills bordering pastoral Teays Valley. A large shopping mall visible in one corner of the valley was a stark reminder that Teays Valley is one of the most rapidly developing pieces of real estate in West Virginia. Farming in the valley will soon be only a memory just as the ancient buffalo trails which once followed the gently-rolling valley floor are now only memories stored in history books and old surveyors' logs. On our trip however, the scenery from the pasture was still largely pastoral and quite lovely.

The trail guidebook gave insight into the history of the valley. I was glad I had carried it along, not only for assistance on trail data, but also because of its informative stories about points of interest on the Kanawha Trace. Notes on wildlife observation areas and wildlife facts are found throughout the guidebook, evidence of the part which the Nongame Program of West Virginia's Department of Natural Resources has played in improving the trail system. The program's Cooperative Grants Project funded the purchase of materials for many of the stiles located at fence crossings on the trails. I noted other trail improvements such as side-hill cuts and rock stairways along the way, but what really stood out were the suspension bridges over Little Cabell and Big Cabell Creeks. These bridges were built quite high above the streams' normal surface levels in order to avoid being snagged by trees carried in flood waters. The waterways in most of West Virginia are flood-prone and the clayey soils prominent in the western half of the state do not hold streambank trees very well. Any bridge is therefore in danger of being damaged by flood-carried debris. Presently one bridge on the Kanawha Trace is missing due to flood debris. The bridge over Bear Hollow Creek was wiped out by a snag in 1987. Clayey soils make a lug-soled shoe or boot the best choice for hiking Troop 42's trail system.

When our trekking group reached the Williams shelter at Camp Arrowhead we rested, ate lunch, and filled our canteens. The well there is one of the few tested water sources alongside the Kanawha Trace. Other, untested springs abound during the wetter seasons and are described in the trail guide, but purification techniques should be used. If you get desperate, you can ask for water from folks who live at road crossings and on farms scattered throughout the trail system. Most are happy to help out and chat a while. While weekend trips usually do not call for food resupply points, there are a few small country stores located along or very near some of the trails. Water can also be

obtained at these groceries. Directions to stores located near the Kanawha Trace are given in the guidebook.

Trekkers noted that the Williams shelter was a well constructed adirondack type shelter with an outside fireplace and grill, an outhouse, and a registration box... it looked like a great place to spend the night, but our chosen campsite lay another 8.7 miles away so off we went again. Over the next few miles we crossed Big Cabell Creek on the cable bridge previously mentioned, passed the old Webb log cabin, wound our way through some very interesting rock outcrops (probably exposed and weathered at the ancient shoreline of Teays Lake), joined the Adahi Trail (both trails follow the same route for about 1.4 miles), and climbed Gobbler Knob.

After ascending 480 ft. in elevation, the trace reaches its highest point as it skirts Gobbler Knob. While 1000 ft. above mean sea level may not seem very high to the backpacker who is familiar with the high Alleghenies further east, the elevation of this knob relative to the surrounding landscape makes it a prominent topographic feature. Folks who intend to hike Troop 42's trail system should be aware that it is not unusual to ascend or descend 200-300 ft. within ½ mile of horizontal distance 5 times in 10 miles. For novice backpackers a 10 mile-per-day trip can be grueling. When planning a hike on the Kanawha Trace, you can take advantage of the guidebook's trail profile which shows elevation changes per unit of horizontal distance. Without a guidebook for the Adahi Trail or the blue-blazed trails, you can simply count on several relatively steep climbs and drops every 10 miles.

After crossing Big Cabell Creek a second time (this crossing has no bridge and is therefore difficult during high water) the trekkers climbed a spur of Barker Ridge and made camp about ½ mile on out the spur. Just before reaching our chosen campsite we passed amidst a tangle of fallen Virginia pines. Fortunately a scout trail crew had carved out the trail corridor with chainsaws previous to our arrival. The mass of blow-downs reminded us that weather conditions can be extreme in western West Virginia. Twisters are more apt to occur here than in the eastern highlands and while snowfalls of more than 6 inches are uncommon, they can topple the shallow-rooted pine trees which have become established in groves along the trail where pastures and fields once grew.

It is best to avoid the temptation to camp in these aesthetically pleasing, pine groves. Hardwoods in the area typically have deeper roots and are much more stable during high winds and snowstorms. The sky was clear on our first night out and a barred owl announced its presence in the hollow north of us. Shortly thereafter, a high-pitched squall informed us that some small mammal had become the owl's late-night meal.

We arose around first light, ate breakfast, broke camp, and made a dewladen hay field just as the sun was rising over the eastward hilltops. The dawn was gorgeous as we plodded through the wet grass listening to the warbling of blue-birds preparing to head south. When we reached Barker Ridge Road we left the Kanawha Trace and headed west on a newly opened blue-blazed trail. Descending through a magnificent stand of beech and tulip-poplar in a moist, steep-sided hollow, we eventually reached Bryan Creek Valley. This is a very picturesque place. Other than a tobacco patch located where the trail first enters the valley, there are no signs that the upper reach of Bryan Creek is farmed any longer.

The open areas covered with fall wildflowers and the abandoned barns and houses indicate that the valley was once cultivated extensively. Ironically this American Lung

Association fund-raising trek passed through the heart of West Virginia's tobacco producing region. We passed by several patches of the plant which is used mostly to produce cigarettes, one of the major contributors to lung disease in America today. After a couple one of miles of hiking along Bryan Creek we followed the trail out of the secluded valley and up a slope covered in spicebush just changing color from green to yellow. The shiny, scarlet berries set among the yellow and green leaves gave the shrubs a bejeweled appearance and the spicy fragrance was very pleasant. Upon crossing a stile we found ourselves in a park-like area with very little undergrowth lying beneath a dense canopy created by huge tulip-poplars. Apparently livestock grazed that area. My hiking partner, Lu Schrader of the Lung Association, and I grazed on our lunches there.

Once out of Bryan Creek's valley, we connected with the Adahi Trail and headed south. A short hike on an asphalt road took us past a small, country church to a ridgetop farm. Leaving the hard-surfaced road we followed a dirt, farm road to a hay field where we again entered a forest on a footpath. Presently over the entire trail system about 35% of trail is on some type of road surface, about evenly divided between bituminous and dirt/gravel. Most of the stretches on road are very short. These roads are not heavily travelled and the rural setting makes the road walking a not unpleasant diversion from walking the footpaths. The numerous road crossings diminish the wildland feel of the trails, but they do provide diversity and the opportunity to "chew the fat" with country folk if your pace is leisurely enough to allow for that. Slowing the pace is often what backpackers hike the Kanawha Trace and Adahi Trail for. A total escape from civilization is not what these trails provide, but rather an opportunity to slow down on the weekend in the woods after a hectic work week at the job.

Other hikers choose the trails for introducing their children to backpacking. While many places along the trails appear quite wild and secluded, trail-users are never more than a few miles from a residence should an emergency arise. No medical emergencies occurred during the Lung Association's trek although we had to pamper a few blistered feet and a few sore muscles, especially for the novice backpackers.

On our second day of the three-day trek skirted around the edge of a forested area that had burned the previous fall. Greenbriars and other undergrowth species were relatively thick in this area and we picked our way along the trail gingerly. Noticing a swarm of what looked like honeybees around a knot hole located about four feet up from the base of an oak tree, I moved closer with my camera to snap a photograph.

Fifteen feet was too close and the bees let me know that they were not honeybees, but yellow jacket wasps. Fortunately I had removed my pack before attempting to catch the entomological wonder on film so I only sustained two stings before busting through enough brush to divert the angry hornets from my escape route. Had I been wearing my pack I would have proved the benefit of the quick-release hip belt. I had never seen such aggressive yellow jackets, but I figured the hot air temperature and my sweaty stink had something to do with their protective behavior. Slowly sneaking back to retrieve my pack, I removed myself from the hotly disputed territory after deciding to abort my photographic mission.

The remainder of that day was not as eventful, but it was nonetheless quite interesting. We joined the Kanawha Trace again just a few miles from our selected campsite at about mid-afternoon. Retracing some of

the previous day's steps we camped along Big Cabell Creek in the old Webb cabin. Early in this century, "Pat" Webb operated a grist mill beside this log cabin. The cabin was utilized as storage for the grain ground at the mill. Our arrival in late afternoon allowed us time to soak our feet, replace wrinkled blister pads, and catch a few crawdabbers (crayfish or crawdaddys) for supper.

After feasting and exchanging our stories about the day's events, we stretched out on our sleeping pads on the few remaining floorboards of the old cabin. Since this structure is still fairly solid, the scouts plan to restore it for use as a trail shelter, but that night we were precariously positioned between gaps in the flooring. An early morning nature call required a flashlight and a balancing act to get outside. A barred owl called from a tree beside the cabin that night and a great-horned owl hooted in its deep and deliberate manner early the next morning. Surrounded by such hostile forces in the forests and fields it is no wonder that every white-footed mouse in the Cabell Creek watershed has moved into the Webb cabin fortress.

When the sun had set that evening and the mice's "fowl" enemies began to prowl, the rodents commenced their maneuvers. First order of business; send out a foraging party to gather food. Our packs were pillaged, but the loss was not great. Second order of business: secure the fort, post sentries at every gap in the chinking, and change guards every 10 minutes. The pitter patter of little feet might have been annoying if the chirping cricket chorus under the floorboards beneath our ears had not drowned it out. Truthfully though, I slept well and when nature beckoned thrice before dawn (I should lay off the water at my evening meal) I enjoyed the night sounds and the starry sky.

Another bright day began with a heavy dew and a countdown of the top autumn bird songs. Waking up to the lovely strains, I found that my eyes were treated by the beautiful fields of flowers just as my ears were pleased by the feathered troubadors. Fall wildflowers are so beautiful when they are moist with dew drops. Spiders webs festooned between wildflower stems and bejeweled with crystal droplets are a reminder that the arachnids are busy collecting their last meals before the cold of winter diminishes the activity of their flying insect prey.

Leaves change colors here in western West Virginia during September and October just as they do in the eastern highlands, though a few weeks earlier, but here the hues are more subdued. Owing to the large proportion of oaks in the Allegheny Plateau region, purple-reds and purple-pinks domi-

nate the landscape, but hickories, black oaks, and tulip-poplars splatter the hillsides with bright yellows. What the tree leaves lack in brightness, the flowers of the Composite Family make up for. Golden rods, dandelion, and crownbeard cover fields with yellow. Purple, white, and all shades between are royally displayed by the abundant asters. Last, but not least, the daisy brightens the green of old pastures with its showy white and yellow bloom.

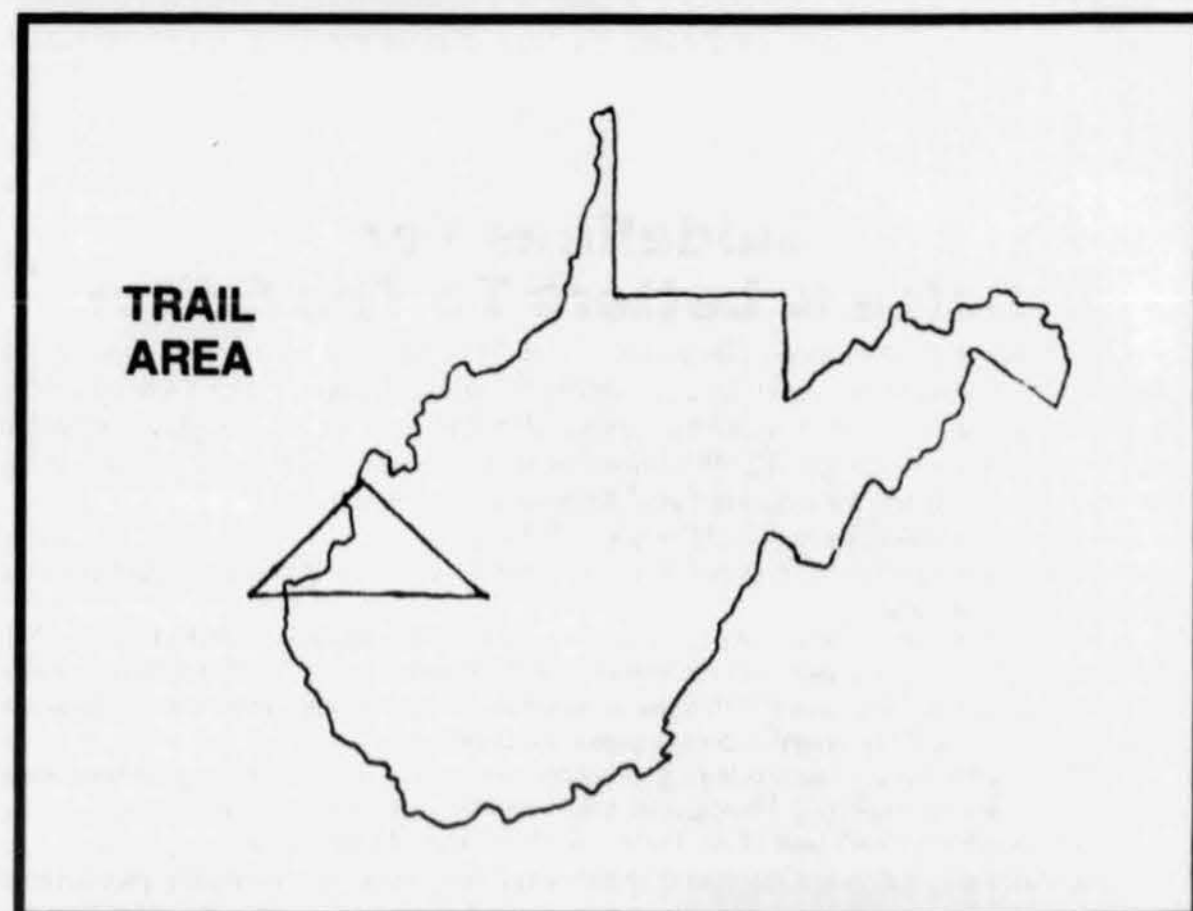
A few moments spent in the sensual delights of bird songs, wildflowers, and crisp, autumn air refreshed my slightly sore body and prepared me for the last leg of our Trek For Life And Breath. Those last few miles were relatively easy so I took time to collect the nuts of various species of hickory to add to my collection. The mast was abundant that fall and squirrels were busy everywhere cutting and collecting the crop. As we climbed through a very beautiful hollow between slopes forested with huge beeches I wondered if that place had ever been anything other than forest.

The larger trees looked to be over 100 years old. The first settlers in the area came during the years around the change from the 18th to the 19th centuries. It is likely that the hollow in question was timbered in the early 1800's, but from all appearances it had never been pastured. Contemplating the narrow ravine's history I wondered about the stories each of the ridges, hollows, rock overhangs, and abandoned farmsteads could tell.

The names of places we had hiked that weekend paraded through my mind; Tag Hollow, Blue Sulphur, Mud River, Howells Mill, and Ol' Baldy to mention a few. What tales lie behind the names? I may never know, but those names make hiking the Adahi Trail/Kanawha Trace trail network even more interesting. Every trekker said that he/she would backpack on the trail system again because it was so interesting. The diversity of scenery and the convenient location of the network to much of West Virginia's urban population make it a prime choice for backpackers in the mid-Ohio River valley area. I will hike it again soon. I like surprises.

**The Guidebook To Hiking The Kanawha Trace (1986)** is available for \$7.00 postpaid from Tri-State Area Council, B.S.A., Inc., 733 7th Avenue, Huntington, WV 25701.

Permission to hike on the trail system must be obtained from the Council by writing to the above address or calling 304-523-3408. A 50¢ user fee is required to hike on the trail system.



## SUMMARY

### Kanawha Trace

31.7 miles SW-NE  
 SW terminus near Barboursville, WV  
 NE terminus at Fraziers Bottom on Kanawha River  
 Stores: Meadows Grocery 14.6 miles from SE terminus  
 Sider's Country Store at NW terminus  
 Trailway: 21.4 miles footpath  
 5.4 miles blacktop road  
 4.9 miles gravel/dirt road  
 Guidebook: Detailed narrative with historical and ecological notes, elevation profile, and a set of plastic-laminated maps which fit easily in backpack pocket. Cost is \$7.00.

### Adahi Trail

20.7 miles S-N  
 S terminus at Camp Arrowhead near Barboursville, WV  
 N terminus at Green's Bottom wetland on Ohio River  
 Store: Staley's Market 17.4 miles from S terminus  
 Trailway: 11.8 miles footpath  
 4.6 miles blacktop road  
 4.3 miles gravel/dirt road  
 No guidebook available.

### Blue-blazed Interconnecting Trails

Bryan Creek Trail:  
 3.1 miles E-W  
 Connects Adahi Trail at 10.4 miles from S terminus with Kanawha Trace at 14.6 miles from SW terminus.

Big Cabell Creek Trail:  
 1.8 miles N-S  
 Connects Kanawha Trace at 7.6 miles from SW terminus with Adahi Trail at 1.6 miles from S terminus.

Ol' Baldy Trail:  
 0.7 mile  
 Creates a 1.1 mile loop with Kanawha Trace in the vicinity of Camp Arrowhead.

### Loophikes

23.1 miles: Adahi Trail N from Camp Arrowhead to Bryan Creek Trail  
 Bryan Creek Trail to Kanawha Trace.  
 Kanawha Trace SW to Camp Arrowhead.

10.1 miles: Adahi Trail N from Camp Arrowhead to Kanawha Trace.  
 Kanawha Trace SW to Camp Arrowhead.

6.0 miles: Adahi Trail N from Camp Arrowhead to Big Cabell Creek Trail.  
 Big Cabell Creek Trail to Kanawha Trace.  
 Kanawha Trace SW to Camp Arrowhead.

### To Reach Camp Arrowhead

I-64 to Barboursville exit.  
 U.S. 60 1.2 miles to Blue Sulphur Road.  
 Blue Sulphur Road 0.9 miles to Boy Scout Road.  
 Boy Scout Road to Camp Arrowhead.

## Guidelines For Articles & Letters To The Editor

The *Voice* welcomes any well-researched article or editorial on areas of concern, for example, river conservation, public land management, mining, Canaan Valley. General articles on outdoor activities — canoeing, hiking, caving, climbing — or on unusual places or special outdoor events are also needed. All submissions are subject to editing. To assure accuracy in the printing of these articles, the following guidelines have been established:

1.) Whenever possible, articles should be typed, double spaced on 8½ by 11 inch paper, with at least one-inch margins on each side. If the submission is not typed, the author should use lined paper and write legibly on every other line.

2.) Each article should be accompanied by the author's name, address, and telephone number. (Addresses and telephone numbers will not be printed with the article, but are needed so that the editor may contact the author for additional information, if necessary.) If the article is more than one page, the author's last name should be placed under the page number on each page.

3.) Photographs related to the article are greatly appreciated. Black and white photographs reproduce best, but color photos can be used. Photographs will be returned, if the author requests them.

4.) The deadline for each issue of the *Voice* is the last Friday of each month.

The *Voice* also welcomes letters to the editor expressing views on any of the topics covered in previous issues or on other environmental concerns. Letters to the editor should follow the guidelines for articles.

## Profile Of A Professional Trail Crew (continued from page 3)

While in Viet Nam, Charlie saw what planning and human-will can accomplish as he watched whole villages of slender Viets build bridges, dams, miles of trails and roads, and other public works projects in just a few days time. Back home he again became involved in scouting by working with Troop 42, sponsored by Baptist Temple of Huntington, West Virginia.

The Troop had constructed and maintained the Kanawha Trace and the Adahi Trail since 1960 as an answer to the need for some good backpacking/hiking trails for scouts in the Tri-State Area Council. Now, these excellent trails have become important recreation corridors in the southwestern part of the Mountain State (See the companion article "The Kanawha Trace . . .").

The scouts have also donated hundreds of hours to the Allegheny Trail project of the West Virginia Scenic Trails Association. Several Eagle Scout projects have been completed by scouts of Troop 42 on the Appalachian Trail in Monroe County, West Virginia and Giles County, Virginia. What Charlie learned about human-will in Viet Nam, he has put to beneficial work back home.

Having cut their teeth on these trail projects, two members of Troop 42, John and Charles Gibson, were ready to make a living at this type of work, if they could find the jobs. The demand for recreational trails was and is high, but state and federal trail budgets were and are meager.

Charlie Dundas and the Gibson brothers heard that the West Virginia Department of Culture and History was interested in constructing a trail to connect Camp Washington Carver with Babcock State Park. It seems the folks who visited Camp Washington Carver for its many events had nowhere to hike. The land connecting the two facilities was state-owned, but the funds were low so the idea was not given top priority. Charlie visited the site, drew up plans for a trail with two bridges and an overlook into the Manns Creek and New River gorges, and made the state an offer too good to pass up.

State personnel had estimated it would take a 10 person crew, 20 days to complete the project, but just seven days after start-up, the three member trail crew had completed its first contractual trail construction project. Only a few hours after the crew came out of the woods on the final day, the ground was covered with 6 inches of snow and it became clear that the easy grade of the new 2.1 mile trail would be an excellent cross-country ski trail as well as a beautiful hiking trail.

State officials were pleased. They had acquired a new recreational asset at a bargain price and they had helped to start a viable small business in West Virginia. These days, when unemployment is a common household term, starting a business with such an unusual focus is no small feat.

While many are mourning the slump in the coal labor market, the Tri-State Area Council trail crew is positioning to catch the economic wave of recreation interests which they see rising in this state so richly blessed with nature's bounty. The Crabtree Falls contract was expanded when the Pedlar Ranger District found some more funds tucked away in a forgotten corner of its budget.

Since that project, the trail crew has successfully completed a project on Jefferson National Forest at the Cascades Recreation Area. Chances are good that in 1989 some projects on Monongahela National Forest, including three or four on the Allegheny Trail, will be funded. While the trail crew members do not mind exporting their services and bringing the profits back home to West Virginia, they prefer working among the hills and mountains of home. So they are keeping a keen eye on recreation areas within the State. They are also interested in

trails which private corporations may wish to have built on their sportsman's club lands.

Municipalities are of prime interest also. Unfortunately, cities often get less than they expect when they have trails constructed in their parks. Lacking the funds for proper planning, they sometimes depend upon the contractor's expertise in trail construction, which is often not the contractor's specialty. In the case of Troop 42 and the Tri-State Area Council trail crew, however, trail construction is their cup of tea.

Not all hiking trails are designed the same way. Some trails have little human influence in their designs, just game paths with some brush cut back, and a few blazes painted on trees. However, most recreational trails must be designed and constructed in the manner that lessens the impact of heavy use upon the trail corridor.

The trail was located on a very a steep slope of a spur of the Blue Ridge Mountains. To maintain an easy grade the trail had numerous switchbacks which also provided for several view points overlooking the series of cascades for which the trail was named.

The lack of rectangular stone (most of the granite blocks we found were fractured in pyramidal or rounded fashion) made us search far from the immediate work areas to obtain suitable rocks for constructing steps and switchbacks. Rolling our choice rocks down the steep slope might have resulted in overshooting our goal or injuring unwary hikers on the trail below. So we took care to "walk" our stones down grade, to use caution-tape and traffic cones to mark the trail below the areas from whence we gathered stones, and to station a crew member on the trail to stop hikers temporarily until the rocks were stable again.

Minimum impact to the work area and its resources is also a major consideration of the trail crew on all of its projects. Many times have I seen evidence that other contract construction crews threw plastic water bottles and sandwich wrappers on the ground surrounding their work areas, or changed the oil in a piece of equipment on site without containing the drained oil, or even left unused materials scattered about or tossed over the edge of a trail or roadway after they had completed their projects.

The Tri-State Area Council trail crew is immaculate. They often collect trash left by others near their projects so that the beauty of the outdoors is even more evident when they leave than when they arrive. The work the crew performs reminds me of the work once done by the Civilian Conservation Corps. The CCC did not have some of the equipment which the Tri-State crew uses, but the quality of their work was grand, as is the trail crew's.

The CCC accomplished some tremendous projects with the simple tools at their disposal. Charlie Dundas commented on the excellence of their work as he was completing the Manns Creek Gorge Trail. Part of this trail follows an old CCC logging road. Though the road's stone cribbing is about 50 years old, Charlie expects it will last for at least another 50 years. Well designed and properly constructed foot trails last a long time also, and usually only brushing and reblazing are necessary for annual maintenance. As ever hiker will attest, a well constructed trail enhances the hiking experience.

The next time you hike on any of the hundreds of miles of public trails in West Virginia, reflect upon the sweat the strain that went into construction and maintenance of those trails. Whether they were built by volunteers, governmental recreation personnel, or contractors like the Tri-State Area Council's trail crew, you can be sure that a kindred appreciation of nature motivated them to perform their work well.



## Canoeing Guide

The Pittsburgh Council, American Youth Hostel's Popular "Canoeing Guide to Western Pennsylvania and Northern West Virginia" is an inexpensive reference book for all active boaters. The 7th edition has almost 300 pages (compared to 168 in the 6th edition) and has many more new trips, with updated information on old trips.

The guide reflects the canoeing experiences collected over the past 10 years by skilled AYH leaders. AYH's canoeing program has been active for over 35 years and has been the largest and most active canoeing program in the Western Pennsylvania area.

Western Pennsylvania and West Virginia offer an abundance of boating opportunities for all skill levels — from placid lakes or marshes to high-class white water. The AYH Guide describes locations and covers all types of boating trips in these areas. Laid end to end, the 200 trips on the 88 rivers and streams in the book would extend over 2,000 miles!

The 7th edition is a handy 6" x 9" glossy paperback priced at only \$5.00. Please add \$1.00 postage per copy and 6% sales tax (30 cents) if applicable. Please inquire for dealer rates or club quantity discounts. All checks should be made payable to: "Pittsburgh AYH" and mailed to: Pittsburgh AYH Books, 6300 Fifth Avenue, Pittsburgh, PA 15232. Proceeds from the sale of this guide benefit hostel development.

### OTA (continued from page 1)

On October 13, 1972, the Office of Technology Assessment (OTA) was formed. Its primary focus was and is on providing Congress with needed information concerning technological advances that impact on environmental issues.

Six senators and six representatives comprise the governing board of the OTA. An advisory council consisting of 10 public members with expertise in science, technol-

ogy and education, advise the board. A non-voting director is appointed along with the ten member public advisory council, to the OTA. A permanent staff rounds out the OTA with skills spanning many fields.

Issues confronting congress in the late 20th century including agriculture, biotechnology and education, are highly complex and technical. During the 1960's Congress realized that failure to consider the complexity, cost and long term impact on the environment brought forth many inappropriate policy decisions. Congress, therefore, authorized the establishment of the OTA.

Today, the OTA's work centers on one and two year comprehensive assessments. Committee members and staff in conjunction with testimony at hearings, ensure that OTA's work is responsive and designed to meet the needs of Congress. This type of close working relationship is the cornerstone on which the unique value of the OTA is built, thus making the OTA an indispensable resource to Congress.

Dennis Hamrick, Distance Runner

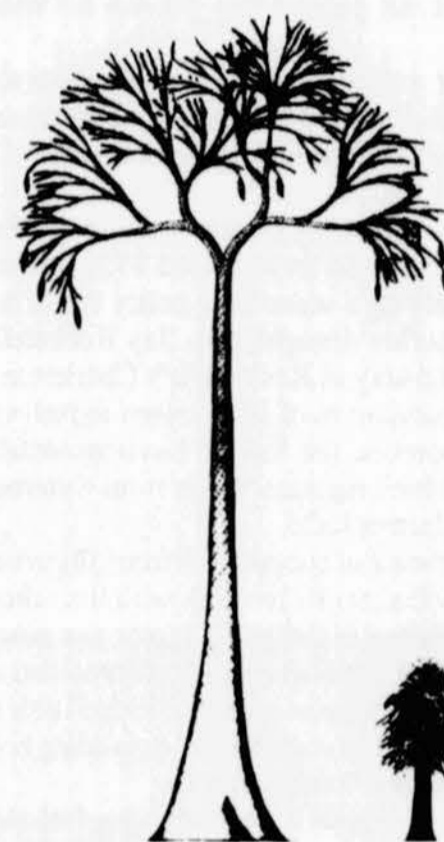
### Unseen Buds

*Unseen buds, infinite, hidden well,  
Under the snow and ice, under the  
darkness, in every square or cubic  
inch,  
Germinal, exquisite, in delicate lace,  
microscopic, unborn,  
Like babes in wombs, latent, folded,  
compact, sleeping;  
Billions of billions, and trillions of tril-  
lions of them waiting,  
(On earth and in the sea — the uni-  
verse — the stars there in the  
heavens.)  
Urging slowly, surely forward, form-  
ing endless,  
And waiting ever more, forever more  
behind.*

Leaves of Grass,  
Walt Whitman



**FIGURE 1**  
Reconstruction of Archaeopteris.  
The leaf like branches of this tree is thought characteristic of plants from the Devonian period. Evidence indicates land plants began a vigorous evolutionary proliferation through which they colonized the earth in the first few million years of Devonian time.



**FIGURE 2**  
Reconstruction of Lepidodendron.  
Known as the "scale tree" Lepidodendron was one of the most common tree-like plants of the Carboniferous period. Each layer of bark exhibited arying patterns in a diamond shape reminiscent of scales. Cones formed at the tops are called lepidostrobos.

## Coal Is Organic (continued from page 1)

The first stage in coal formation was the growth and accumulation of plants. In our modern forests, leaves, stems, seeds, pollen grains, and even an occasional tree litter the ground, but the total accumulation is seldom appreciable because the material is subject to nearly continuous decay. For example, if a tree topples to the ground, it is attacked at once by fungi, bacteria, insects, and perhaps other destructive organisms which, in time, reduce it to a rotten mass, and ultimately to dust and gases. If the same tree had fallen into stagnant water, the process of decay would have been slowed or perhaps even stopped, due to a shortage of oxygen necessary to maintain life processes in the decay-causing organisms. This, then, is the way that our coal beds were initiated — by the accumulation of plant debris in shallow depressions that were more-or-less constantly covered by standing water.

There are dozens of factors which could have interrupted the process at one time or another. As examples, certain organisms can cause decay even if nearly all of the oxygen is excluded. If there was much current, the debris could be carried away nearly as quickly as it was deposited. If substantial amounts of mud and/or sand were washed in and intermixed with the plant fragments, the accumulation more than likely became a carbonaceous sandstone or shale. But, if the water was quiet and stagnant, and if very little mineral material adulterated the deposit, then plant material accumulated, much as it does in similar modern situations, such as peat bogs.

This process continued year after year, with plants growing in and around the margin of the basin constantly contributing to the deposit. As new layers were added, the additional weight gradually compressed the lower layer, most of the remaining water was subsequently squeezed out, and decay practically ceased. The resulting material, peat, was the initial stage in the formation of coal.

Later, as nearby hills and mountains were eroded, sediment washed into the basin and the peat deposits were covered. Then, as layer after layer of sediment was added, the basin began to subside slowly. The enormous weight of the overlying material compressed the peat even more, the temperature increased due to the depth of burial, the moisture level decreased — and "brown coal" or lignite was formed. As the deposit was buried even deeper and consequently kept at a high temperature, it became bituminous coal. When subjected to still greater heat, anthracite coal was formed. As this process was being carried out, the overlying sediments were

gradually cemented into rock.

A majority of the fossil plants found today are in the shales immediately overlying the coal beds. These were the last plants added to the deposit. Many were probably still living as the first mud was washed in, and as decay was not far advanced, they are preserved much as they grew. In extreme cases, trees remained standing as mud and sand washed around them, and quite often these are seen as casts standing erect in massive sandstone blocks exposed in highway cuts or at surface mines.

The conditions for coal-swamp formation are believed to have been a tropical climate with abundant rainfall and flat, poorly drained land. Similar conditions are found today in restricted areas in Indonesia, the Niger, and other tropical river deltas.

A common question is "How long did it take to form coal?" No one knows exactly, but geologists estimate that it takes from eight to ten feet of peat to make one foot of bituminous coal, and peat has been recorded as accumulating in modern swamps at the rate of approximately one foot per century. Although not an exact corollary, as the accumulation rate would expectedly be slower in the tropical coal swamps, it would, at this rate, take nearly 1,000 years to accumulate enough plant debris to form one foot of bituminous coal. Therefore, a five-foot coal bed would have required nearly 5,000 years for the plant material to accumulate, and many additional millions of years for completion of the conversion process.

Coals are often quite numerous in localized areas. In West Virginia, there are mountains where as many as 45 different beds occur in less than 1,500 vertical feet of rock. Several of the beds in such sequences may not be thick enough for mining, but quite often the same bed in an adjacent locality may be several times thicker.

The coal beds were given names as they were studied and mapped, and the same bed has sometimes been given different names in different areas. In such instances, intensive study is necessary to prove that they are one and the same, particularly if several river valleys separate the localities and if the rocks have been differentially uplifted or deformed. The fossil plants occurring in the roof shales and the plant spores contained within the coal are often the only keys to exact identification in such instances.

From *Plants Fossils Of West Virginia*  
WV Geological and Economic Survey

## Telescope Investigation Continues

GREEN BANK (UPI) — Officials on Thursday continued to investigate the collapse of a 300-foot radiotelescope at the National Radio Astronomy Observatory in Green Bank.

It could be quite a while before engineers can dig through the twisted pile of metal, all that is left of the first telescope of its kind, said Seth Tuttle a manager at the National Science Foundation, the agency which runs the observatory.

"It is more right now trying to figure out what happened," Tuttle said.

"The radioastronomy community has to get together and see what steps they would propose."

The two steel towers holding up the massive dish collapsed Tuesday, destroying the telescope and damaging the control building. No one was hurt.

The dish was used to scan the heavens by collecting radio waves from space.

Tuttle said it is too soon for specifics on what type of telescope could replace the one demolished. The telescope cost less than \$1 million to build in 1962.

Tuttle said a similar radiotelescope easily could cost \$4 million now.

The Charleston Gazette, November 18, 1988

## Water Flow Policy Topic Of Rafting Meeting

How should dams be regulated to satisfy the special and sometimes conflicting needs of West Virginia's white-water rafting, river transport and chemical industries, while maintaining water quality for fish and wildlife?

The question has never been an easy one to answer, and last year's drought, the worst in decades, only served to push all parties who depend on water from the Kanawha River watershed further apart.

The state's white-water outfitters, who normally generate about \$16 million in sales annually, lost an estimated \$6.5 million because of the abbreviated fall rafting season on the Gauley River, which was open to thrill-seekers on only eight of the season's normal run of 21 days.

However, had water levels not been maintained through the week in the Charleston area, heavy industries here would have lost an estimated \$750,000 to \$1 million a day.

To begin work on developing a water flow policy that is fair to all parties, and takes into account the possibility of another drought, Sen. Jay Rockefeller and Rep. Bob Wise, both D-W.Va., held a meeting Thursday in Rockefeller's Charleston office.

Attending it were representatives of all involved industries, plus officials from the state Department of Natural Resources, the federal Environmental Protection Agency, and the Army Corps of Engineers, which regulates flows from Summersville, Sutton and Bluestone dams and the London and Marmet locks.

"We're seeing a genuine sense of cooperation from all parties," Rockefeller said at the end of the meeting. "The corps will share its research with the rafters, and if both sides can work from a data base they can trust, we're that much closer to a solution. We'll need several more meetings like this, of course, but there was more communication than I expected."

Rockefeller said the Corps of Engineers has developed new research, which was presented at Thursday's meeting, that should prove valuable in planning how to regulate water flow in the Kanawha, New, Gauley, Elk and Bluestone rivers.

Rockefeller said his West Virginia Rivers Bill, signed into law by President Reagan in late October, makes white-water rafting a direct program purpose, ensuring its development in the years to come.

Passage of Rockefeller's bill, coupled with National Park Service protection of the New River Gorge, gives West Virginia the largest network of federally protected rivers east of the Mississippi, a fact that "will attract many more people to the area," he said.

The Charleston Gazette, November 18, 1988

## Strip Mining Prohibited At Plum Orchard

Fayette County Judge Robert Abbot issued a temporary injunction Wednesday prohibiting strip mining in the Plum Orchard Public Hunting and Fishing Area. The Department of Natural Resources sought the injunction after the Department of Energy gave Harvey Energy permission to extend its mine onto public lands.

Robert Parsons, DNR's deputy director, said Abbot's injunction "restricts them from surface mining in the public hunting and fishing area. They have to have a hearing within 10 days." Lawyers for DNR and Harvey Energy will present arguments during the hearing.

Plum Orchard Lake is a good bass fishing area, Parsons said. John Kizer, who owns Harvey Energy, plans to extend an already-existing surface mine on a steep ridge above the lake. The area is located between Oak Hill and the West Virginia Turnpike.

On Friday, DNR issued Kizer a cease and desist order, because he had not yet obtained the required modification to his water-pollution control permit, called a National Pollution Discharge Elimination System permit. DNR approved that modification Wednesday, and lifted the order issued on Friday, Parsons said.

Parsons said the deed transferring the property to DNR reserved rights to mine coal. "That deed did not contemplate surface mining," Parsons said. "It did contemplate deep mining. They can deep mine, and we can't stop them."

"When the New River Mining Co. sold off the land, they knew it was going to be used for public hunting and fishing," Parsons said Wednesday. "Our contention is that we wouldn't have accepted the land back then if we knew anyone was going to surface mine it."

New River later changed its name to Mountain Laurel Resources, a Mount Hope-based company that leased coal rights near Plum Orchard Lake to Kizer.

Beckley lawyer Mark Neil, who represents Harvey Energy, said Wednesday, "It is our position that surface mining is permitted under the terms of the deed. The right to mine coal was reserved."

Neil described the dispute as a friendly one. "I don't think anyone is mad at each other. The hearing next week will give the judge the chance to hear both sides of the story . . . Harvey Energy is just a contract miner. Mountain Laurel is the most interested party. As far as I know, they are planning to be involved in the hearing, too."

The Charleston Gazette, November 24, 1988

## Opponents Of Wood Treatment Plant Still Kicking

Will there be death in the river and worse in the well? That is the question many Greenbrier Valley residents in and around the communities of Alderson and Glen Ray have been asking themselves since a public meeting was held by the Department of Natural Resources on August 18.

Since the hearing, the number of residents of the area concerned with the proposed plant's potential for causing irreversible health, life safety, and environmental damage seems to be increasing. Citizen groups have met with the Monroe and Summers county commissions seeking their help in delaying the DNR's permitting process until all crucial questions have been explored. The DNR reports that a very large number of comments are being reviewed.

Concerned individuals have requested that the DNR hold a second public hearing to gather comments on the permit based upon complete and correct design and as-built construction data and to give the developer and the DNR an opportunity to answer questions raised during the first public comment period.

The hearing has been scheduled at 7 p.m. Jan. 4 at Alderson Elementary School.

The West Virginia Air Pollution Control Commission has also been asked to review its initial assessment of the air pollution potential of the proposed plant based on current information.

A citizens group, Concerned Citizens of Alderson-Glenray, has been formed to challenge the permitting and operation of the proposed plant on legal grounds.

The Charleston Gazette, December 14, 1988

## Treating Waste 5,000 Feet Down

If a wet waste material, like sewage sludge, is mixed with oxygen and placed under high pressure, it undergoes a process that chemists call wet oxidation. The sludge, whose disposal is becoming a burden to more and more municipal sewage plants, is converted to relatively clean water and sterile ash.

Such processes, when carried out on the earth's surface, require elaborate vessels under high pressure, special pumps and ample acreage for buildings and equipment. But a Dallas company, the Oxidyne Group Inc., has developed a system that moves the process to the bottom of a well 5,000 feet underground, where it is carried out in a sealed reactor vessel.

In the process, sludge is pumped to the bottom of the well. Because of the weight of the sludge coming down the pipe, pressures at the bottom of the well can exceed 2,000 pounds per square inch. Oxygen is sent down through another pipe and the wet oxidation begins.

Raw sludge is constantly pumped into the system and treated water and ash come out. Wet oxidation produces considerable heat, some of which can be used to drive the process.

New York Times, December 7, 1988

## W. Va. Least Energy-efficient State, Study Finds

WASHINGTON (UPI) — The burning of coal, natural gas and oil was less efficient in West Virginia than in any other state in 1986, according to a new environmental study.

The study by Renew America, an environmental group, looked at emissions in the 50 states of fossil fuel gases linked to the greenhouse effect.

The study reached its conclusions by analyzing each state's 1986 consumption of the fuels, which release carbon dioxide, believed to be the main contributor to global warming.

Scientists believe excessive levels of carbon dioxide and other industrial gases are accumulating in the atmosphere, where they trap heat radiating from the Earth that ordinarily would escape into space. It is called the greenhouse effect because the heat-trapping gases act much like glass ceilings and walls.

Experts predict current concentrations of the gases will lead to global temperature increases of several degrees Fahrenheit in the next half-century.

Although West Virginia did not rank with the worst offenders in terms of tonnage of carbon dioxide released into the atmosphere, its emissions did make it the least energy-efficient state, the survey said.

Sources in West Virginia emitted 1,179 tons of carbon for every \$1 million of the state's gross annual economic product. West Virginia is heavily dependent on coal, which when burned releases the greatest amount of carbon dioxide for every unit of energy.

Tina Hobson, executive director of Renew America, said the survey represented the first effort to quantify each state's carbon dioxide emissions and their primary sources.

"It is intended to serve as an indicator of potential problems and solutions," Hobson said. The authors of the report acknowledged their analysis produced only rough estimates of emissions and did not take into account all relevant factors that might affect rankings.

"We realize that state-by-state variations in emissions of greenhouse gases are due to a complex combination of economic and other factors, so caution should be used in interpreting the data in a comparative context," they said.

The Charleston Gazette, November 18, 1988

## New License System To Be In Effect January 1

Starting Jan. 1, the license system in West Virginia will offer three new licenses, including for turkey, muzzleloading and deer bow seasons.

Along with the addition of more specific licenses, Potesta said the state will put into effect a reciprocal hunting or fishing license for Kentucky, Maryland, Ohio and Pennsylvania. This means West Virginia will charge nonresidents the same amount that residents of this state pay as nonresidents to hunt and fish in the surrounding states.

The Charleston Gazette, November 13, 1988