Forest Lookout

By Ella E. Clark

"YES, I was entirely alone, but I was never lonely . . . No, I was never afraid."

How many times I have given these replies since September, 1943, at the end of my first summer in a lookout station of the United States Forest Service! That season I had been located on a mountain road and could drive to my cabin door. After my second summer, though I had lived an hour's climb from a road, I could still make the same answers truthfully.

When the same questions were asked at the end of the season of 1945, I had to reply, "I was never lonely, but I was afraid—or at least very nervous."

In fact, some of the paragraphs which follow were written partly to free myself from nervousness, by turning my attention from "the mighty space of air" displayed below my windows to the mountains and ravines at greater distances.

Wartime Service in the Wilderness

You may wonder, as others have, why I, a woman, should choose to spend three summers "roughing it" alone in the wilderness. When I learned in the autumn of 1942 that the United States Forest Service planned to employ women the following year, I knew that I had found my wartime service for summer vacations: I should be a lookout, or forest guard, on some mountain peak.

I was sure I could adapt myself to the isolated life and to the outdoor environment with which I had become acquainted through essays of students who had introduced me to the beauty of the virgin forests of the Northwest's Cascades, Bitterroots, and Olympics.

So in the spring of 1943 I wrote letters of application to eleven district rangers, accepted my first offer, and in June drove to the Mount Adams District of the Columbia National Forest, in my home State of Washington (Plates I, IV, VII, and pages 75, 91).

In September I returned to my college community and, to my surprise, to a barrage of questions which are repeated every time a new acquaintance discovers my experiences.

But before I begin to answer those questions in writing, I want to present, as background, some facts which I have gleaned from Forest Service publications found in my lookout stations, facts about the great property which you and I and other Americans own—our national forests.

We, the people, own 152 national forests, which cover 177,642,000 acres. This means that our national forest land almost equals in area the whole of France plus the State of Washington or Missouri. Yet we, the people, through State and municipal ownership as well as Federal, own less than a third of all the forest land in the United States. The balance is privately owned.

But lest these figures make us complacent and we continue to deplete what was once thought to be an inexhaustible resource, let us remember these Forest Service statements concerning all the forests of the country:

First, only about 100,000,000 of our original 850,000,000 acres of saw timber remain.

Second, "It is estimated that the drain on forests of the United States in 1944 amounted to nearly 16 billion cubic feet, and exceeded total growth by 50 percent. In timber of saw timber size, drain was almost twice the annual growth."

Third, "To meet the requirements of our people for forest products . . . growth should be nearly doubled."

For administrative purposes, the national forests are grouped in ten regions, with a regional forester in charge of each. Region 6, with headquarters in Portland, includes 19 national forests in Washington and Oregon.

Each national forest is administered by a forest supervisor and his assistants. For closer supervision, each forest is subdivided into ranger districts, with a forest ranger as administrator. Thus the Columbia National Forest, which is about the size of the State of Delaware and the eighth largest forest in Region 6, has five ranger districts.

Fire Prevention Paramount Duty

A district ranger has supervision over timber sales in his district; over grazing and other uses of the forest; over building and maintenance of roads, trails, bridges, telephone lines, recreation camps; and over the protection of his part of the forest from fire.

The most important of these duties is the last one, for upon it depend all the others. Consider these figures:

"During 1935-1939 cooperative Federal, State, and private fire control was in effect on 260 million acres of State and private land. The area burned was held to 1 percent. One hundred and sixty-three million acres of private forest land were without protection, and fires burned over 17.8 percent of this area."

To assist the district rangers in their work of protection, nearly 6,000 forest guards are

Ray M. Filloon

Student Guards Learn to Operate a Firefinder

On its surface is a circular map of the area, with the lookout station in the center. The rim is calibrated in degrees of the azimuth circle. Spotting smoke, the guard revolves the ring and adjusts the sights until the base of the smoke appears in the cross hairs of the front sight (at elbow). A tape spanning the map measures distances. Fire data are telephoned to the dispatcher a few minutes after spotting.

The person on duty in a lookout station is considered "the eye of the entire fire-fighting organization" of his area. He is expected to discover a fire as soon as possible after it originates, to locate it accurately and quickly, to record the data concerning it, and to report these data by telephone to the office of the ranger station.

The lookout, therefore, is directed to have his area under general observation all the daylight hours during possibly dangerous fire weather. By so doing he can detect a fire when it is small.

He is also directed to give his area a "check look" every twenty or thirty minutes; by a check look is meant an intensive scrutiny of the observed area, one small sector at a time. Usually the schedules for check looks on adjacent stations are so arranged that a given sector is under scrutiny most of the daylight hours. When a lookout detects a smoke, he locates it by means of a firefinder.

How Fires Are Located

This instrument has a circular map of a given area screwed to a steel frame. The whole equipment rides on a pair, or two pairs, of tracks fastened to a rigid stand tall enough to clear the windows enclosing the station.

The steel rim around the map is engraved to show the 360 degrees of the circle—the azimuth circle. On a movable steel ring between the map and the azimuth circle are screwed, opposite each other, perpendicular pieces known as the front sight and the rear sight. The front sight is equipped with a vertical hair and two horizontal hairs, to be used in determining the horizontal angle and the vertical angle of a given spot.

Across the map, between the front sight and the rear sight, runs a measuring tape, by which the lookout determines distances. At the center of my map is my particular lookout station.

The map shows the topography and names the principal landmarks (peaks, rivers, creeks, Forest Service stations) in a radius of twenty miles from my station. It is also a section map, and therefore shows the townships, ranges, and sections of the area covered.

When, therefore, I see a smoke, I revolve the sight-bearing ring and I adjust the front sight until, as I look through the peephole of the rear sight, the point of intersection of two hairs in the front sight appears to cut through the center of the base of the smoke.

Now I am ready to read the horizontal angle on the azimuth circle and the vertical angle on the vertical scale of the rear sight. I locate the spot on the map, record these data and others on a blank prepared for the purpose, and reach for the telephone. All this is supposed to be done within three to five minutes after the fire has been spotted!

My report to the fire dispatcher includes the following data: location by local landmarks (for example, the junction of Agnes Creek and Trapper Creek); the azimuth, or horizontal, angle; the vertical angle; the distance in miles; the township, range, section, and subdivision; the direction from which the smoke is drifting; the volume, color, and character of the smoke; the approximate size of the base of the smoke; the time the smoke was first sighted.

The dispatcher copies the data and, whenever possible, telephones another lookout or two in the area for azimuth readings on the smoke. This is to obtain a two- or three-point intersection on the location of the fire and will save time, for an error of one degree in the reading may result in several hours' delay in reaching a fire.

The dispatcher plots the readings on his map and decides upon the best course of action. If it is a small fire, he may send one or two men who are already nearest it. The lookout is alert to receive a mirror flash if the men need more help and to report to the dispatcher on the progress of the fire and the fire fighting. If the fire becomes large, the dispatcher calls together as many men as he needs or can find (page 92).

Besides the men employed by the Forest Service for fighting fires (and for making improvements when there are no fires), other men in the community are called upon. Workers in lumber mills in the area, as well as loggers and stockmen in the forest, may be subject to fire calls as a part of contracts with the Forest Service.

All of us are acquainted, through the daily press and the radio, with the heroic fire fighting done by the C.C.C. boys some years ago and by the soldiers and sailors in more recent summers, in the big fires which made the headlines.

The lookout also is expected to wash his windows after every rain or fog and at regular intervals during dry weather. This was no small task at Flattop, where I had fourteen windows in my living quarters and two glass-enclosed rooms, probably 6 by 6 feet and 10 by 10 feet, for the firefinders. But one cannot see smoke through streaked or rain-spotted windows.

The lookout is directed to keep his house, tool shed, and adjacent grounds tidy. We women have not been expected to do some of the tasks usually done by men lookouts, such as painting and repairing the stations, or working on trails on foggy days, but at least one woman unaccustomed to hammer, saw, and pliers has found it fun to discover what she can do when necessity arises.

And of course housekeeping takes some time, even for one person, when it includes splitting kindling, cooking on a wood stove, baking bread, and doing the laundry with tub and washboard.

One learns to be economical with water carried up from a spring. With the same water I have, in turn, shampooed my hair, washed my clothes, scrubbed the woodwork and mopped the floor. Then I have watered the nearest lilies or settled the dust near the cabin.

Lookout De Luxe on Flattop

Lookout stations—that is, the buildings themselves—differ somewhat with the location and with the period of architecture, if one can use so elaborate a term for them. The first one I lived in is a lookout de luxe, more spacious than any other known to experienced foresters of my acquaintance. It has two screened-in porches, a small bedroom, a spacious "room," in the pioneer sense, with windows on three sides.

From the bedroom a steep, narrow stairway leads through a small attic to the tower enclosing the firefinder. The room is equipped with a good wood stove, built-in cupboards, folding chairs, two large tables, and a desk with drawer space not fully appreciated until this summer. (Cartons on a shelf under the table are my present drawer space, holding anything from bread to sheets.) Both stove and metal bed are grounded for lightning protection.

My second lookout in the Columbia National Forest and my present one in the Chelan National Forest are more nearly typical stations. Each consists of a single window-enclosed room. This one measures 11½ by 11½ feet.

A ladder starting from about the middle of the room leads to the tower and the firefinder. Each room is furnished with bunk or army cot, a table, a built-in cupboard topped with a worktable, and a stove.

Here, far above the tree line, I burn kerosene; there I burned wood. Cooking equipment is good and, when kept up to the standard Forest Service list, is complete. The white china dishes are substantial—twice the

U. S. Forest Service, Official

Man Causes 9 of Every 10 Fires in Western Forests

Here a worker touches up a sign in the Columbia National Forest. In areas where fire hazard is high, smoking is prohibited. Elsewhere, officials designate safe places that have been cleared of inflammable material. Three of every four man-made fires are due to carelessness, the other to incendiarism (page 96).

thickness and weight of my breakfast pottery at home. Floors are bare; windows, of course, must remain curtainless. In these one-room stations there is no wall space, not even for hanging one's clothes.

The first two summers a good little cellar in the side of a hill, equipped with shelves and a ventilating system, kept butter firm always and vegetables fresh surprisingly long. This year my "frigidaire," on warm days, is a metal container forced into the snow between two rocks.

Previously I have disposed of my garbage by burning what I could and then putting the rest in a pit dug for the purpose and fitted with a lid. Here, where I can neither burn nor bury, garbage disposal is more primitive. When I have emptied a can, I step to the door and toss it three or four feet. For a few seconds it knocks against the rocks which I cannot see, and then it reappears, a moving speck on the snowfield below.

It still goes against the grain to dispose of refuse in that way, even though I am sure that no human being will ever see that tin can again and even though I can think of no better method of disposal.

Standard among the newer types of lookout stations is the single room, 14 feet square, with the firefinder in the center. In some areas most of the stations have tall towers, 50 feet high or more. Sometimes living quarters are on the ground and only the firefinder is in the tower; sometimes both are in the tower, and the lookout stays there day and night.

The unique station of my acquaintance is in a State forest near my first location. Living quarters are in a small cottage on the ground, and the firefinder is in the top of a tall tree. There a local girl, first as high school senior and then as college student, has been forest guard for three summers.

Old Glory Flies High

A typical day's schedule varies somewhat with the station. The first summer I telephoned the ranger station every morning at six, made a check look at that guard station, walked across the mountain through a grove of trees and a flower-dotted meadow for a check look at the east-point station, raised the flag, returned to the other station, and put up the flag there (Plates I and IV).

No, I did not sing "The Star-Spangled

Banner." "America the Beautiful" seemed more appropriate to my location. It was my "theme song" all summer, and I sang it many, many times as I walked across the mountain. Months later I learned that it had been inspired by the view from Pikes Peak.

Flags up, I made a fire, prepared a hearty breakfast, and did the routine housework, including preparations for a hasty lunch. On hot, dry mornings I interrupted these activities by unscheduled check looks at both stations. At nine o'clock I went again to the east-point station to read and report the weather, as I did also at one and at five in the afternoon.

By telephone I reported to the ranger station the visibility, the percentage of humidity, the weight of the fuel moisture stick, the direction and velocity of the wind. A more detailed report at five o'clock, including the kinds and movements of clouds at different altitudes, became part of the data for the weather forecast telephoned back to the ranger station from Seattle each evening.

As a war-secrecy measure, both the evening forecast and my five-o'clock report were made in code. These five-o'clock reports were used also to determine the burning index for the following day in our district. At each of the three daily readings I made a detailed record and mailed it every ten days to the U. S. Weather Bureau in Seattle.

"Reading Between Looks"

Throughout the day I continued with the check looks at both stations, usually reading between looks, giving most of my attention to the side of the mountain where the fire hazards—the logging operations—were.

During August, when there were huckleberry pickers on one side and logging operations on the other, a few days of "fire weather" caused me to walk six or eight miles a day back and forth across the mountain. An estimated four miles was normal—and pleasant.

The last check look was made at early bedtime. Another telephone call had been made at four o'clock. This one and the early-morning one are made for two purposes: to see that the telephone is in order and to make sure that all is well with the lookout.

If he is not heard from at his scheduled hour, the office tries to call him. If repeated calls are unanswered, someone is sent up to investigate.

This was a typical sunshiny day of my first summer, but it is not a typical lookout's day. Most lookouts have but one station, either on a promontory or on a tower. Their days are much less active—sometimes boringly inactive.

Most schedules include also a certain time for getting water from the spring, usually between six and seven-thirty in the morning, so that the lookout will not be away from the station for any length of time after the dew is gone.

Last summer (1944) I went for water between six and seven in the morning, a seven-minute journey down to the spring and, after I became acclimated, a twenty-minute journey up, through the flower-dotted woods and clearing below the cabin. The water I carried in gallon canteens hanging from each shoulder.

Youthful Lookouts Become Lonely

Life on a lookout has, of course, its drawbacks and hardships. To most high school and college boys, the chief hardship seems to be the isolation, the loneliness. The long, three- or four-cornered telephone conversations in the evening show youth's hunger for companionship.

To one middle-aged man the worst feature, especially on these high peaks, is the frequent fog. Shut in by fog as well as by hazardous rocks, one can become depressed as well as lonely. (Patrol by airplane, being experimented with this summer, may prove to be a partial and welcome substitute for the lookouts on these isolated peaks.)

Probably all of us weary of the wind. Many times I have been awakened by it and have been grateful for the eight heavy cables which keep the cabin in its place at the edge of the mountain. Young boys, I was told last summer, have telephoned during a heavy wind in the middle of the night, just to hear the reassuring voice of the motherly woman at the switchboard below.

Sometimes carrying water is almost back-breaking work. Some complain of the monotony of their menus. When the grocery store is 25 miles to 75 miles away and supplies are brought up once in three or five weeks, one is restricted mostly to packaged and canned foods.

None of these hardships has affected me much. My varied interests have kept me from being lonely, even though for one month of my first summer I saw just one person and then for only five minutes. On foggy days I have gone exploring or have picked huckleberries and made jam. When the curtain of fog was very thick and cold, I have sat beside my snapping wood fire and rejoiced in long days of reading and study.

For two summers my water for cleaning was brought up by truck or by pack mule, and I could easily keep myself supplied with fresh water for drinking and cooking. This

summer my water supply, a glacier, is but a few yards from the door. I melt the snow, strain the water through a cloth, and boil what I drink.

My chief hardship, even in the lookout de luxe, has been the lack of beauty and comfort and conveniences in living arrangements, coupled with the impossibility of keeping well groomed.

Not in my most uncomfortable moments, however, have I thought that bed springs or easy chair or bathtub should be carried up on the backs of men or of mules to convert the lookout into a Shangri La. The marvel is that lumber and window glass have been brought up. But I have often had to remind myself that I probably have more conveniences than my frontier grandmother had and that I am certainly more comfortable than some of my friends were on the islands of the Pacific.

Rivaling these discomforts this summer, and perhaps surpassing them as I look ahead, is the lack of opportunity here for healthful outdoor living, a necessity of my summers. Here in the center of far-reaching space, ten miles from anyone, there is not enough space inside the cabin, nor substantial footing outside, for even vigorous setting-up exercises.

In discussing the qualifications of a lookout—good eyesight, resourcefulness, ability to live alone, etc.—the Forest Service omits one important quality: a sense of humor. Mine came to my rescue every other day last summer when I crawled out the window to sweep the soot-clogged spark-arrester screen of the chimney.

Poised on a slanting roof, holding a long-handled broom, I often laughed at my witch-like appearance; I felt that if I had a peaked hat and a cat I could float across the edge of the cliff a few feet away and soon wash my soot-flecked face in Steamboat Lake, 1,000 feet below.

My sense of humor was dull my first day up here, when I killed the last mouse and cleaned the scattered meal from the cupboard. Yet I did manage a chuckle as I recalled that Mary Walker, a pioneer in Washington a century ago, had "wept at the thought of how comfortable my father's pigs are" back in New England.

The Joys of Rustic Life

Like Thoreau at Walden, I have found many joys in my rustic life—joys which, for two summers, have far outweighed these unavoidable inconveniences. Among them is the closeness of the elements.

My first morning on Steamboat Mountain last summer, I awoke to see Mount Adams bathed in rosy light. Would the sun come up from behind the north shoulder or the south shoulder of the mountain? Propping my head up, I watched it gradually come into view over the north slope. Less than eight hours before, wearied by a day of cleaning and unpacking, I had lain with my head at the other end of the same bunk and watched the sun go down in golden glory behind the peaks in the arc between Mount Rainier and Mount St. Helens (Plate II).

In late June in the central Cascades sunset glow and sunrise glow almost met. When I left in September, the sun was appearing far down the south slope of Mount Adams and was disappearing behind the south slope of St. Helens.

120° Heat on a Mountain Peak

At seven o'clock that first morning, the thermometer, in the sun, registered 110°; when I moved it into the shade, the mercury dropped to 55°. Frequently in the late afternoon sun the mercury reached the top of the thermometer, past 120°, while I in the shade and in the breeze usually needed a light sweater. Shade temperatures ranged from 42 to 82 the first summer, and from 32 to 94 the second summer.

One Fourth of July I sat on a bench in warm sunshine and watched a cloud empty rain on Sleeping Beauty ridge, a few miles to the southeast, and another cloud empty snow on Mount Adams, twelve miles to the northeast.

Next morning when I returned from the spring, I found a fairyland of fog below me—white fog, billowing like the waves of the sea, the low mountain peaks and ridges jutting from it like islands, the snow-capped mountains glistening white against a brilliant blue sky. Sunset, sunrise, moonset and moonrise, radiant evening star and morning star, the Great Dipper and the Milky Way—all seemed very close, almost within reach.

There were other simple pleasures and some small adventures. Young people usually ask, "Didn't you have any big adventure? Tell us about your big adventure." Perhaps I am having a big adventure as I write.

For the fourth successive day I am enveloped in fog so thick that I can see but a few feet from the cabin. Though it is the middle of July, there are frost and ice outside; there have been sleet, howling winds, and flurries of snow. My battery radio, brought up for news and pleasure, is silent in the cold. For more than 48 hours my telephone has been dead, my only contact with the outside world being hourly radio communication with a high school boy on a

Kodachrome by Ella E. Clark

Mount Adams, More than Two Miles High, Dominates Columbia National Forest

Embracing 1,263,000 acres in Washington's Cascade Range, Columbia is one of 152 national forests. Amid scenic grandeur like this, Miss Ella E. Clark, a college teacher, spent three summers alone as a lookout. Sometimes fog was so thick she could see but a few feet. Keeping Old Glory flying was one of her many duties.

Kodachrome by Ella E. Clark

Twenty Miles Away, Mount St. Helens Raises Its Snow-capped Head from a Creamy Sea of Cloud

This 9,671-foot peak, one of several visible from the author's station, challenges many climbers among the thousands who visit Columbia National Forest each year. During one month of her first summer as a lookout, Miss Clark saw but one other person and then for only five minutes. A near-by spring supplied her with water.

Kodachrome from Ella E. Clark

Duty at McGregor Mountain Lookout Proved to Be "No Life for a Lady"

Here a packer and other Forest Service employees escort Miss Clark (center) toward civilization after two weeks atop the 8,140-foot peak in Chelan National Forest. The station's surroundings looked "as if Paul Bunyan had angrily hurled rocks as far as he could in all directions" (Plates V, VI, and VIII).

Kodachrome by Ella E. Clark

Vistas of Majestic Beauty Surround the Four Glass Walls of Miss Clark's Mountain Cabin

In the distance, Mount Adams rises above 12,000 feet. Stations like this in the Columbia National Forest are equipped with a fire-finding instrument, telephone, and minimum essentials of living. Windows, often streaked by rain and fog, must be cleaned frequently to permit instant spotting of smoke.

Kodachrome by Ella E. Clark

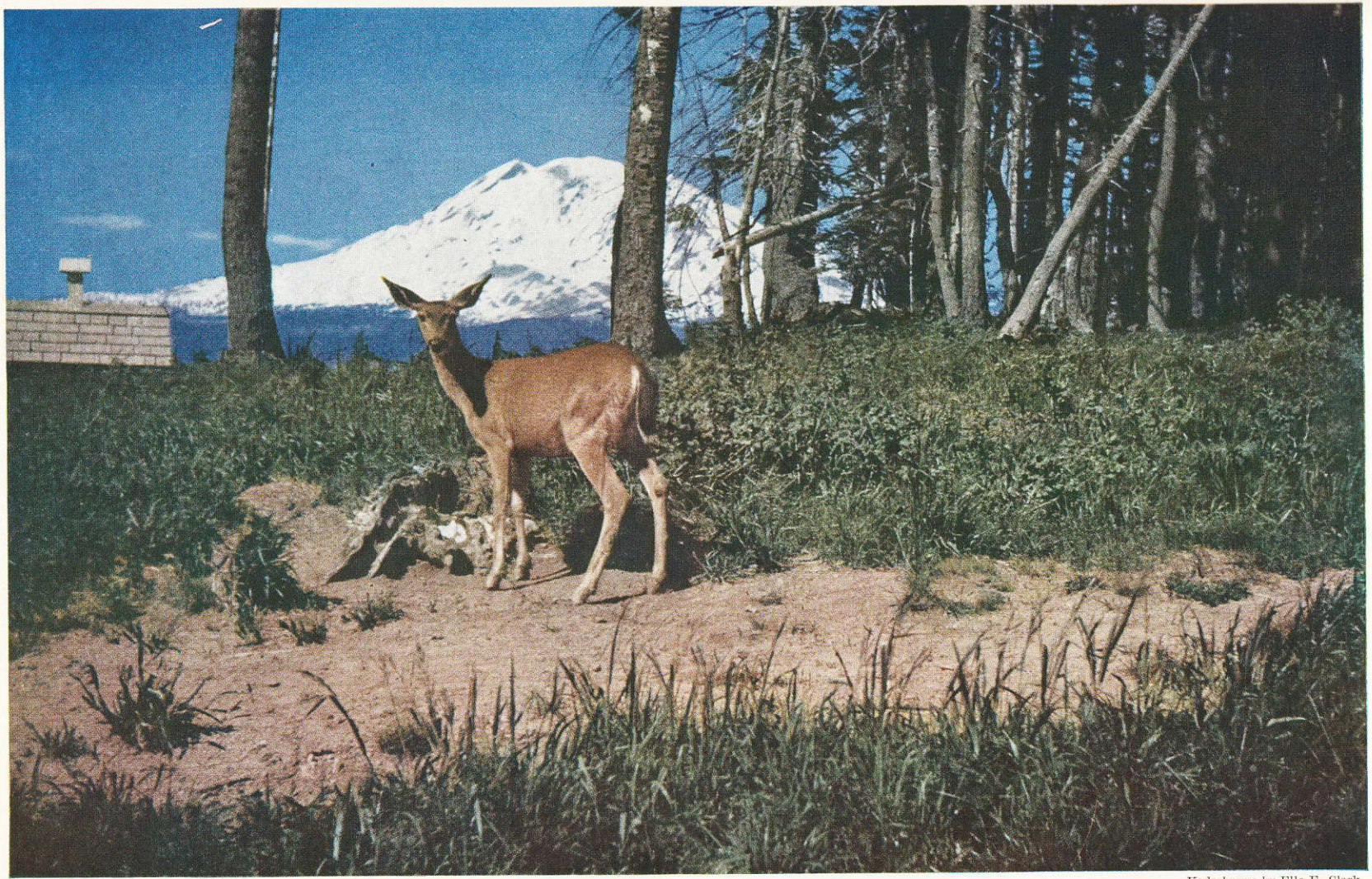
High School Boys Back-pack Supplies up McGregor Mountain to the Lookout

These young summer employees approach the station where the author spent part of her third season as a lookout. From the post she could see more than a dozen peaks, ranging from 8,500 to 10,400 feet in altitude, and hear the roar of the Stehekin River rapids, more than a mile below.

Kodachrome by Ella E. Clark

Boat Travelers on Washington's Lake Chelan Look Up at Towering Snow-clad Mountains

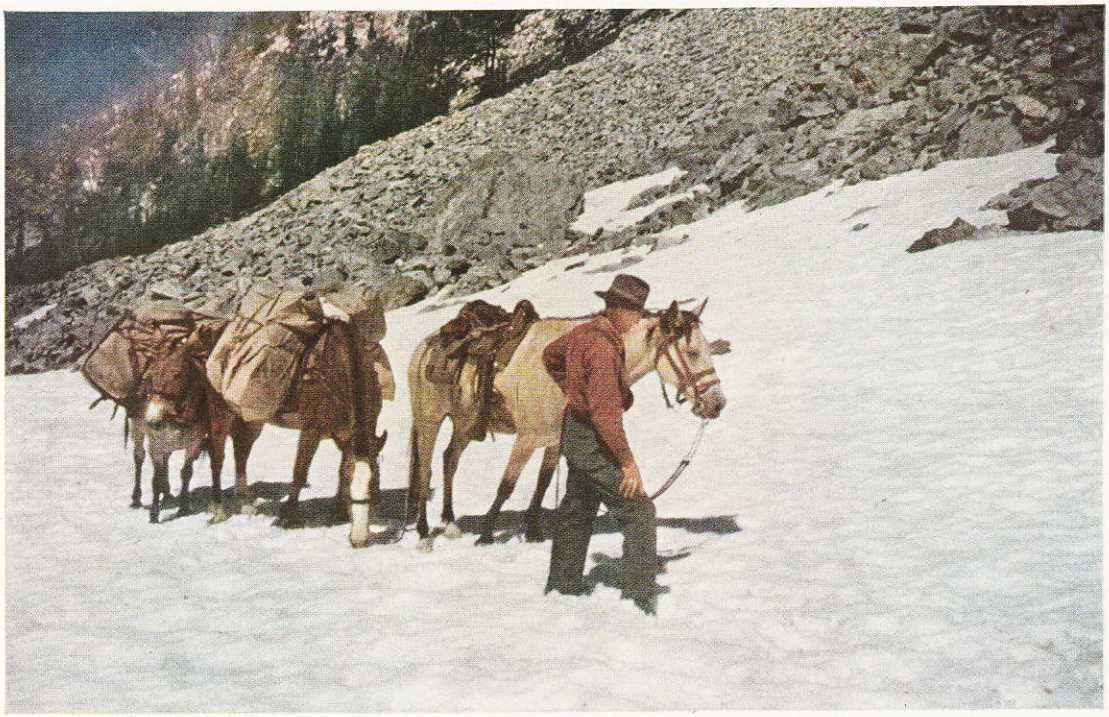
In summer this craft plies the 50-mile length of the lake between Chelan and Stehekin, carrying hikers, campers, supplies, and mail. The Government maintains 74 camps and picnic grounds in Chelan National Forest. First peak from center on right-hand ridge is McGregor Mountain (Plates III, V, and VIII).



Kodachrome by Ella E. Clark

This Doe Adopted the Author and Helped Relieve Her Solitude

Deer were frequent visitors, tempted by the salt brick Miss Clark put out for them, but this female blacktail took up residence under her lookout cabin. So plentiful is game, including elk and mountain goats, that 3,000 hunters visit the Columbia National Forest annually.



Over Snowfields in July, Pack Animals Carry a Summer's Supplies

To reach her third station, atop McGregor Mountain in Chelan National Forest, Miss Clark traveled on horseback up a trail which rises 6,000 feet in eight miles. Supplies were back-packed the last half-mile.

Kodachromes by Ella E. Clark

Before Taking Their Posts, Forest Guards Learn to Fight Fires

Part-time lookouts must undergo a four-day course which includes practice in extinguishing small blazes. Quick use of shovel and "Pulaski," a combined ax and hoe, often prevents woodland disasters.

lookout 20 miles away. Perhaps the trip up here across the snowfields and the rocks, to be described later, was an adventure in itself.

But the experiences I have enjoyed the most have not been adventures in the adolescent sense. In describing some of them, perhaps I can answer youth's question and also the frequent questions, "What did you do with your time besides looking and reading?" and "What is your recipe for 'taking it'?"

An amateur botanist has had the joy of discovery in the identification of a new flower; the pleasure of watching a curious plant, without leaves or greenery of any kind, grow until it could be identified as pine drops of the Indian pipe family; the pleasure of watching and wondering while lilies grew taller and taller, their buds forming and swelling—would they be tiger lilies or Washington lilies?

That rhododendronlike shrub which makes the dense undergrowth in the forest on the north slope of Steamboat Mountain—what kind of blossoms would its buds become and what shrub would it prove to be? Each summer I kept a list of the wild flowers seen, and each summer I had almost 100 varieties on the list. Those which remained unknowns I pressed and brought back to a botanist for identification.

Like a gardener, I had the fun of clearing away the fallen branches so that the glistening white petals and golden centers of queencups, in their bed at the edge of the forest, could be fully appreciated; of clearing out the dead brush and dead trees that marred the great display of Indian basket grass, perfectly landscaped with huckleberry bushes and surrounding firs and hemlocks.

These little self-appointed tasks lasted because, you remember, they were interrupted every twenty or thirty minutes by a study of the landscape. And to a lookout—at least to a contented lookout—the landscape is a constant source of joy.

"Deer Friends" Call

My deer friends, the first summer, were another source of pleasure. The very first evening, as I was watching the sunset glow over the Cascades and on my four great snow-capped peaks, I felt eyes upon me. Through the north windows a doe and a buck were watching me, all eyes and ears.

During my first night the doe bumped her way in and out of her basement apartment under the cabin (Plate VII). A week later, in the twilight, she brought her fawn down the lane through the woods. The next evenings they came at sunset, and soon the two browsed near the guard stations at all hours of the day, as did the buck and a second doe.

One noon when I went across to the weather station to make my report, all four deer were there. The buck slipped away, but the two does and the fawn stood only a few feet from me, alert and interested and perfectly still, while I went from station to anemometer to psychrometer to telephone.

Rooster Crow Baffles Deer

One morning the doe and fawn were near my windows when I turned on the radio for Sam Hays' newscast, which, as Pacific coast readers know, is always preceded by the crowing of a rooster. As I tuned in, the cock was in the act of crowing. The deer were startled and stood at attention facing me, their faces registering a most amusing series of expressions—surprise, wonder, amazement, puzzlement. The little fawn's expression made me laugh aloud.

They were quiet pets, with no barking or meowing or pawing. After weeks of silence, I once heard a strange cry somewhat like the squeak of a rodent caught in a trap. I went out expecting to rescue a chipmunk, but instead found the fawn looking for her mother and occasionally uttering that thin, sharp call.

The next time I heard that cry, Mother Deer was disciplining her young one and training her in independence. I had seen the doe go under the cabin (I never saw any of the other deer there), but the fawn was too busy browsing to notice. She called her mother, but the doe neither answered nor appeared.

The fawn repeated her call. Still no answer. Finally the little one turned away through the forest toward her hiding place among the alders on the south side of the mountain. I moved along in a parallel line with my camera, but the mother's instructions had been learned and I got no picture.

One "big fish that got away" still makes me lament. It was on a beautiful, crisp September morning when everything has that freshness peculiar to a morning after a rain. I had made the first weather report and was returning across the mountain.

As I came around a little grove of trees, I was surprised by three deer that had just emerged from the forest and were posed for the perfect picture. They were surprised, too. They stood in good light, the sun behind me, the forest behind them, the three does equidistant, each with head up and neck arched.

While they stared at me, I adjusted my camera. Just as I was ready to press the lever, I saw in the mirror the little fawn also staring at me. Fearing it would be hidden by the tall grass, I thoughtlessly took one step. Of

course the four bounded away into the forest on the other side of the meadow.

I regret that I cannot really share that picture, but it remains etched upon my memory as the perfect picture of deer: the forest background, the three does in the sunlight in the familiar alert posture, the fawn looking at me wistfully from the deep grass.

To the amateur photographer, life on a lookout in a beautiful setting is paradise. Deer do slip away into the shadows, but mountains and flowers remain; one has time to study the lighting and has opportunity to see the mountains and the sky in different moods and with different foreground.

Sometimes the whole interval between check looks has been spent in taking a single picture or merely in investigating the possibilities. Only one group of avalanche lilies on the north slope of Steamboat Mountain seemed ever to be in the sunlight, and then only for a short time at noon. The only accessible shrubs of white-flowered rhododendron glistened most in the late afternoon sun. Both were on slopes so steep that I could keep my balance only by hooking one leg around a small tree trunk, but the effort was fun and the results were worth the effort.

The brilliant pink or red penstemon on the rocks below had the richest coloring in the strong light of the early afternoon—directions for flower photography to the contrary. And the cloud effects over the mountains! Those people who have said, "After the first three days, the mountains must have looked alike," have never observed clouds, have never seen how they change the landscape, and what they add to pictures.

Mountains, Mountains Everywhere

But the greatest joy of all to one sensitive to scenic beauty is the magnificent panorama spread out before one at all times.

Imagine spending three months where you could enjoy with every meal four snow-capped peaks: St. Helens directly in front, Adams only a stone's throw to the right, Rainier between them but farther back, Hood far to the left. All can be seen from the dining table at Flattop Lookout, with but a slight turning of the head.

The setting sun touches the snowy crests with soft pink, and the long skyline above the ridge from Rainier to Hood, one hundred miles apart, is warm with burnished gold or pink and rose or more spectacular with tinted cloud formations.

From the other side of the mountain the view is less magnificent but not less pleasing. It is a study in green: dark green conifers down the slopes, in the valleys, and up to the timberline on Mount Adams, in so dense a forest that even with binoculars I could not see trail or camp or stream; lighter green of deciduous trees and shrubs along the creeks that join the White Salmon River; pale green meadows of the dairy farms in the valley; then a dark green ridge, another soft green valley, and finally the hazy bluffs of the Columbia River 20 miles away.

Seven miles from my nearest neighbor, 14 miles from the village, I never felt really isolated because the white farmhouses in the valley looked friendly and close.

Move across another valley ten miles to my second lookout station on Steamboat Mountain. Imagine washing dishes or kneading bread facing the White Salmon Glacier on Mount Adams or, with a half-turn of the head, seeing Mount Hood 55 miles away, and on very clear days having a glimpse of Mount Jefferson 100 miles away, peering over Mount Hood's shoulder, a white pyramid against the blue sky.

The City Price of a View

In the residential districts of Portland, I have been told, the view of one snow-capped peak adds from $500 to $1,000 to the value of a building site!

Adams, St. Helens, Hood, Rainier—each has its charms, but on my second lookout I was most impressed by Mount Rainier. Fifty miles to the north, across forested valleys and forested slopes, it stands glistening, a magnificent jewel perfectly set among smaller jewels.

The snow-capped mountains accent the quieter beauty of the rest of the landscape, which would be beautiful even without them —the miles and miles of tree-covered mountains and valleys, the little lakes down below, the jagged skyline made by Sunrise Peak, Jumbo, Hat Rock, Snagtooth, Craggy, Badger, and the other peaks, always different as the light changed and the clouds formed, shifted, and melted away.

Last summer I estimated that I could have detected smoke in 2,000 square miles of forest—an area twice the size of Luxembourg. Some people have been certain that the check looks would grow monotonous; but left alone with the trees for company, I acquired a sense of personal ownership, a strong desire to keep my possession green and beautiful. When I left the middle of September in a downpour of rain, I felt that it was *my* country that I was leaving safe until another season.

I saw the beauty of the silver firs and ponderosa pines near at hand and multiplied their beauty by thousands. "These beauteous

U. S. Forest Service, Official

Cloud Formations Like This Spell Trouble for the Forest Service

This thunderhead over Mount Adams, in the Columbia National Forest, preceded a series of lightning fires. At left, a woman lookout watches from her station atop a neighboring peak. Lightning starts about 90 percent of this region's forest blazes. Since the area is so sparsely populated, they often sweep over thousands of acres before they can be checked and controlled.

forms," the forest and the mountains, combine in a soul-stretching view, enjoyed over and over again during the summer and in retrospect during the winter months. For, like Wordsworth revisiting the Wye Valley—

> I have owed to them
> In hours of weariness, sensations sweet,
> Felt in the blood, and felt along the heart;
> And passing even into my purer mind
> With tranquil restoration.

I linger over this view from Steamboat Mountain, for it is my favorite of the panoramas displayed from my three lookouts.

The radio news in the summer of 1944 was exciting and heartening; on my map I followed our armies as they raced across western Europe, and I joyously re-broadcast the news by telephone to eager listeners at other Forest Service stations (once, to six at a time). Yet the destruction and the marching armies did not seem real; the realities were the serenity and the productivity, the dignity and the majesty of the natural world around me, in the diamond-shaped area pointed by four great peaks.

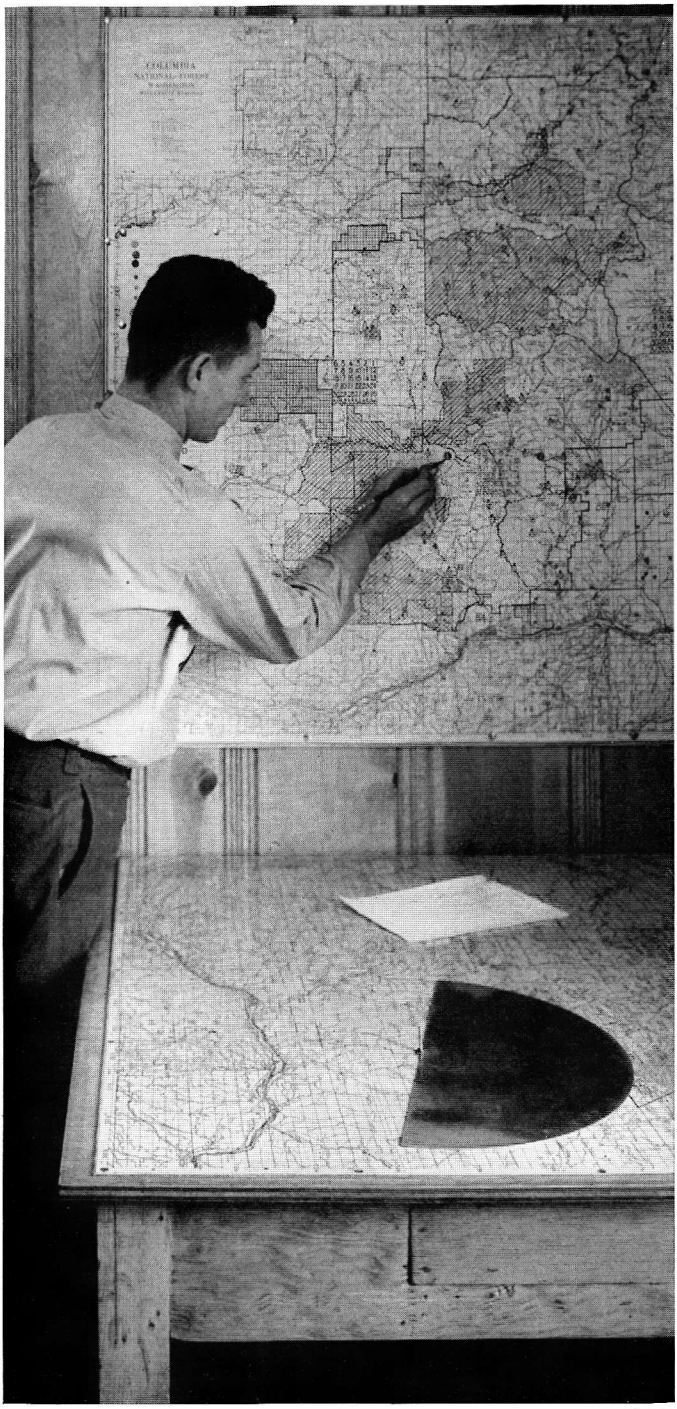
Alpine climbers among my readers may prefer my present view of the Cascades in northern Washington, especially if they do not contemplate spending two months upon this pin point of rock, with yawning abysses on three sides and a steep descent of boulders and loose rock on the other.

Climbing to McGregor Lookout

To reach my third lookout station, one must come by boat to the head of Lake Chelan (Plate VI), travel for eleven miles on a rocky Forest Service road along the Stehekin River, and then climb eight miles of trail, rising 6,000 feet.

The trail leads first through forest lush with thimbleberry and with bracken often horse-high, then through a wild chaos of rocks, tumbling streams, alpine firs and alpine larches, small meadows bright with heather, paintbrush, and blue lupine.

The trail has 187 switchbacks, I am told, and I am willing to accept the number. At times each new switchback brought a wider vista; a little more of that snow-capped ridge



U. S. Forest Service, Official

Pins on a Map Show Forest Fire Positions

By coordinating compass readings telephoned by lookouts from their remote stations, this Columbia National Forest dispatcher fixes the site of a new blaze. His next step is to order the nearest fire-fighting crew to the scene. Shadings on the map indicate the types of timber and help the dispatcher determine how many men and what kind of tools are needed. Wind and weather are also factors. The mountainous and heavily wooded area above is difficult of access.

became visible; the whole crest of another mountain appeared behind a crescent-shaped valley head. A few times on the fifth of July we dismounted and led our horses across the snowfields (Plate VIII). After three hours we were above the tree line, even above the dwarf conifers.

About one-half mile from McGregor Lookout, perched above us on a perpendicular wall of rock, the packer left me and my summer's supplies and took the horses back to High Bridge, from where next morning he would return with the kerosene for the summer's cooking and heating.

In the shelter of a boulder, shelter from both glaring sun and chill wind, I watched for nearly two hours while the trail crew brought a telephone wire down from the lookout. That is, I watched as often as I could endure the fascinating horror of seeing a Forest Service official and three youths bring or throw a copper wire from crag to crag, seeing them climb over sharp ridges and along ravines where a false step would be the last step.

Yet a husky high school boy whistled as he worked and laughed as he slid down the snowfield. In his hand he held a rock attached to the wire, the rock which he had flung from the last sharp ridge above the snowfield. Never again will I look casually at telephone lines in hazardous places.

A half-mile is a short distance except when it is turned on end. This last half-mile to the lookout required one hour of climbing and of stopping for breath in the rarefied air. Up we went across the snowfields and over the rocks, the leader and the boys carrying 40 to 60 pounds apiece in their back-packs and I feeling that my camera equipment and ski jacket were sufficient pack for me. I literally followed in the footsteps of the leader, and all of us kept our

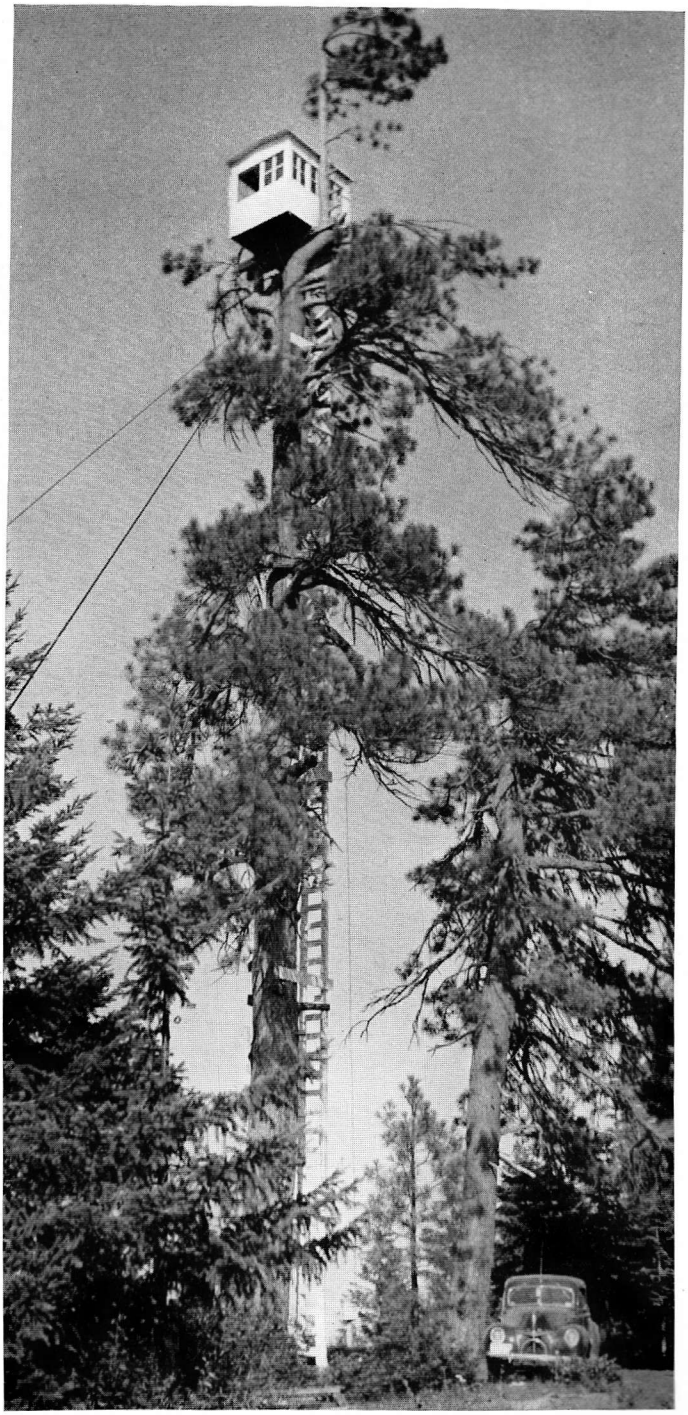
hands free to balance ourselves on the rocks wherever the trail was especially steep and narrow beside an abrupt drop (Plate V).

From the top of the mountain, 8,140 feet in altitude, the landscape first seemed a chaos of snowfields and sharp, ugly rocks near the station, a wild jumble of chimneys and points and sawtooth ridges against the sky, with forests on the lower slopes and in the valleys. It was as if Paul Bunyan had angrily hurled rocks as far as he could in all directions and then, repenting his anger, had planted trees at the base of the rocks and hoped, in vain, that they would spread to the top.

But gradually I began to bring some kind of order out of the chaos and to see something of grandeur in it. The Stehekin River is the unifying element in the picture, a diminutive river to give unity to so vast a scene. The blue-green water and occasional white flecks of its last eight miles are visible from the lookout tower as it meanders through the trees before flowing into Lake Chelan.

From here, more than a mile above it, the river looks quiet and slow, but I can hear its roar, and I know that those white flecks are the foam of its tumble over and around boulders. To the southeast, probably 15 miles of the upper part of Lake Chelan wind around its numerous wooded points, its water usually blue-green, sometimes touched with purple shadows, sometimes dotted with whitecaps, often turquoise blue without a ripple. In the opposite direction, the water of the Stehekin is hidden by near-by crags, but one can trace its valley up above the tree line and to the river's source in streams below Cascade Pass and Horseshoe Basin. On clear days one can see the snow-capped peaks above that basin.

Down the steep slopes which almost surround me come the



Keith C. Langfield

When the Wind Blows, the Station Does Rock!

State and Federal agencies cooperate in manning this lookout crowning a tall ponderosa pine. The tree stands in a Washington State forest along the eastern boundary of Columbia National Forest. The guard is employed by the State, trained by the U. S. Forest Service, and has telephone connections with both State and Federal fire dispatchers. Most tree lookouts consist merely of platforms; this one is unusual for being a cabin.

U. S. Forest Service, Official

Forest Fire Fighters Work at Close Quarters

Singed hair and eyebrows may be the lot of this man demonstrating a back-pack pump. By operating a sliding pump near the nozzle, he generates a strong stream of water. In recent years, specially trained "smoke jumpers" and equipment have been parachuted to battle woodland blazes in six western States. Where possible, spread of a fire is checked by the "one-lick" method, by which men in single file dig and successively widen a trench in the path of the blaze.

hundreds of streams which flow directly or indirectly into the Stehekin River. From here they look like mere trickles, but as I have hiked along that narrow silver ribbon which on my firefinder map is labeled Agnes Creek, I surmise that many a trickle, at this time of melting snows, tumbles and rushes and roars down its own deep and narrow canyon.

A tin can which I dropped from the bridge across the Agnes Gorge was several yards downstream almost as soon as it touched the water and was swallowed quickly by the white rapids. At normal level the water is 220 feet below the bridge, in a canyon which is about 90 feet wide. Agnes Gorge is picturesque and fascinating—a Grand Canyon in miniature.

Looking out from McGregor, the eye follows Agnes Creek for three winding miles beyond the gorge, seeing its water as silver flashes here and there among the trees. Above the forested valley head of one fork is Dome Peak, 8,860 feet in altitude, a long, snow-covered ridge flanked by sharp spurs and many glaciers. To the left, above the head of another fork, stands Glacier Peak, 25 miles away, the fourth highest mountain in Washington. Like its taller brothers—Rainier, Adams, and Baker—it is clothed in white.

A Landscape of Towering Peaks

A Forest Service list of the 25 highest peaks in the State of Washington shows that 14 of them, ranging from 8,590 to 9,500 feet in altitude, are in the Chelan National Forest. At least

Ray M. Filloon

Student Smoke-eaters Put Out Practice Fires

These fire fighters learn their trade at a school in the Umatilla National Forest, Oregon. They wield the Pulaski, a combination ax and hoe designed by Edward Pulaski, hero of the disastrous Idaho blaze of 1910 (Plate VIII). By constant research and use of new methods, Federal and State agencies strive to reduce the 200,000 fires which annually burn over about 31,000,000 acres of forest land in the United States.

seven of them are seen from this lookout. My own count on my firefinder map tells me that within a radius of 20 miles from McGregor are at least 62 peaks above 7,000 feet in altitude.

I say "at least" because an old-timer in the forest and in the Service tells me that this area has never been mapped in detail.

I have climbed or ridden horseback in the Lake Louise country of the Canadian Rockies, in Glacier National Park, up to 7,500 feet on Mount Rainier, along the Cascade Crest Trail in the Mount Adams country, in the Olympics of western Washington, in the Wallowas of eastern Oregon, and in Yosemite, and I have driven through the Swiss Alps. But I have never seen such rugged country as this.

Ages ago, glaciers cut and carved the great plateau which was the original Cascade Range, and the rivers and creeks which travel down the gorges made by the great ice streams have continued to cut and carve for many centuries. It is easy to believe the statement of the late Henry Gannett, formerly chief geographer for the U. S. Geological Survey and President of the National Geographic Society from 1910 to 1914: "Of the many ice-cut gorges of the [Cascade] Range, that of Lake Chelan and its tributaries is probably the finest."

Ravaged Slopes Record Fire Tragedies

I should be unfaithful to my trust if I left the impression that looking out from a lookout brings one into contact with only beauty and grandeur.

Facing me, above Agnes Creek on the right, is a slope bare and denuded except where Nature has tried to heal the ravages of fire. On my way to Agnes Gorge I passed through part of that graveyard of the forest, and I was grieved by the charred remains of what was once a beautiful and valuable piece of virgin timber.

Across the creek is a burn which tells an even sadder story. A fire fighter, returning from extinguishing a small lightning fire, failed to heed the rules of the forest, lighted a cigarette, threw down a burning match, and started one of the biggest fires in this area.

I recall those burned-over acres which spoiled part of my view during my second summer—ugly scars, wasted timber, now highly inflammable material for lightning fires which could destroy the young trees there and quickly spread to mature trees. Almost every forest one enters bears these pathetic, silent, ghostlike, black or gray evidences of what man has done to Nature. For man is responsible for most of these graveyards.

"Nine out of every ten fires are man-made. Smoking, camping, debris-burning, logging operations, incendiarism, and lightning are among the chief causes of forest fires. In a recent five-year period 7.6 percent of all fires recorded were caused by lightning, and the remaining 92.4 percent were man-caused.

"One-half of all fires in the national forests are started by careless campers who build their campfires too large or leave them without being sure that all the sparks are out."

During the five-year period ending in 1944, studies were made of the fires in all protected forests. State and private lands were included in this study, as well as national forests. Of a total of some 418,000 fires, 9.3 percent were started by lightning; 15.5 percent by debris-burning; 23.2 percent by smokers; 26.5 percent by incendiarists. In other words, so far as number of fires is concerned, smokers and incendiarists were about equally criminal!

Have we considered what these destructive fires mean to the public? They destroy scenic beauty and the playgrounds of the millions of Americans who visit our forests annually. They destroy forested watersheds which minimize floods and soil erosion and which protect the water supply of hundreds of cities, of power plants, and of irrigated farms (half the farms of 11 western States are irrigated).

They burn the forage of thousands of domestic animals, the homes of wild creatures, and hundreds of animals themselves. They destroy the source of a multitude of products, from golf tees and ball bats to 95 percent of our furniture and 80 percent of our houses, and the source of an increasing number of chemically made products as widely different as cattle feed, rayon, photographic film, and plastics.

This last list will gradually become longer, for scientists are challenged by the fact that at present from 50 to 70 percent of a tree is wasted in the woods and in the mills.

Forests Help Our Daily Living

Directly or indirectly, forests contribute to every aspect of our everyday living. They furnish us with shelter, water, food, clothing, fuel, electric power, newsprint, entertainment, and esthetic enjoyment.

As I write, a terrifying and devastating fire is roaring through nearly 267,000 acres of forest in western Oregon. In the same area, in 1933, a fire in some of the best timber in the State destroyed as much as had been cut in the whole United States in 1932! The estimated financial loss to industry and to the public was $350,000,000.

We are steadily reducing virgin forests, and "second-growth forests are being cut and burned almost as fast as they grow." We allow 75 to 80 million acres of timber-growing land to lie idle as a result of cutting and burning. At the rate we were proceeding in 1941, it would take us an estimated 22 years to complete the replanting needed in our national forests alone. Many owners of lands in need of planting are not replanting at all. All programs of reforestation were seriously retarded by the war, at the same time that cutting had to be increased greatly.

Three summers have not made me an authority on forestry. I have merely observed, listened, and read in thoughtful solitude twelve pamphlets published by the Forest Service of the Department of Agriculture.

I have become aware of an urgent domestic problem. To one who has spent 25 weeks looking out upon the green beauty of three forested areas and upon denuded spots which should be green, it seems clear that we need a Nation-wide program for our forests, for both the publicly owned and the privately owned—a long-range program of forest protection, restoration, and development.

We need to prevent 92 percent of our forest fires. We need more, not fewer, forests as luxuriant and beautiful as the wooded slopes and valleys, like dark green waves of a dark green sea, which lie between Steamboat Lookout and Mount Rainier.

VOLUME XC NUMBER ONE

THE NATIONAL GEOGRAPHIC MAGAZINE

JULY, 1946

Map of the United States of America

Thirty-two Pages of Illustrations in Color

PUBLISHED BY THE
NATIONAL GEOGRAPHIC SOCIETY
WASHINGTON, D.C.

$4.00 A YEAR 50c THE COPY