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To carry out the purposes for which it was founded sixty-two years ago, the National Geographic Society publishes this Magazine monthly. All receipts are invested in The Magazine itself or expended directly to promote geographic knowledge.

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In addition to the editorial and photographic surveys constantly being made, The Society has sponsored more than 100 scientific expeditions, some of which required years of field work to achieve their objectives.

The Society's notable expeditions have pushed back the historic horizons of the southwestern United States to a period nearly eight centuries before Columbus crossed the Atlantic. By dating the ruins of the vast communal dwellings in that region, The Society's researches solved secrets that had puzzled historians for three hundred years.

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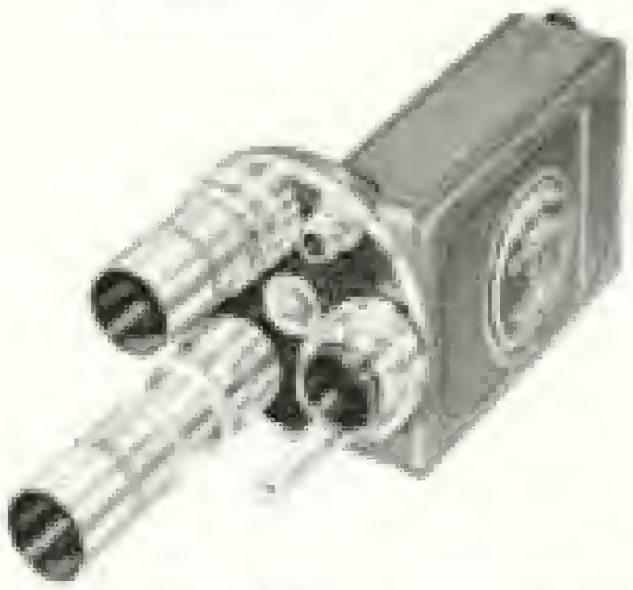

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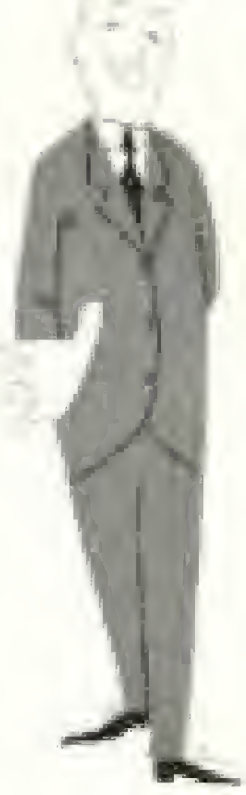

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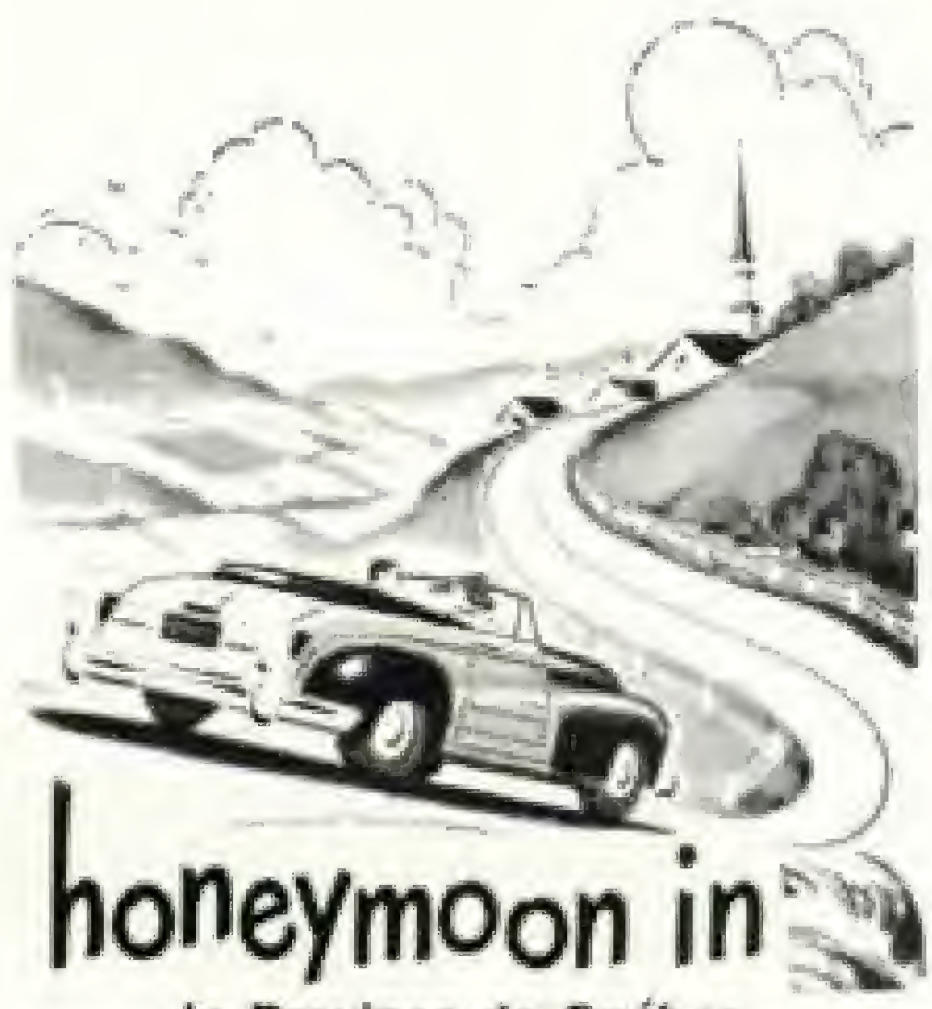

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Developments by RCA scientists have made Television part of family life in homes of all incomes.

How research fits television into **more purses**

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One factor has been research at RCA Laboratories. In 1940, RCA scientists perfected the glass-and-metal picture tube—so adaptable to mass production that savings of 30% in tube cost were made. Again, these scientists and developmental engineers learned how to replace complex parts with less costly, and more efficient materials. A third contribution was the use of versatile *multiple*-purpose tubes—so that one could do the work of several!

Most important, the savings effected by RCA scientists have been quickly passed on to you, the consumer. RCA Laboratories is a great center of radio, television, and electronic research. It is indeed an institution which fits RCA products into more purses!

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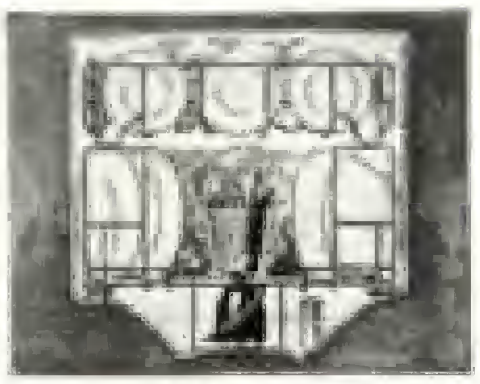

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3. "NATURAL-HEAT" drying that ACTUALLY LETS DISHES DRY IN THEIR OWN HEAT!

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Also see the new G-E Portable Dishwasher

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Some DOs and DON'Ts for Summer Months

DO . . . take proper precautions for safety in the water. Fewer than 1 out of 14 Americans who participate in water sports can be considered skilled swimmers, and even they may sometimes need assistance. So it is always best to swim only where other people are around to help if you need it. When swimming even moderate distances away from shore, try to have someone in a boat accompany you.

DON'T . . . exercise too strenuously on week ends or during your vacation. Too strenuous exercise, especially if you are not accustomed to it, puts a heavy strain on heart and blood vessels. Some physical activity, however, is usually beneficial. Your doctor, taking into account your age and physical condition, can advise about the kind and amount of activity you may enjoy safely.

DO . . . learn the principles of First Aid. There is always a chance that an accident or emergency may occur where you are. If you know how to take prompt and proper action before a doctor arrives, you will help to protect the victim, and may save his life. To do this, you may want to learn basic First Aid techniques, including artificial respiration. Your local Red Cross will be glad to help you.

DON'T . . . take chances on overexposure to the sun. Starting slowly (about 10 minutes the first day) and tanning gradually may help avoid a painful or serious burn. In addition, if you stay out in the sun too long or exercise strenuously during the hottest part of the day, sunstroke or heat exhaustion may result. Getting out of the sun before you get too red or too hot is a wise safeguard.

DO . . . make sure, when you are away from home, that the water you drink is safe. Water that looks clear and tastes good may still contain disease-carrying germs. So when you are on vacation, or on week end hiking or camping trips, make sure the water is pure. If there is any doubt, you will be wise to boil it for at least five minutes.

DON'T . . . neglect cuts, bruises, or other minor injuries. Prompt First Aid should include cleaning the wound, applying a mild antiseptic and covering with a sterile bandage. This will lessen the chances of infection. Of course, if signs of infection appear, such as redness or swelling, a doctor should be consulted promptly.

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VOL. XCVIII, No. 1 WASHINGTON JULY, 1950

THE NATIONAL GEOGRAPHIC MAGAZINE

You Can't Miss America by Bus

By HOWELL WALKER

With Illustrations from Photographs by the Author

ONE SUMMER morning I left Washington, D. C., to see something of the country by bus. I rolled home in autumn, 9,000 miles and 38 buses later. My route made a loop around America and took me through 27 States.

With me went a dozen pieces of baggage and a ticket stretching from head to toe (page 21). If the agent had included all my stopovers, the ticket could have reached at least the length of a bus—35 feet.

Every hour some 100,000 persons board intercity buses to go somewhere along 400,000 miles of American highways. Each year the motor-driven stagecoaches carry nearly six times the entire population of the United States.

Close-up of America at Low Cost

Millions using this means of transport have a good reason for doing so: economy. Cost for luggage and myself worked out at less than 1½ cents per mile.

Bus travel gave me intimate glimpses of cities, communities, and countryside. The big vehicles drove along main streets to pull into downtown terminals; they stopped near the village general store; and anywhere on the open road they paused to pick up rural folk. From buses I had a close-up of America and its people (map, pages 8-9).

I stepped into a 37-passenger coach of the Greyhound Lines and put light luggage on an overhead rack. A porter stowed my heavy pieces in a baggage compartment under the floor. As if he could do it with his eyes shut, the driver backed the 10-ton bus away from the Washington depot and headed for Virginia.*

Friends called my tour "Operation Sacroiliac"; but I reclined in a tilting-back chair and had an adjustable footrest. Air conditioning helped me forget sweltering weather. On six huge wheels and giant springs we moved smoothly over some of the world's best highways.

A brief stay in Staunton with a visit to Woodrow Wilson's birthplace, and I continued south in another Greyhound.

Birth of a Bus System

The racing dog on nearly 6,000 blue-and-silver road monsters stands for THE BUS to millions. Actually, the Greyhound system covers about half the primary highway mileage served by intercity buses of the other larger lines; the "Hound" handles about 40 percent of all business done by such operators.

Now a Nation-wide institution, Greyhound grew from a jitney line at Hibbing, Minnesota. In 1914 Carl Eric Wickman set up a Hupmobile agency at Hibbing. People wanted to ride, but not to buy; so a new seven-passenger demonstrator was used for hauling passengers through the red mud of that iron-mining town.†

By 1916 the jitney firm had five members and five buses. Each stockholder was a director, each director an officer, each officer a bus driver.

Three pioneers in the industry that quickly developed from these humble beginnings today head the world's largest intercity bus system.

* See "Appalachian Valley Pilgrimage," by Catherine Bell Palmer, NATIONAL GEOGRAPHIC MAGAZINE, July, 1949.

† See "Minnesota Makes Ideas Pay," by Frederick G. Vosburgh, NATIONAL GEOGRAPHIC MAGAZINE, September, 1949.

National Geographic Photographer Emory J. Cottrell

Author Buys a 2-yard Ticket for a 27-State Trip

Howell Walker, who started his continental tour in Washington, D. C., rode 58 buses across 9,000 miles. For 1½ cents a mile he enjoyed exploration, adventure, and a close-up of America. Making his journey in easy stages, Walker found it fun. Friendly drivers served as his guides; many stopped to let him make pictures. If this agent had included all stopovers, the strip would have measured a bus-long 35 feet (page 1).

Mr. Wickman is chairman of the board of the Greyhound Corporation, Orville Swan Caesar its president, and R. A. L. Bogan, executive vice president (page 49).

In Winston-Salem, North Carolina, I stepped off the fleet Hound and walked a mile to R. J. Reynolds Tobacco Company.

Hundreds of machines hummed and clicked; conveyor belts rode endlessly everywhere; men and women touched this or turned that, and presto! thousands of cigarettes were born each second, inspected, packaged, and boxed for shipment.

Yes, we figuratively placed them end to end; a year's production could girdle the earth at its Equator well over a hundred times.

College Older than U. S. Constitution

The city consists of two parts: industrial Winston and residential Salem. Settled by Moravians, Salem still keeps the faith and its early architecture, even to hooded doorways. Salem College, older than the Constitution of the United States, has never closed to students.

With a man of Salem I strolled through "God's Acre," the Moravian cemetery. First interment took place in 1771. We walked by more than 3,000 uniform tombstones lying flat like pillows at heads of graves.

"Death, after all, is a very leveling thing," my friend explained, "and to God the dead are equal."

At Charlotte, North Carolina, our Greyhound made a 20-minute halt. The driver saw my photographic equipment and invited me to go with him to a camera shop. Photography was his hobby. I told him of my plan to see the country by bus. That assured me of a front seat to Augusta, Georgia.*

Driver E. W. Evans offered to stop wherever I wished to make a picture. In Columbia, South Carolina, he pulled up at the busiest intersection; I stood in midstreet to

* See, in the National Geographic Magazine: "Dixie Spins the Wheel of Industry," by William H. Nicholas, March, 1940; and "Tarheelia on Parade," by Leonard C. Roy, August, 1941.

Captain of His "Ship" and Passengers' Fate, the Bus Driver Inspires Friendly Confidence

A personal atmosphere pervades the coach. Unlike plane pilot or railway engineer, the operator stays in touch with riders, who often ask him questions or converse. Whole busloads sometimes join in song, or laugh at a joke passed from seat to seat. Some find long-distance travel in motor coaches tiresome. Many wouldn't journey any other way; they see more, and feel that they are exploring their own country. Here the Oregon-bound bus swings onto San Francisco's Golden Gate Bridge (page 34).

photograph the State Capitol with our bus in the foreground.

While we rolled south through old fields of young cotton, an elderly woman sidled up to Evans. She described at length a big red-brick house that would eventually appear on the right side of the road. He promised to let her out there.

"But," said the woman, "I don't want to get out at that place; I'm going to the little white cottage a mile beyond."

Near Ward, South Carolina, five Negroes climbed aboard.

"Where to?" Evans asked.

"Pine House," said one.

The driver pointed out that the bus didn't go that way, and all but the oldest, a woman, got off.

"Where *do* you go?" she inquired.

Evans mentioned Trenton among other places.

"All right, then," she said, making up her mind for the rest of the party, "we'll go to Trenton." The other four climbed on again.

Ten Governors from One County

In Edgefield, South Carolina, I saw a monument honoring ten of that small county's sons; each had served the State as Governor.

Crossing the muddy Savannah River, we entered Georgia and the city of Augusta. A monument in the middle of the main street particularly interested me: at one of its corners stands a statue of my great-grandfather, Maj. Gen. W. H. T. Walker of the Confederate Army.

Past cotton field after cotton field, the bus cut across central Georgia. I watched colored families hoeing long rows; saw their lonely homes all looking alike—unpainted plank shanty with wooden shingles and leaning chimney. Pine forests flashed by, only to reveal

Mobile-New Orleans Bus Roars Past Biloxi Light on the Old Spanish Trail

For more than a century it has guided mariners to this sailing city on Mississippi's Gulf coast. Mississippians painted the tower black in mourning for Abraham Lincoln's assassination, old-time residents told the author. Two women, mother and daughter, kept the light burning for 57 years.

more cotton country and an occasional sleepy village.

Sandersville, population 3,566, hid behind a giant sign: "The largest town its size in the world."

At Macon I changed to a Greyhound express. Willie Buzz behind the wheel drove hard and nonstop to Columbus, Georgia. He let up once when he slowed down to swerve around a baby rabbit.

The panting Hound took a 10-minute breather in Columbus. Here I quit the express, ate a leisurely lunch in the depot restaurant, ambled around the city's steaming streets, then boarded a local for Montgomery, Alabama.

Casual as a hatless housewife going to market, a young woman rode to Auburn for an overnight visit. She told me her husband piloted commercial planes; but she stuck to buses.

A girl leaned over the driver's shoulder to say, "Just by this big tree, please." There he stopped to let her off. A bit farther on the bus pulled up at a bridge to take on a man who appeared to have been painting it.

Oblivious of Misfortune, Omaha's Stranded Passenger Sleeps

Family funds were exhausted when the child's parents checked into the bus station at the end of a ride. While father and mother sought aid, baby napped on a bench. Help was finally arranged by the terminal manager.

I stayed a day in Montgomery, first capital of the Confederacy.* On a balcony opposite my hotel window the South in 1861 introduced a great hope; orator and secessionist William Lowndes Yancey presented Jefferson Davis to an enthusiastic throng below: "The man and the hour have met." The first Confederate Cabinet assembled in a building near by.

Not far from Montgomery, two men flagged our Mobile-bound bus. The younger of them helped the older, who was crippled. As they struggled up the coach steps, the youth fumbled for their fares. He didn't have the money.

"I'll pay for them," volunteered a kind woman who was sitting up front.

Over Mobile Bay on a 19-mile causeway, under Mobile River by Bankhead Tunnel, and we popped up in the center of a city.

Bauxite and Iron "Lace"

Founded in 1702, Mobile has lived under six flags: French, British, Spanish, United States, Republic of Alabama, and Confederate.

To the port of Mobile sail ships of all flags. I watched fruiters from Central America discharge tons of bananas. Scandinavian freighters took on mountains of cement, and bauxite

* See "Smoke Over Alabama," by Frederick Simpich, National Geographic Magazine, December, 1931.

Date Palms Give the American Southwest an Egyptian Look

"Head in hell, feet in paradise," Arabs say of dates, which love hot, sunny skies and cool, wet soil. Introduced into the Southwest not half a century ago, the palms now occupy mile upon mile of irrigated lands. Today many old trees have grown so tall that growers use tower platforms for dusting, hand pollinizing, and picking. These Phoenix, Arizona, palms are young and low. Here in July the fruits are as green, hard, and bitter as young olives. November harvest will find them brown, juicy, and sweet.

by the carload. Miles of modern warehouses obscured other vessels along the water front.

About Mobile, however up and coming, I liked its old things best. On wide Government Street or narrow lanes I saw magnificent mansions occupied for generations by the same families: the ironwork of their balconies looks like frozen lace. A business firm restored one old home to its ante-bellum dignity and uses the rooms for office space.

In Mobile I smelled the South; felt it; tasted it. With friends I went to a small eating house. My nose told me we had chosen the right place. Big bowls of barbecued pork ribs covered our table, but no silverware. We fell to with bare hands and teeth.

On another southern scent I drove to Bellingrath Gardens, 20 miles south of Mobile. Walter D. Bellingrath, former owner, turned a casual camp on a riverbank into a garden of 60 acres. But, of course, I should have been there in early March to see the azaleas.

Recently Bellingrath created a foundation for the care of the gardens.

Not gardening, but fishing, obsessed Biloxi, Mississippi. A friend apologized for keeping me waiting while he telephoned; he had to wind up arrangements for a two-day fishing trip. With difficulty I declined his invitation to go along. I wanted to see Biloxi.*

My friend took me on a quick tour. Instinctively he drove straight to the water front. Small boats creaking with the day's catch of deep-sea varieties unloaded at the beach; larger craft drew up to the docks. I asked the names of fish I'd never seen before. The weathered seamen told me; but my angler-guide corrected them, mumbling something about old fishwives' tales.

* See "Machines Come to Mississippi," by J. R. Hildebrand, NATIONAL GEOGRAPHIC MAGAZINE, September, 1937.

San Antonio's Sight-seeing Buses Always Remember to Stop at the Alamo

Here in 1836 James Bowie, David Crockett, William Barret Travis, and 184 others stood siege by Santa Anna and his army of 4,000 Mexicans. When the fort's walls were breached, the Texans fought hand to hand, muzzle to muzzle. Rather than surrender, they died to the last man; but they accounted for 600 to 800 of their enemies. Forty-six days later, "Remember the Alamo!" became the battle cry at San Jacinto, where Texas won its independence.

We rode past shrimp and oyster canning plants, trawlers, and luggers. Almost incidentally I caught glimpses of grand old mansions under enormous oaks gracefully draped with Spanish moss. One imposing red-brick home, older than a century, still retains its former slave quarters. Another old mansion is Beauvoir, last residence of Jefferson Davis, who wrote here *The Rise and Fall of the Confederate Government*.

It seemed that most of Biloxi had put off fishing trips to get on the same bus to New Orleans. For the three-hour journey I sat on my portable typewriter in the aisle. The modern coach followed the Old Spanish Trail around the Gulf coast (page 4).

Old France in New Orleans

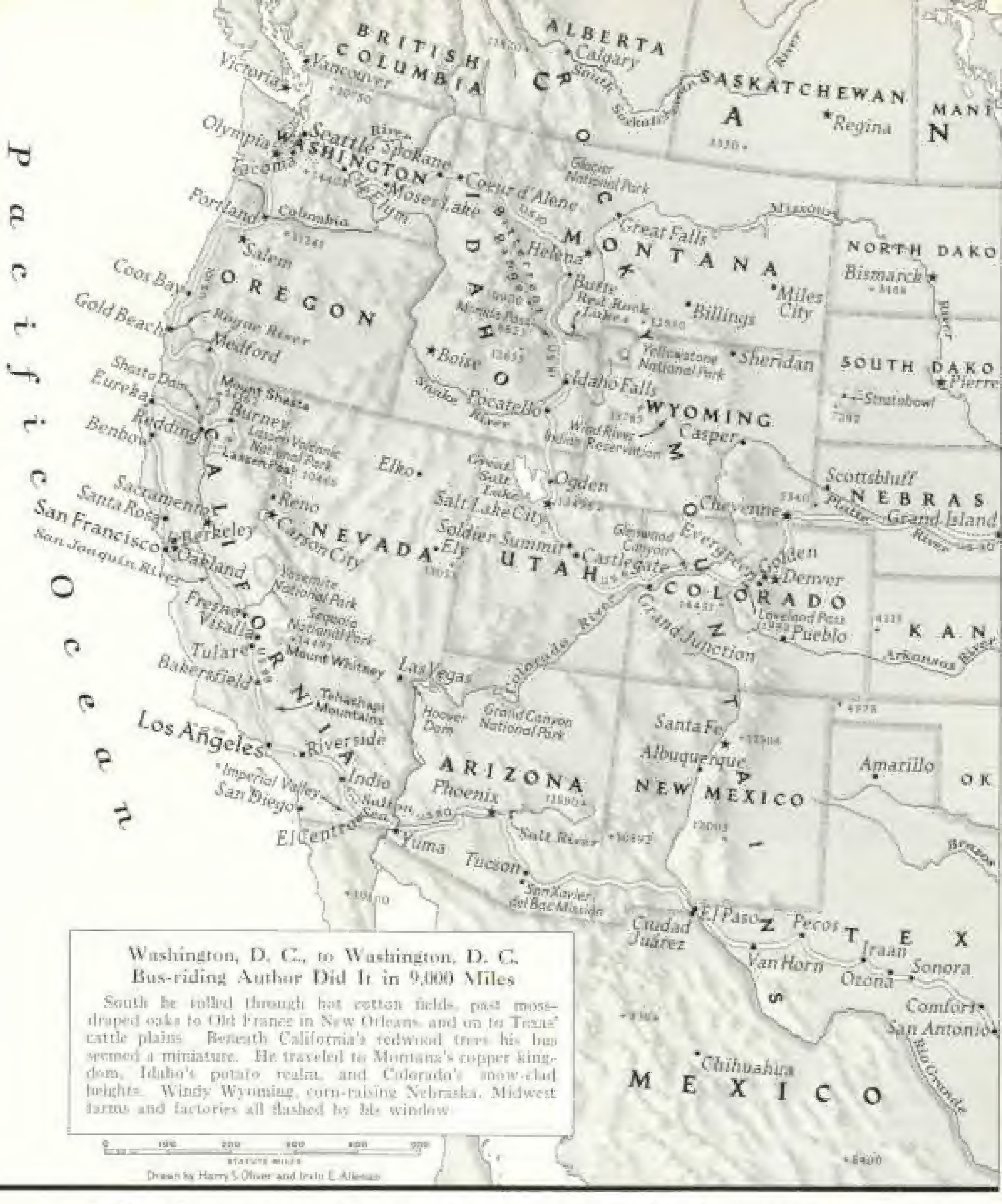
New Orleans is a snare without delusion, a city beyond description.

For several days I forgot about that part of it outside the Vieux Carré, or French Quarter. This section cradled New Orleans and trapped me. Its narrow streets overhung with balconies, its lacy ironwork and gas lamps, art shops, antique stores, and book stalls. Cathedral and cafés, smells, bells, colors, and even the human attitude—all reminded me of Marseille, sometimes of Paris.

I sat in a café, once a blacksmith shop where Pierre and Jean Lafitte are said to have forged the trade as a blind for their piratical activities. One of the proprietors talked with me. He had attended Annapolis and cruised the world. Tired of spending money in restaurants, cafés, or bars, he decided to have a place of his own.

But he never lost his love of foreign atmosphere; hence he settled where he did.

"If you ever want to get away from the United States," he told me, "just come to New Orleans."



Washington, D. C., to Washington, D. C. Bus-riding Author Did It in 9,000 Miles

South he rolled through hot cotton fields, past moss-draped oaks to Old France in New Orleans, and on to Texas' cattle plains. Beneath California's redwood trees his bus seemed a miniature. He traveled to Montana's copper kingdom, Idaho's potato realm, and Colorado's snow-clad heights. Windy Wyoming, corn-raising Nebraska, Midwest farms and factories all flashed by his window.

STATUTE MILES

Drawn by Harry S. Oliver and Irvin E. Allenson

I liked Jackson Square (formerly Place d'Armes), heart of the French Quarter. Natives rested under shady trees, listening to birds, simply thinking, or holding earnest conversations; some strolled idly.

The Cathedral of St. Louis faces the Square. Originally of Spanish design, it later took on a French look with tall spires. Beside it stands the Cabildo building, where the United States purchased the vast Louisiana Territory.

From Jackson Square I could hear the bustling noises of the Old French Market, it has catered to housekeepers and restaurateurs since the late 1700's. Under its arcades I walked past rank on rank of vegetable stands, flower stalls, cages of live chickens, ducks, and geese—everything. Occasionally I lingered to listen to haggling in French, a Spanish greeting, or just plain southern talk.

With numerous visitors aboard a sightseeing steamer, I made a 30-mile tour of the harbor. A lecturer, aided by a loud-speaker, described all—absolutely all—we saw during the 2½-hour trip.

Shipping crowded miles of wharves along the Mississippi. Mark Twain ferries plied between New Orleans and Algiers, just across the river. Did we wonder about that stuff floating on the water? Our alert guide told us: rice hulls. He didn't miss a piece of driftwood.

Passing factories seen from the deck, the lecturer discussed some of the local 1,100 industries. Machinery unloaded heavy cargoes of bananas and coffee at the docks. And I learned that New Orleans is one of the world's greatest banana ports, some 15 million stems per year being imported from neighboring tropical countries; and that it handles a fourth of all the coffee consumed in the United States.*

West by Airliner of the Road

The limited to Houston, Texas, had features I'd not found in other coaches. As a

*See "Louisiana Trades with the World," by Frederick Simpich, National Geographic Magazine, December, 1947.

Billows of Pillows for Weary Heads

Pillows, like tires, are not owned by the bus line. These are rented by a concessionaire to passengers at 25 cents each. The author photographed this stock in Portland, Oregon. Salt Lake City, a pillow-distribution center, sometimes has 10,000 on hand (page 391).

member of the crew, a steward passed out pillows, sold snacks and soft drinks, and announced points of interest along the way. A lavatory at the rear eliminated comfort stops.

Bus riding seems to loosen tongues. Next to me sat a woman who had a remarkable talent for total recall. Even before the bus left New Orleans, she started the story of her life. Only our arrival in Houston ten hours later dropped the curtain on her soliloquy. If she could write as she spoke, her story might fill a fat best seller.

Crossing the Mississippi just north of Baton Rouge, the steward pointed to the skyscraper capitol, "tallest in the South." Extensive fields of sugar cane and green rice floated by with southern Louisiana. White herons stood out against the marshland like cumulus clouds in the summer sky.

We entered Texas at Orange, took Beaumont in our stride, and hummed on to Houston.

To experience night travel in a bus, I departed for San Antonio at 1 a.m. I rented a pillow, expecting to sleep some of the dark miles away. But that pleasure escaped me; I found it more comfortable to sit up and smoke. I gave the pillow to a soldier, who used it well.

This GI had hopefully chosen a seat next a girl. It seemed, however, they had nothing in common: she went to college; he went to sleep.

A student at Swarthmore College, Pennsylvania, she was going to Mexico City to complete research work for her thesis in Spanish. She planned to make the round trip by bus.

Dawn and our bus hit Luling at the same time. The town looked very Texan. But farther west I was reminded of northernmost Maine. Well cultivated and green, the land rolled gently. It resembled potato country.

San Antonio Cradled Texas Liberty

Sleep or no sleep, I wanted to explore San Antonio. All morning I followed the little San Antonio River under city bridges, in the shadow of skyscrapers, or through parks and rock gardens. I passed an outdoor theater and one or two open-air cafés flecked with leaf-sifted sunlight.

In a central business district I walked over some of the most historic ground in Texas. I crossed Alamo Plaza with its cenotaph and

entered the old Alamo chapel, cradle of Texas liberty (page 7).*

First part of the journey to El Paso took us through a surprisingly hilly, wooded region. Here, the driver said, he sometimes hunted deer. Black squirrels scampered across the road, but I saw no larger game.

At infrequent intervals the highway briefly became main street of small towns remembered for their names: Comfort, Sonora, Ozona, and Iraan. Mirages drifted over hot plains; the road leveled out on sandy land thirsty as Persian desert.

A 30-minute stop in Pecos let me walk about the town, and I appreciated more than ever the air conditioning of buses. Blowing through Van Horn, we reached El Paso at midnight.

El Paso Guards International Gateway

On the north bank of the Rio Grande, El Paso looks squarely at Ciudad Juárez, Mexico, across the river. International Bridge links the cities. From a tall tower on the American side, Border Patrol sentries watch for illegal entry into Texas.

When I finished photographing from the lookout, chief inspector of Immigration Border Patrol G. J. McBee showed me El Paso. In his car we climbed Mount Franklin, rising behind the city; dipped down to the Texas College of Mines and Metallurgy with its buildings of Tibetan architecture; drove by a copper smelter, cotton and flour mills; and passed fields where fat cattle got fatter.

From El Paso my bus hurtled over southern New Mexico and breezed into Arizona.† Here Nature outstaged Hollywood, applying fantastic colors to geological formations defying all laws of gravity. Ribbed and rigid saguaro cactus grew tall with perpendicular dignity.‡ Jumbled clumps of jumping cholla thrust fuzzy fingers in any direction.

On the outskirts of Tucson I met Herb Wood, who operates a service station. In spare time he works with cactus, making anything from miniature covered wagons to full-scale dining-room sideboards.

Curios Come from Arizona's Painful Cholla Cactus

Herb Wood (left) cuts his raw material from plant skeletons on the desert near Tucson. From it he fashions souvenirs and furniture. His masterpiece, a cactus grandfather clock, ticks away the time in his living room.

* See "Carnival in San Antonio," by Mason Sutherland. National Geographic Magazine, December, 1947.

† See, in the National Geographic Magazine: "Seeing Our Spanish Southwest," June, 1940; and "Arizona Comes of Age," January, 1929, both by Frederick Simpich.

‡ See, in the National Geographic Magazine: "Saguaro, Cactus Camel of Arizona," by Forrest Shreve, December, 1943; and "Saguaro Forest (Arizona)," by H. L. Shantz, April, 1937.

Autographed Wings of Famous Flyers Cling Swallowlike to a Wall in Riverside

Twice daily a guide conducts tours through Mission Inn's galleries in southern California. St. Francis Chapel, an international shrine for aviators, faces the courtyard. Among the many copper wings, the author saw those of Eddie Rickenbacker, Jimmy Doolittle, Ira Eaker, and the late "Hap" Arnold (opposite page).

I went into the desert one Sunday morning to see how Herb gathered cactus. With saw and ax he cut dry saguaro and cholla carefully selected for his purposes. Of such stuff he fashioned most of the furniture for his home. In his living room I saw even a grandfather clock of cactus (page 11).

I left Herb without ordering a cholla easy chair, but I couldn't resist Navajo and Zuni jewelry at a little shop in Tucson—silver and turquoise things of exquisite workmanship.*

Seven miles south of the city a young monk led me through the San Xavier del Bac Mission. The greater part of the church rose between 1772 and 1783. Under two architects, the Gaona brothers, Indians labored with Europeans to erect the masterpiece. This "White Dove of the Desert" stood dazzling bright against the deep-blue Arizona sky.

One tower was never completed. Legend tells that Ignacio Gaona died on falling from the unfinished structure; out of respect, the other brother let it remain as it was.

I also heard the more practical theory that Spain did not tax unfinished religious buildings.

On the west-bound bus from Tucson I sat behind a four-year-old girl and her mother. Approaching Phoenix, we passed a greyhound

* See "Indian Tribes of Pueblo Land," by Matthew W. Stirling, National Geographic Magazine, November, 1940.

racing park. The child wanted to know what it was, and was told.

"Oh," she exclaimed, "is that where all the buses race?"

Phoenix, financial and shopping center of Arizona, glistened in the blazing sun. I cooled off in a hotel lobby where cattlemen, booted and spurred and thoroughly hatted, mingled with dapper traveling salesmen; where lettuce farmers talked irrigation with citrus growers.

"You've heard a lot about irrigation in this country," remarked a friend taking me around the city, "but did you know that Phoenix is the air-conditioning capital of the world?"

Be it ever so humble or dashingly lavish, nearly every home we saw had an air-cooling contraption.

Air conditioning obviously makes a difference to the city's population; but irrigation really explains its increase from 5,500 in 1900 to about 100,000 today. In short, Phoenix grew up on water. To realize this, drive as we did through acres of citrus groves, fields of vegetables, date and dairy farms, grain and alfalfa (page 6).

Here the white man's miracle, wrought by water, merely repeated what Indians in the Salt River Valley had done a dozen centuries earlier. At Pueblo Grande, Indian site outside Phoenix, city archeologist Odd S. Halseth showed me an irrigation canal engineered by primitive red men.

The Hohokam quit the region 400 years before American pioneers arrived in the 1860's. Their abandoned ditches and village ruins tell of a prehistoric irrigation culture.

Speeding west, the bus crossed the Colorado River at Yuma and entered California. Evening stretched shadows across the American Sahara. In shifting dunes obsolete telephone poles sank to their crosstrees. I saw remains of a plank road used before the days of well-maintained highways. How horses ever dragged the first wagons over the trackless waste I couldn't imagine.*

To find a generous flow of water in this desert seemed incongruous as rain in Phoenix. Men shackled the Colorado River and let loose the All American Canal, which makes Imperial Valley so lush.

With irrigation of Imperial Valley, El Centro became chief shipping center for the agricultural produce. It happened in the lifetime of present residents; the All American Canal didn't go to work until 1940.

El Centroans are proud of their city. They keep it clean, put up signs at principal intersections warning autos to stop for pedestrians, place cards in café windows barring dogs, cats, and parrots, build arcades along shopping streets to ward off the glaring hot sun, and name their leading hotel for their favorite heroine, Harold Bell Wright's Barbara Worth.

From El Centro I traveled north through the Imperial Valley. The bus skirted the Salton Sea, an inland body of blue water 241 feet below sea level and saltier than an ocean.

Farther north we penetrated the date-growing Coachella Valley. Cool-looking groves, neatly planted, continued for miles. Near Indio a woman across the aisle presented me with a pound package of this luscious fruit.

Immigrant Oranges Founded an Empire

Getting off at the Riverside depot, I counted my baggage as usual. For the first time something was missing; my tripod had gone with the bus to Los Angeles.

"Don't worry about it," the dispatcher said. "It'll be here tomorrow."

And it was.

I stayed at the Mission Inn. While its architecture and imported objects made the combined hotel and art galleries famous (opposite page), imported orange trees distinguished Riverside.

Young navels from Brazil were introduced in 1873; with these early plantings the region founded a citrus empire. Riverside cradled the culture of Washington navel oranges in the United States and gave California its major fruit crop.

Three years later California planted its first Valencia orange trees; they came from English nurseries which raised this type of Spanish origin.

Buses flow through Riverside like water in its irrigation canals. Miss one and you must hurry to catch the next. My reluctance to leave this city of trees and friendly people made me miss several.

Neither heat nor humidity could thin the downtown crowds of Los Angeles. A newspaper headlined, "93 DEGREES—BABY, IT'S HOT OUTSIDE"; but that didn't bother shopping hordes I found as far out as Farmers Market (page 14).

Tourists filled hotels and restaurants, jammed streetcars and buses. Even at Pershing Square with all its benches I saw signs reserving seats for women and children; and standing audiences packed the central fountain area to hear hours of public haranguing.

Once out of Los Angeles, the bus climbed high into the Tehachapi Mountains. U. S. 99 led us over Tejon Pass and began the long descent of the Grapevine grade. A gap re-

* See "The West Through Boston Eyes," by Stewart Anderson, NATIONAL GEOGRAPHIC MAGAZINE, June, 1949.

It's the Kids Who Have the Say in This Comics Library

"No adults," admonishes the sign in the Los Angeles Farmers Market, but many grownups, children at heart, take advantage of the free outdoor stand to follow Superman and Donald Duck.

veiled the fertile flats of San Joaquin Valley, and I glimpsed the oil town of Bakersfield shimmering like a mirage.*

Northward we streaked past valley vineyards and orchards, vegetable and dairy farms; slowed up for Tulare and Visalia; broke the journey at Fresno for supper; then dashed on in the dark. The night air smelled of water on soil and told of well-tilled fields.

At Oakland our bus swung onto the Bay Bridge, gliding toward sparkling San Francisco. This approach thrilled me more than entering New York Harbor; it surpassed ferrying from Kowloon to Hong Kong, or sailing into Sydney, Australia.†

From its sudden hills the city winked myriad eyes in a fickle mist; the Bay winked back. The hum of our bus muffled most of the usual sounds, but I heard the clanging of a cable car's bell.

I went to a hotel on a sharp slope of Nob Hill. After registering at the main-floor desk, I rode two floors *down* to my room.

From the roof of the many-storied hotel I looked over the city, the Bay with its bridges, Alcatraz and Treasure Islands, ships and ferries. Berkeley and Oakland backed up the hills on the opposite shore.

I started to walk down Nob Hill by Mason Street. The grade was too steep for slippery leather soles; I had to use Powell Street instead.

Later, I hopped on a cable car headed for Fisherman's Wharf. The woman conductor wore pants and worked like a man. She tugged on the hand brake, leaped to the street to turn switches, and had to run to get aboard again. As we approached a sharp bend, her husky voice competed with the clanging bell: "Going around—hang on or fall off!"

* See, in the NATIONAL GEOGRAPHIC MAGAZINE: "Southern California at Work," November, 1934; and "Northern California at Work," March, 1936, both by Frederick Simpich.

† See "San Francisco: Gibraltar of the West Coast," by La Verne Bradley, NATIONAL GEOGRAPHIC MAGAZINE, March, 1943.

Did You Leave This Corset or Football Helmet on a Bus?

If so, apply to Trailways' lost-and-found department in Denver. In that "morgue" the author saw suitcases, umbrellas, cameras, alarm clocks, sleeping bags, and ironing boards. Such other items as cavalry saber, baby buggy, sewing machine, false teeth, and a glass eye also went unclaimed. Once a forgotten baby howled on the shelves (page 19).

Both she and the motorman jumped down at the end of the line to swing the car on its turntable. Straining at the job, she looked up to answer a tourist's question.

"You can't miss Fisherman's Wharf," she said. "Just use your nose."

I moved with a school of visitors past numerous fish shops and seafood restaurants. Fresh catches cooked in sidewalk caldrons. Sooner or later one had to give in to the delicious aromas and stop to eat.

Scores of brightly painted fishing craft nuzzled the wharf. On their decks stolid bronzed men prepared tackle. Two youths carried a box of fish. I asked what kind, and they said sardines. Certainly the largest I'd seen, those sardines looked as long as mullet with three I's.

"People who travel by bus move like birds, following the seasons," said the manager of the Greyhound service lot.

His job was to keep sufficient buses running to handle all migrations. At the end of their runs coaches went to the service lot for standard check-up. Electric-eye washers automatically scrubbed and rinsed the big bodies in a matter of minutes; men added a final polish (page 37). In a parking area which could hold 127, serviced buses awaited next assignments and drivers.

Buses Roll on Rented Tires

Greyhound does not own a single tire; the company rents them on a mileage basis. Apparently the system works all right. In my entire bus journey around the United States I never experienced a flat.

San Francisco's Greyhound garage handles vehicles with serious mechanical difficulties. I saw rear ends of buses open like wardrobe doors and 3,000-pound Diesel engines slide out. Powerful jacks on wheels rolled them to any section of the enormous shop.

At the Greyhound depot, used by 29,000 persons daily, the chief dispatcher and an offi-

duty driver helped me make photographs (page 35). When I photographed buses on the Golden Gate Bridge, crossing the longest single span in the world, the State cop on duty helped, too; he'd been reading the NATIONAL GEOGRAPHIC for years (pages 3, 34).

I heard of another lenient policeman in San Francisco. As he directed downtown traffic, an intercity bus stopped beside him. The driver, having discarded regulation cap for a woman's wig, popped his head out and asked in falsetto the way to the terminal. Good-naturedly, the cop told him where to go.

This doesn't mean that bus operators take their responsibilities lightly. Many have driven a million miles without causing a scratch. Theirs is "defense driving," which considers every foolish thing the other fellow on the road might do.

Earth's Tallest Living Things

Early one morning I began the all-day ride over the Redwood Highway to Eureka, California (page 36). Eugene McLean, the driver, soon asked whether he had any sightseers aboard. Every passenger confessed.

At Santa Rosa we saw an average-size church constructed entirely of one redwood tree.

Just north of Benbow we penetrated the heart of the rich coast redwood realm.*

World's tallest living things, and among the oldest, the majestic coast redwoods (*Sequoia sempervirens*) have been growing 1,500 years or more to reach from 300 to 364 feet into the silence that settles on the groves.

Here one instinctively spoke softly or not at all. Significance? One's own insignificance. These ancients of eons stirred in me the same feelings I have in a cathedral mellowed by age.

We reached Eureka 40 minutes behind schedule because the driver stopped so often to let passengers make photographs.

Down by the docks on Humboldt Bay we watched fishing boats unload ling cod. At a fisheries company 24 women skillfully filleted 1,000 pounds of sole an hour. One cut as many as 600 fish in an 8-hour day.

On all the roads of the region we met tremendous trailer trucks hauling colossal *sempervirens* logs to some 160 lumber mills in Humboldt County. Fifty percent of the world's redwood of this species (the important one commercially) stands in this county, which leads all others in California lumber production. We marveled at how easily millhands and machinery moved timber nine feet in diameter from mountainous stockpiles to screaming saws.

One night I went with friends to the only licensed whaling station in the United States. Well before we reached our destination six miles south of the city, we smelled what we later viewed, as one views a panorama. A male whale of the humpback variety covered a dock with his mammoth mass—42 feet long and as many tons heavy.

John Lima drove for the Trinity Bus Line linking Eureka and Redding, to the east. For the 150-mile trip he gave me a front seat. High mountains, magnificent forests, deep gorges with racing streams—all in incredible

* See "California's Coastal Redwood Realm," by J. R. Hildebrand, NATIONAL GEOGRAPHIC MAGAZINE, February, 1950.

An Artist's Glimpses of Our Roadside Wildlife

"Take the back roads," fellow motorists advised Walter A. Weber, National Geographic Society staff artist, when he started out to paint wildlife pictures for Howell Walker's narrative of a bus trip around the United States.

"I should like to take these doubters on a transcontinental motoring tour. I could show them many sights as absorbing as the 16 I have painted for the NATIONAL GEOGRAPHIC MAGAZINE (pages 17 to 32)," said Mr. Weber.

"The very pavement proves my point. Scarcely a mile is not redolent with the vulture-haunted remains of a furred or feathered jaywalker. I believe more jack rabbits die of automobile wounds than of gunshots. The fearless skunk seems unwilling to believe that a motorcar cannot smell a warning (page 25). Nocturnal road-prowling deer (page 20) are so thick in places that their bulky bodies shatter speeding cars.

"In Yellowstone National Park I once stopped my car to let a moose amble across the road (page 21). Some years ago an antlered bull, irritated by a horn tooting for right-of-way, charged a Canadian car and chased frightened occupants into the woods.

"In the Southwest my headlights have pinpointed coyotes skulking across desert roads (page 29). I have seen others following deer hunters through Texas mesquite brakes and gorging on discarded venison. Whenever a rifle shot rang out, they howled in chorus, as if in answer to a dinner bell.

"I watched ospreys (page 23) sailing over Washington, D. C., looking for a meal in the Potomac, and sparrow hawks perching on a Capital hotel's television antenna. From a car parked near Red Rock Lakes, Montana, I followed the rare trumpeter swan with binoculars (page 27).

"One reason so many trout streams seem fished out is that mink have a way of following their convenient contour lines (page 31).

"I saw these things, not because my eyes are sharper, but because in 20 years a wildlife artist learns where to look for them."

Painting by Walter A. Weber

Yellowstone Park Bears Prefer Man's Tasty Picnic Foods to Their Own Wild Diet

These park pests introduce a series of 16 roadside dramas observed by staff artist Weber and painted for the National Geographic Magazine. Cinnamon and dark cubs are color variants of the common black bear.

Egg-stealing Magpies Tolerate No Egg Fanciers near Their Colorado Nest. Stabbing Beaks Chase an Abert's Squirrel

Pygmy Owl, Night's Sharp-eyed Tyrant, Day's Drowsy Innocent, Is Scolded by a Raucous Mob in Washington State

The artist once called 11 small birds by imitating the owl's whistle. Counterclockwise: pine grosbeak (male, upper left); pair of mountain chickadees; evening grosbeak (male); pair of Oregon juncos (male, female); red-breasted nuthatch (male); Townsend warbler (male).

Painting by Walter A. Weber

Painting by Walter A. Weber

White Flags of Virginia Deer Flash Wigwag Signals Bounding Through a New England Wilderness

Our commonest deer is multiplying despite civilization's encroachments. Brush and burned-over areas, offering succulent new growth, suit the animal better than dense forest. The handsome tail, a register of emotions, flicks from side to side in courtship, stands high in alarm, and clamps the body in pain.

Antlered Lord of the Harem Jealously Scans His Domain for a Rival Bull Moose. Motorists Often See Such Groups in Yellowstone

Painting by Walter A. Weber

Red-tailed Hawk, a Vermin Hunter, Sits on an Ohio Fence and Digests a Mouse Dinner

A belligerent kingbird (left, above) pursues his favorite sport, hawk chasing (a young redtail). Marsh hawk, with white rump spot, sails over the meadow looking for insect, mouse, frog, lizard, or snake.

Bald Eagle, Highwayman of the Air, Bullies a Fish Hawk for the Loot in Its Talons

Not an expert fisherman, the eagle steals from his cousin. The osprey, knowing he is bound to lose, drops the fish, which the "highjacker" snatches in mid-air. Witnessed by the artist along the North Carolina coast.

Painting by Walter A. Weber

Prairie Falcon Strikes a Ring-necked Pheasant Feeding on South Dakota Wheat, Its Powerful Blow Often Kills on Impact

The pheasant, introduced from China, flourishes on the prairies of the north, but does not thrive in the south. It eats insects as well as grain.

Mother Skunk Hoists Her Warning Flag in Colorado. Badger Decides He Is Not Hungry Enough to Risk Chemical Warfare

Three fearless little "squirts" already know that *size* means nothing. When scent glands develop fully, they too will be able to wheel around and direct an odoriferous spray accurately up to eight feet. Badgers, using big claws, dig for marmots, prairie dogs, and ground squirrels. If starving, they will eat skunk.

Painting by Walter A. Weber

Painting by Walter A. Weber

Not a Critic in the Audience. Pronghorn Antelope, Kibitzing the Artist, Study His White Umbrella, Ignore His Painting—Montana

White objects excite pronghorns' curiosity. Hunters sometimes lure them into gun range by waving a white cloth they may mistake for a white rump patch.

Trumpeter Swans, Once Nearly Extinct, Multiply in Montana Sanctuary. In 1935 the U. S. Counted 73 Trumpeters: Now It Has 450

Thirty-pound birds with eight-foot wingspread made easy gun targets. Fashion's demands once sent skin prices up to $150. Left, top down: coots, blue-winged teal, shovelers (male white breasted, female speckled), and gadwalls share Red Rock Lakes.

Painting by Walter A. Weber

Painting by Walter A. Weber

Holboell's Grebes Enjoy Taxi Service, Redhead Ducklings Swim, and Avocet Walks on Stilts in a North Dakota Pond

Raven Sails Past Coyote's Meal to Snatch a Mutton Morsel. Both Are Scavengers of the Arizona Range

While the wolf is disappearing in much of the United States, his smaller cousin of the western prairies holds his own against men and dogs. Jack rabbits and rodents are coyote's natural prey. This will be a farewell banquet if the ranch owner has poisoned the carcass.

Painting by Walter A. Weber

Painting by Walter A. Weber

Scissor-tailed and Vermilion Flycatchers Flash Their Colors in a Texas Mesquite

Insect-eating flycatchers annually destroy millions of crop pests. Scissor-tail, like the kingbird of page 22, loves to harry hawks. His scarlet cousin is known to Mexicans as *brasita de fuego* (little coal of fire).

Painting by Walter A. Weber

Four Famous Trout, Rarely Seen Together, Mingle in a Branch of Wind River, Wyoming

But only Indians may enjoy this anglers' dream in the Wind River Reservation. Top to bottom: cutthroat, eastern brook, golden, and rainbow. Formerly the golden was confined to California's Kern River system.

Painting by Walter A. Weber

Northern Pike, a Fool for a Spinner, Makes a Last Strike in a Midwestern Lake

Probably more time, tackle, and gasoline are spent on black bass (center) and yellow perch (below) than any other fresh-water fish save trout. The name pike, which grows to 40 pounds, is often caught through ice holes.

color—were with us the whole journey. With its breathtaking turns and views straight up or down, the narrow road helps form the only highway across northern California.

Arriving in Redding after a hard day of driving, Lima jumped from our bus into a private car and drove me another dozen miles to Shasta Lake. He showed me the world's second largest and second highest concrete dam, completed in 1945. Higher than the Washington Monument, it backs up three rivers and a creek to make a reservoir 35 miles long.

Lima introduced me to Tom B. Riley, manager of the Trinity Bus Line. From Redding, Riley and I went northeast to Lacy Burney Falls, then drove south into and around lava-strewn Lassen Volcanic National Park. Here rises 10,466-foot Lassen Peak, only living volcano in the continental United States, but merely latent this day. At hot sulphur springs, however, boiling pools filled the glassy air with the heavy essence of bad eggs.

On the way to Oregon the next day a fully loaded Greyhound stopped when I gave the signal. Driver and passengers waited patiently while I photographed the snow-streaked head of Mount Shasta, 14,162 feet above the sea.

At Medford, Oregon, I turned west again to see the coastline of this State. The car climbed heavily forested mountains, dived into deep canyons, and buzzed through communities cut out of the big timber they milled. Emerging from an unspoiled redwood grove, the road hit the coast just above the California border.

Oregon's high rocky shore drops abruptly into the Pacific and bounces up from the sea like schools of giant porpoises. Some off-lying islands resemble massive backs of black whales; others look like aircraft carriers; and a number take the shape of cathedral towers.

River Teems with Fighting Salmon

To me it seemed that all the anglers in Oregon converged at Gold Beach. Scores lined both banks of the Rogue River mouth; hip-booted dozens waded between; and fishing boats, lashed broadside, nearly closed the gaping jaws of the river. Chinook salmon were running.

I went as far as Coos Bay that day and headed for Portland the next. Although the bus hugged the shore for another hundred miles, fog and drizzle masked all. Without knowing it, I passed the only mainland sea lion rookery on the Oregon coast.

But the sun brightened the inland port of roses, sawmills, ships, bridges, and buses—Portland.*

After seeing some of the 13,000 passengers and 353 buses that keep the Greyhound depot awake 24 hours a day, I walked to the Trailways terminal close by. A waiting-room wall map showed that the National Trailways System serves more than 65,000 miles of American highways.

On a Trailways bus from Portland to Seattle I sat next to the driver, Lawrence Price.

"Bus driving gets you," Price remarked. "Once you're in this game, it's hard to let go. Personally, I don't think there's any other job that would suit me as well.

"Funny thing how women passengers go for bus drivers," he continued. "Maybe it's the uniform; maybe it's because we're the captains of our ships and their fates, or something."

Drivers Flash a Code of the Road

Price waved to Greyhound drivers as readily as to Trailways mates. He told me that heavy commercial vehicles have a code of the road. If a truck broke down on the highway, a bus stopped to help, and vice versa. They also flashed lights on meeting to signal messages: once—look out, cops in the vicinity; twice—everything O.K.; three times—stop to talk; four flashes—road obstructions ahead.

In some ways Seattle reminded me of San Francisco: water front and ferries, hills with steep streets, tall buildings in the fog, many hotels, most of them crowded; and again that western spirit of levity.

Leaving the city, the bus bridged Lake Washington by a concrete and steel pontoon highway, largest of its kind in the world. Now eastbound on U. S. 10 to Spokane, the Hound humped over Snoqualmie Pass—no snow, no qualms.

From rocky peaks we wound down to a coal-mining town called Cle Elum; then rolled out onto the broad Kittitas plains, as unlike my picture of central Washington as Vermont and Texas.

We passed the Ginkgo Petrified Forest where a farmer passenger said he once raised sheep.

"And I suppose they had to leave for lack of feed when the forest got petrified," a woman near him concluded.

"Oh, the trees still had twigs," explained the farmer, "but I was afraid the sheep would get gallstones if they ate 'em."

Crossing the Columbia River, the bus fol-

* See, in the National Geographic Magazine: "Oregon Finds New Riches," December, 1946, and "Washington, the Evergreen State," February, 1943, both by Leo A. Borah.

Portland Bus Swings Across San Francisco Harbor on 6-lane Golden Gate Bridge

Towers rising higher than the Washington Monument support the world's longest single span, four-fifths of a mile long, 250 feet above the water. The entire structure, completed in 1937, extends 9,266 feet. Construction required 108,000 tons of steel, enough to load 30 miles of freight cars.

lowed an absolutely straight stretch for 25 miles to Moses Lake. The somewhat desolate land offered only grazing, mostly to sheep; but upon completion of the Columbia Basin Project this area will be irrigated and therefore more highly cultivated.*

Another 20 miles east and we rode into a wheat-farming region. In every direction the fields rolled toward infinity.

I registered at a Spokane hotel which advised, "Come in Just as You Are." Everyone did, including a flock of woolgrowers; their convention gave the place the atmosphere of a good country "pub" in Australia.

A neat, compact city, Spokane has a more than adequate modern Greyhound terminal. There I talked with a tolerant ticket clerk. He said that usually some sense lurked behind even the silliest question, and blamed nervousness of persons unaccustomed to travel. But he did admit that he tired of such queries as "When does the 3-o'clock bus leave?"

Okinawa Was Never Like This

Before daylight my bus headed for Idaho. A chilly drizzle peppered Coeur d'Alene and its lake. We wriggled with the mountain road in

* See "Columbia Turns on the Power," by Maynard Owen Williams, NATIONAL GEOGRAPHIC MAGAZINE, June, 1941.

Bewildering Code on the Blackboard Means Work and Pay for Extra Drivers

When a regular operator takes time off, a substitute is assigned to the run and his name moved to the "Stand" column. Relief men temporarily working regular runs become "Hold Downs"; hence the column "H. D." These clerks direct operations in a San Francisco dispatch office. Usually a crowd of spare drivers waits and watches.

All Aboard for the Redwood Highway, One of America's Most Scenic Drives

One bus company alone schedules eleven trips daily over this coastal road between San Francisco and Portland, Oregon. Besides normal traffic, tourists crowd the modern stagecoaches to see California's vineyards and the Redwoods, Pacific rollers crashing on the rocky coast, and Oregon's rivers jammed with anglers and running salmon. Here the first aboard pre-empts the most popular chair with unobstructed view.

and out of communities mining silver, lead, and zinc.* As we sped across the narrow neck of northern Idaho, gloomy clouds hid the height of land.

The bus for Butte, Montana, seethed with soldiers returning from duty in the Far East.

"I've been in Italy, North Africa, Sicily, Italy again, Czechoslovakia, Austria, Germany, France, Guadalcanal, Okinawa, China, Korea, and Japan," said a sergeant going home to South Carolina, "but I never seen anything like Montana."

A Mile Deep and Getting Deeper

"How about that?" an Alabama-bound GI marveled as we crossed the Blackfoot River. "They have water rivers in Montana, too."

Mayor Tom R. Morgan of Butte personally introduced me to his copper-mining city, "a mile high and a mile deep."

"And it'll be even deeper," he said. "Miners tell me that the farther down they go, the better the copper."

In the mayor's car we drove to the top of the "richest hill on earth." It forms Butte's backyard. Past the superstructure of several working mines we looked over the city and the wide valley below. Near by stood the remains of a mine which burned in 1917 with loss of more than 163 men.

Winding down the hill, the mayor pointed with respect to little diggings of individual prospectors.

* See "Idaho Made the Desert Bloom," by D. Worth Clark, National Geographic Magazine, June, 1944.

Four Hands and One Electric Eye Wash a Bus in 5 Minutes

As the coach drives onto the wash rack, the electric eye automatically starts the brushes rolling and the spray sprinkling, thus cleaning its sides. Then the windows and wheels are washed by hand. When the bus slowly passes off the rack, it is showered by the rinser (pipe frame).

"After all," he said, "that's the way the place got its start."

But Butte doesn't live for ore alone. Four important railroad lines meet there to make it an active cattle-shipping center; hence the large stockyards we saw on the flats south of the city.

Mayor Morgan hinted that the romance of a wide-open western town still lingers in Butte. He had established a rifle range for his police.

"And they're doing all right, too," he smiled proudly; "I've got 'em to the point where they can shoot from the hip."

The son of a sea captain, Tom Morgan was born in Cornwall, England. His father tried to make a sailor of him, but the boy fell out of so many boats he had to abandon the idea. In 1913 the captain shipped Tom to Butte on six months' trial. If he liked it, he could stay.

I, too, liked it and wanted to stay. But in the cold darkness of the next morning I boarded a coach of Intermountain Transportation Company, oldest bus line in Montana, and rode due south.

We climbed nearly 7,000 feet in the Bitterroot Range and rushed with the wind through Monida Pass; there huddled a desolate hamlet, bleak and cold in the snow.

Down the bus raced into that broad, russet realm of Idaho made famous by potatoes. Now in late autumn the tubers had been uprooted, but towns were still busy shipping them. Crossing the Snake River to enter Idaho Falls, I saw the cataract that suggested the city's name.

Sandstone Walls Denver's Red Rocks Auditorium; Its Ceiling, the Deep Blue Sky

By day the city's skyscrapers, by night their winking lights, may be seen from this natural amphitheater, 16 miles distant. Benches accommodate more than 10,000 spectators at festivals and pageants.

A long, level road took us south over well-farmed fields and through a large Indian reservation to Pocatello. On the rear seat I talked with a schoolteacher accompanied by his wife and five-months-old son. After Thanksgiving in Idaho, they were returning to their home in Utah. He said that with such a young child he found it easier to ride the bus than to use his own car on long trips.

I glimpsed Great Salt Lake as we moved into the Mormon country of northern Utah. My questions about the history of the region prematurely ended the professor's holiday. And when we reached Salt Lake City, one of his students leaving the bus turned to him and said, "See you in English History."

First thing I saw on emerging from the bus depot was the Mormon Temple. I stayed in a hotel opposite it, and I always had the feeling that this great granite monument to Mormonism dominated the whole city, physically and spiritually.*

Although not allowed to enter the Temple,

* See "Utah, Carved by Winds and Waters," by Leo A. Borah, National Geographic Magazine, May, 1936.

I did attend a daily organ recital in the Tabernacle of Temple Square. The building seats 8,000 persons. It has such remarkable acoustics that a pin dropped at one end could be heard at the other—about 200 feet.

At the top of a shaft in Temple Square hover sculptured gulls in memory of those birds whose timely arrival saved the earliest Mormon settlers from starvation. Gulls wiped out a cricket plague threatening destruction of pioneer crops.

Near the Square, Greyhound has erected a dog 27 feet long over its bus center. The depot's pillow stockpile sometimes has as many as 10,000 on hand (page 10). The ladies' rest room is walled with Tennessee marble and ballroom-size mirrors; the men's features shower baths for 25 cents, towel and soap 10 cents extra.

The "morgue" in the basement holds all unclaimed baggage and articles left on buses or in the depot. I noted hundreds of suitcases, oddments of clothing, books, umbrellas, half-empty bottles, rucksacks, sleeping bags, and cameras; and an absent-minded musician had walked off without his bass viol!

12,000 Feet Up in a Bus

I made the trip in two days from Salt Lake City across Colorado to Denver, stopping a night in Grand Junction. The first leg took us over 7,440-foot Soldier Summit, through a rocky, steep-walled valley to Castlegate with its coal mines, and on to the fruit-growing plains just east of the Utah border.

On the second leg next day, driver Herb Denham realized that some of us wanted not only to see the spectacular country but to photograph it. He frequently waited while we turned our cameras on such subjects as Glenwood Canyon. At Loveland Pass, 11,992 feet above sea level, he gave us five minutes to take in the snow-covered grandeur of the mountains.

Once a visiting French architect beside me jumped up with his camera and cried, "Halt, just here." And Denham did.

Despite numerous delays caused by passengers, we reached Denver only a few minutes late. A turntable in the terminal spun the bus 180 degrees, obviating much backing in a limited space.

On a tour of the Trailways depot I mentioned the "morgue" I'd seen in Salt Lake City.

"You should see ours," said an official and led me there (page 15).

Some of the items: a lady's pink corset next to a football helmet, one white shoe in a brown paper bag, a violin strapped to a pillow, snare drum, alarm clocks, ironing board, cavalry saber, baby buggy, sewing machine, false teeth, a glass eye. The baggage man told me that once he even had a live baby on the shelf; a forgetful mother left it on a bus.

For most of a day a friend and I drove into the hills west of Denver. In the Park of the Red Rocks we walked along the aisles of a natural auditorium capable of seating more than 10,000 persons. Gigantic upheavals of Dakota sandstone formed its rust-colored walls, a deep-blue sky the ceiling (opposite).

We wound with Bear Creek Canyon to the alpinelike hamlet of Evergreen, then swung around to return to Denver by another route.

Standing by Buffalo Bill's grave on the summit of Lookout Mountain, I gazed over Golden, former capital of Colorado and supply base for pioneer mining camps. At the town's edge stands the Colorado School of Mines.

Across the Cornlands of Nebraska

I went north to Cheyenne from Denver, and Wyoming's winds virtually blew my bus into Nebraska. The bus flattened out with the country and streaked due east to Grand Island. Light snow dappled the brown fields, all level as a lake. One had the impression that Nebraska never altered, never ended, and everywhere raised corn.*

Getting off at Grand Island to spend the night (page 40), I passed a tired soldier going straight through from coast to coast. "Greyhound," he moaned with feeling. "Next time I see a gray dog, I'm gonna kick it."

In all fairness to bus travel, I found it fun when taken in stages. To make a journey of several days without a break turned it into a grind.

Omaha's Greyhound depot, one of the newest and most modern in the United States, has air-conditioned telephone booths with plastic walls to discourage "doodlers."

In the three-level garage covering much of a city block, I watched reconstruction of bodies, repainting, upholstering, assembly of gargantuan springs, and even the rebuilding of batteries.

An Omaha friend took me to dinner in an excellent restaurant above a corner of the stockyards, often second only to Chicago's in total livestock receipts. Over juicy steak I bragged of all the bus traveling I'd done without a single flat tire. We had a puncture on the way back to my hotel.

On the express bus for Chicago, we crossed the Missouri River, poked through Council

* See, in the National Geographic Magazine, "Colorado, a Barrier That Became a Goal," by McFall Kerby, July, 1932; "Grass Makes Wyoming Fat," by Frederick Simpich, August, 1935; and "Nebraska, the Cornhusker State," by Leo A. Borah, May, 1945.

Day or Night, Rain or Fog, Snow or Ice, the Buses Roll, and Usually on Time

These coaches line up at a terminal in Grand Island, Nebraska, a staging base between Chicago and the west coast. This light snow offers no schedule problems. Tire chains will come out if drivers face icy hills, an unlikely hazard in the Nebraska flatlands.

Bluffs, and picked up speed on U. S. 6 over Iowa. Fog and rain obscured the narrow, slippery highway, but the bus barged ahead amid lumbering trucks to keep on schedule. The driver wasn't reckless; he knew the road and the character of the vehicle.

Bus Travel Only One Generation Old

In a rear seat I sat next to young Slim. Just out of a Los Angeles prison, he was heading straight for New York without stopovers.

Slim spoke of some of his mates with three years to serve for automobile theft; he said they spent most of the time laying plans to steal 1952 models. He told of a lad pretending insanity and always bouncing a ball that wasn't there. And he wondered why detectives hadn't asked for my identification card.

Des Moines dropped behind, then Iowa City. Into Davenport, over the Mississippi, and across Illinois we shot to Chicago.

This metropolis, "Titan of the Middle West," is headquarters of the Greyhound system.

Looking over the city from his 26th-story window, Mr. Orville S. Caesar, Greyhound's president, reminded me that the bus business is still in its first generation; many of the top officials started as drivers of the earliest jitneys.

As he spoke, one of the oldest of old-timers quietly entered the office—Carl Eric Wickman, chairman of the board of the Greyhound Corporation. Despite his years in this country, he retains the deliberate accent of Scandinavian English.

He had just returned from a quick trip to Texas.

Detroit's Off-duty Drivers Await Assignments in the Wardroom

Here drivers make out end-of-run reports, play cards, or watch television. They "grouse" about irregular hours, "nervous Nellie" drivers, low speed limits, and unruly passengers; but scarcely one would exchange his life on the road. "Bus driving gets you," a western operator told the author. These men call their comfortable lounge the "doghouse" because it is a "Hound" property.

"Did you make the journey by Greyhound?" I asked.

"Oh, no," he replied. "That is for my customers; I mustn't crowd them, you know."

I rolled out of Chicago in a Detroit-bound bus with Dick Sherwood at the wheel. He started driving buses in 1917; used to work the Hibbing-Duluth run. In those days, according to Sherwood, the road twisted so much he could see his own rear license plate going around corners. And what about the winters? Well, farmers had to shovel snow off windmills.

For 14 years Sherwood has covered the same route: Chicago to Niles, Michigan, and back. Everyone along the road seems to know and like him. He likes them all.

"My passengers come to be a part of me," he said. "If they don't show up on the days they usually ride my bus, I worry about them."

I settled down next to a 75-year old woman who was traveling straight through from Kansas City to Wayne, near Detroit; she had begun her journey the previous afternoon. Born in a Missouri log cabin, she went west in a covered wagon. "Kansas or bust" was the cry in those days.

"And now it's 'travel by bus,'" she remarked. "I've seen some big changes in this country."

Ours was one of nearly 1,000 buses daily in and out of the Detroit central terminal; and I was one of about 30,000 persons passing through it every 24 hours.

Along with the intercity and urban traffic, a 32-passenger airlines express leaves the depot

"What Time Does the 5-o'clock Bus Leave?" Cleveland's Six Oracles Have the Answer

Which bus? What route? Thousands of queries a day come in by phone. These women rattle off most replies from memory, but an occasional poser compels them to consult their open files.

every 20 minutes for Willow Run Airport.

Largest in the United States, Greyhound's new maintenance center here has service facilities for a fleet of 600 coaches. Every five minutes one bus comes in and one goes out. Two hundred and seventy-five experts keep the Hounds in racing form.

For much of the trip to Cleveland the bus hugged Lake Erie's southern shore. Ice smoothed Sandusky Bay and ruffled the big lake's edges with Elizabethan collars. Thinly, snow clad the land.

In Cleveland, Greyhound has built a depot with 21 loading platforms working 24 hours a day. The interior reminded me of a modern luxury hotel's lobby. In special restrooms for children, I saw miniature versions of standard equipment, including low-slung basins to let shorties reach the taps.

We went to the depot's telephone information bureau where half a dozen women answer questions over the wires: which bus? when? where? how? even why? What these oracles couldn't rattle off, they found in fat reference books beside them.

On the bus to Pittsburgh I heard passengers compare Ohio and Pennsylvania drivers.

Someone mentioned those of another State.

"Oh, them," said our driver joining the discussion. "There you can expect anything; they drive with their bare feet."

Once beyond Pittsburgh,* I hit the home stretch. The road to Washington slanted across the hills of western Maryland like the late-afternoon sun.

Something Orville Caesar had said to me took on more meaning: "Every highway is a main street through the United States. To ride over them is to see America; it's exploring; it's adventure."

For me it was.†

* See "Pittsburgh: Workshop of the Titans," by Albert W. Atwood, National Geographic Magazine, July, 1949.

† For additional articles on States mentioned in this article, see "National Geographic Magazine Cumulative Index, 1899 to 1949."

Home Life in Paris Today

By Deena Clark

ON A SHINING day in New York we boarded a plane bound for Paris in the spring. My four-year-old daughter, Niki, barely had time to look down from the air to observe, "The houses look like I made them with my blocks!" before the chic stewardess was serving us a roast chicken dinner prepared by a French chef.

An hour later we were cozy in an immaculate, roomy berth. After a bedtime story in the sky, we snuggled down to a deep sleep while the ocean miles vanished far below us in the star-spangled night.

By noon the next day, after a magical 14 hours aloft, we had checked into the Hotel Continental, in the heart of Paris.

Our number-one problem, a nursemaid for Niki, was solved through the overseas edition of the *New York Herald Tribune*. Our jewel of a Simone stepped right out of its "Situations Wanted" column straight into our hearts.

We arrived on Saturday. On Monday she and Niki were hand in hand on their way to the gardens of the Tuileries, just across the Rue de Rivoli from our hotel (page 62). Simone's English was as good as her native French, and from the very beginning Niki loved her dearly in both languages.

An Apartment? Try to Find One

Bright and early Monday morning we began our hunt for an apartment. We soon found that the classic "*Cherchez la femme*" has given way in today's Paris to "*Cherchez une maison.*"

Practically no housing has been built in Paris for years, and with the rigid control of rent ceilings there is not much inducement for anyone to relieve the shortage. Consequently, there are not enough houses for the French themselves. I have a friend whose father owns three five-story apartment houses, but he cannot give his own daughter and her husband a place to live.

As the days passed, we began to feel we were lucky to be at the hotel, even though the Government had turned off the heat the first of May, making the decision according to the calendar rather than the thermometer.

On the morning that I saw the headline, "Naming of Bruce as Ambassador Ends Wife's Year-long Hunt for Home," I had a telephone call in answer to an advertisement we had put in *Figaro*. Madame Blanc had "two bedrooms, 65,000 francs."

Our French friends said, "Don't even look at it. The price is absolutely fantastic." To us, however, paying far more than that at the hotel, the $208 a month for what we found was not exorbitant. It was just about the same as we would have to pay for similar accommodations at home.

We entered through a sunny court bordered with orange nasturtiums. Tall windows and reflecting mirrors lighted the entrance hall. We had a foyer, a hall lined with spacious closets, two large bedrooms, a modern bathroom and a half, a laundry room, and a window-lined dining room. The living room afforded a splendid view of the Seine and the broad expanse of the Esplanade des Invalides.

Before we took possession, we paid Madame Blanc, a Yugoslavian married to a Frenchman, a shoebox full of francs—195,000 of them—for three months' rent in advance. The rent she paid to the landlord for that entire period was 18,000 francs. Of course we rented furnished, and we were asked to pay a $320 deposit against any possible unauthentic scratches we might add to Madame's antiques.

Stoves and Sinks Come in Pairs

We were especially pleased with our new kitchen. There were two stoves, one gas and one electric. Above our two sinks stretched a maze of pipes. One set ran from a gas heater that provided water only for the kitchen, and the other set led from a huge electric heater that supplied the laundry room and bathroom.

All of the pipes were connected in some mysterious way. Taking the plug out of the dishwashing sink was apt to cause lettuce leaves to rise in the laundry-room basin. Perfumed shampoo suds from the bathroom basin often gurgled up next to the stove.

The kitchen had four light switches. Each of them, for reasons of French thrift, illuminated only about four square feet of space. No turning on of the pantry light if one were peeling potatoes at the sink! Actually, the arrangement saved me no money, for it required all the available watt power to give a cheerful light.

Over one wall of the kitchen hung a row of graduated aluminum pans with which I could handle anything from an individual poached egg to a 20-pound pot roast. Sauce whisks, a pepper mill, a coffee grinder, apothecary's scales with shiny metric weights, a sieve mill for ricing vegetables, and a salad basket, the treasure of the assortment, decorated the shelves.

André de Dienes

Flowers of Fire Blossom over Notre Dame on the Night of July 14, Bastille Day

Shells and rockets shoot skyward from the Ile St. Louis, a small island in the Seine behind the illuminated Cathedral. France's national holiday commemorates the summer day in 1789 when the Bastille fortress-prison, symbol of autocratic authority, fell to liberty-loving mobs. For centuries Frenchmen have marked historic occasions and national fêtes with fireworks. In 1739, two Ruggieri brothers, first of a famous family of firework makers, set off magnificent "artificial fires" at Versailles. Today, the same house provides displays for its festivals.

PIX, Inc.

Children of Peacetime Paris Thrill to the Return of Punch and Judy

Germans prohibited the puppet shows during the Occupation. But now puppeteers in booths in parks again present varied programs. Paris youngsters are enchanted with the antics of Punch and Judy. Of Italian origin, the squeaky-voiced Punchinello and his raffish wife are such ancient characters that no one knows who invented them. These delighted children know every move and character by heart, and shout in enchanted anticipation as the plot unfolds.

In the basket each washed, crisp lettuce leaf was shaken thoroughly dry so that it was ready to drink up its freshly mixed dressing (page 61). Simone told me the cagelike police wagon in which roustabouts were taken to jail was also called a "salad basket!"

Our kitchen was one of the two percent in Paris equipped with a Frigidaire, and we immediately set out to fill it up. We soon discovered that a morning's shopping really took a full *morning*.

"Oh, for a Super Market!"

At home I went into one super market, rolled a double-decker cart through, and found all my supplies under one roof.

In Paris I paid individual social visits to the baker for bread, the pastry shop for cookies, the grocery for staples, separate stands for vegetables and fruit, and the butcher for meat —being careful to avoid one who displayed a gilded horse's head as indication that some of the 10,000 horses sold weekly in the Paris market awaited purchase within.

Continually I had to remind myself, "*Kilo* means a trifle over two pounds, a *livre* is a pound, *litre* stands for a quart, and 100 francs equals 32 cents."

I patronized a fish market where the entire reed-woven store front rolled up to reveal live speckled trout swimming in an aquarium. Above them on beds of graceful ferns reposed choice live lobsters, their claws waving; or their cooked brothers, with the white meat removed and arranged artistically on the red shells.

Half a lobster cost 495 francs—about $1.50. Translated into U. S. money and weights, sole was about 75 cents a pound; gleaming mackerel, 15 cents; and tiny smelts for frying, 23 cents.

Eggs in Glass Bowls

At another favorite market, called, poetically, "Fruits of the Sea," the fishmonger's wife wore a fluted provincial bonnet as she sold glistening blue-black mussels at 13 cents a quart, red pearls of caviar at about 23 cents

an ounce, and kippers on tables of cracked, silvery ice.

At the dairy, eggs in glass bowls were priced at 5 to 7 cents apiece, depending on their size and how recently they had left the nest.

Pasteurized milk—about 12½ cents a quart—was very difficult to find in the land of Pasteur. Most shoppers brought their tin pitchers, with the chain-attached covers, or their jars, and had their supply of "natural" milk—11 cents a quart—ladled out to them from zinc vats.

I could buy cubed and wrapped butter at 96 cents a half pound, but the most popular, and slightly cheaper, butter squatted in watermelon-sized yellow mounds on marble slabs.

The proprietor filled customers' orders by deftly slicing off a portion with a taut wire held stretched between both thumbs and forefingers. It was such a simple and effective operation that I complimented him on it once.

"Thank you," he replied, "but we do not think it extraordinary. In France we have the expression for someone who is not very smart—'He could not invent the thread to cut the butter.'"

Terraces of round and creamy Camemberts were stacked between protective layers of golden, clean, sun-fresh straw. Chèvre, recognizable immediately as being made of goat's milk, was 19 cents. Port du Salut, made by the Trappist monks; Roquefort; Gruyère;* and demi-Swiss—snowy morsels from the French Alps—all found their way to our cheese platters.

We learned to honor the custom of cutting a Camembert in triangles radiating from the center of the "pie." We found out that a Camembert was improved by carefully scraping the crust, buttering it lightly, and sprinkling it with toasted crumbs or almonds.

Brie we cut always in wedges, down to the last guest. A gentle rain of caraway seeds added zest to it.

Cheese was always served at our table with individual crisp rolls six inches long. I remember childhood struggles in California over who would get the crusty heel of the French bread. Here were no table tussles—the rolls were *all* heel!

Pastry Shop Fantasies

Fabulous fantasies held us spellbound before the windows of the pastry shops. A few cents would buy a fat *baba au rhum*, topped with a perky stem of green citron. Blushing red with strawberry syrup, they always looked to me like happy peaches that had had too much to drink. Spiraled pastries imitated ice-cream cones, custard-filled and cherry-decorated. Crisp meringue boats sported sails of triangular sheets of chocolate.

Bossier's pastry chef created a caramel-coated cream puff no bigger than a glistening walnut. He could make a fluted pie the size of a 50-cent piece—just big enough to accommodate three gay-looking cherries. Tea-party cookies bore names as charming as the sweets themselves—"cat's tongue," slender slivers of bittersweet chocolate, and "tiles," cooled over a rolling pin to make them look exactly like feather-light, curved roofing sheets.

Rice, a very scarce item, I found at the granary. There, bulging from finely woven burlap bags which took up so much of the sidewalk that passers-by had to step into the street, green split peas, rich brown-red kidney beans, amber chick-peas, marble-white rice, and some yellow and black grains merged their tones in a color symphony. Above all, as if to drive any passing bird to final distraction, hung golden millet sprays bursting with plump kernels.

Artistry in Lard

Had I shopped blindfolded, the aromatic casks of wine-cured green, and wrinkled black, olives mixed with the pungent odor of hanging bunches of rich sausages, including salami, would have told me I was at the pork butcher's. His excellent bacon, in chunky slabs ready to be cubed for soup, sold for 50 cents a pound.

His special pride, a pure-white mound of lard, he renewed daily and decorated with a different design each morning and afternoon. His knife-drawn masterpiece was a rose, its petals scooped out, its center dots of cloves, its stems and leaves the greenery of thyme.

One of my marketing streets, Rue St. Dominique, where the Eiffel Tower superintended my selections, was just around the corner from our apartment. I soon learned never to enter unequipped with a string shopping bag. And how it could expand! Magically, there always was room for one more item, whether it was a tiny, toylike waxed barrel of fresh cream or an oversized melon.

Few merchants "bag" their wares, although items such as grapes, as a special concession, were frequently put in fragile, cornucopialike containers. Certain pastries, too, were enveloped in thin and crackling paper, whirled, and handed out with two "rabbit ears" where the ends were twisted together.

* See "August First in Gruyères," by Melville Bell Grosvenor, National Geographic Magazine, August, 1936.

International News

From Sidewalk Cafés on the Champs Elysées Patrons Watch the Parisian World Go By

Customers may dawdle for hours over coffee, cognac, vermouth, or beer; no one hurries them. Sawyers marked with drink prices now furnish a nostalgic note; waiters used to tot up the bill from piled dishes, but postwar prices made the system hopelessly obsolete. Most imposing of twelve avenues that radiate like points of a star from the Arc de Triomphe (left background), the Champs Elysées was originally marsh and in 1800 had only four houses.

Unwrapped carrots and bananas would bristle through the bag's netting like orange and yellow miniature cannons, but they could not escape. But peas and other small delicacies were a problem. I could always leave a trail of cherries, apricots, and plums of which Hänsel and Gretel would have been proud.

An American friend told me the first time she went marketing she was on the search for 50 pounds of ice. She did not know she was expected to provide receptacles for her purchases. The merchant hacked off a block of ice and offered it to her, without even so much as yesterday's *Paris Soir* for insulation.

Visions of chilblains danced in her head, but fortunately a friend of the proprietor's seated at a back table said, "You may have my paper if you'll wait until I finish the sports section."

Shopping for Grapes a French Rite

The Paris housewife soon collects a spindle full of deposit slips. If you fail to take your own jar, you pay a 5-cent ransom on the jam glass provided for your cream. Merchants charge for the bottle in which compotes of pear are preserved. Woven reed berry baskets are valued at 16 cents; tiny Perrier water bottles, about a penny and a half.

Oil, vinegar, and wine bottles are redeemable, too. Only those for champagne do not bring a refund. They come under the category of "lost bottles"!

Rue Cler, four short blocks from the outdoor stalls of the Pont de l'Alma market, I found infinitely quieter but slightly more expensive. The street was lined with perambulating carts that held jewels of raspberries, never squashed by being sold hulled, American-style, but round, firm rubies of sweetness. Mirabelles (a variety of damson plum), blushing yellow and red sunset colors, at 9 cents a pound, made the best fruit jelly I ever tasted.

Here knowing French housewives shop for grapes as they choose their vintage wines. They know not only the district in which the fruit is grown, but the estate that produced them, and on which side of the hill they received their sunshine.

On Rue Cler royal purple eggplants were 8 cents a pound, and green cucumbers 12. Plump red tomatoes at 4 cents a pound sat next to fat, buttony mushrooms. Every item, by law, bore a sign which gave the price paid by the merchant to the wholesaler, and that to be charged the customer.

Wary housewives kept a sharp eye out to see that they did not pay more than the legal markup. Cards reading, "Lemons, 145/170; Peppers, 35/44; Green Gages, 62/78" were familiar sights.

For 22 cents a pound I bought romaine lettuce that was so young and green I could never bring myself to defile the tender center stalks with a dressing. The woman proprietor at that vegetable stand always totted up my bill on a black iron slate, which was really the table of her scales. With a cheerful, "A thousand thanks, Madame," she would then erase the chalk figures and be ready for her next customer.

Downtown, near the church of the Madeleine, a "luxe" store sold ripe strawberries so sweet that only the double cream we poured on them needed sugar. There fragrant, hand-picked peach-apricots were displayed individually in waxen green fluted cups, as if each were a giant bonbon.

Purple figs, each on a puff of tissue-paper accordion pleats, stood side by side with golden pears still warm from their sun-drenched, espaliered branches.

I bought good-sized clusters of amethyst grapes, at 63 cents, which were so nearly perfect they looked like imitations. They were still lightly and evenly dusted with powder from the vineyards, proving they had not been disturbed by the picker's hands as they were snipped from their vines. Silver-tied, Nile-green grapes beside them were as translucent as the clear waters of the Riviera, from which they came.

One day I was surprised to see a small box of dull, wizened fruit among all the splendor.

"Now, who in the world would buy peaches that looked like that?" I demanded.

"They're almonds, Madame!"

And the merchant cut one open to reveal the ivory nut imprisoned within. From my first crunchy bite I was a fan. They differed as much from ripe, dried almonds as juicy grapes do from raisins.

Sun-decorated Apples

The shop's special pride was a small table of apples that, selling for 25 to 35 cents apiece, had been decorated by King Sun himself. Maskings had been applied while the fruit was still on the tree, then removed after the apple had "tanned," to reveal complicated pictures.

Sharply etched airplanes, windmills, crowns, pairs of lovebirds, horseshoes arching above sailing ships, and, most wonderful of all, an antlered stag's head encircled by a hunting horn, were among the designs.

Food prices fluctuated from day to day. Some weeks potatoes, at 2 cents a pound, cost less than a "flute" of bread. It depended on what was in season. Certainly I saw no shortage of good food. Today all wartime

Kodachrome by Willard R. Culver

A Poem in Structural Steel, the Eiffel Tower Arches Skyward over Paris

Only New York's Empire State and Chrysler Buildings top Gustave Eiffel's 984-foot wonder of the 1889 Paris Exhibition. These visitors tread the esplanade of the Palace of Chaillot, where Trocadéro Palace once stood.

Kodachrome by Willard R. Culver

Artists Love to Sketch Street Scenes in Montmartre, a Paris Hilltop, Where Visitors Dine at Sidewalk Cafes

Traffic-dodging waiters, crossing the street, carry tasty dishes from three restaurants to tree- and umbrella-shaded tables in the Place du Tertre. The basilica of Sacré Cœur, with its gleaming domes, overlooks Paris from a height of 335 feet above the Seine.

Chartres Cathedral Appears in Chalk on a Paris Walk

In Place du Théâtre Français an itinerant artist reproduces the Cathedral's graceful twin towers, huge rose window, and ogive windows directly above the entrance. The original, which stands in Chartres, is France's masterpiece of early 13th-century Gothic art.

A vignette of Paris pauses to pay homage—a boy en route to sail his boat in the Tuileries Gardens, a gentleman promenading his small dog, and between them a young man who prefers to concentrate on living art (the girl in checkered jacket).

Appreciative passers-by drop coins into the small box.

With unlimited sidewalk for his canvas, the artist may draw a number of landmarks. Upon his departure, however, passing feet soon obliterate his work.

Playbills and public notices are posted on the column behind the railroad conductor.

A corner of the Palais Royal is the backdrop of this scene. Begun in 1629 as the residence of Cardinal Richelieu and next occupied by Cardinal Mazarin, the palace later sheltered relatives of the royal family; hence its name.

Kodachrome by Willard R. Culver

↑ Niki, the Author's Daughter, Helps Make a Bottle Tree Grow

In wine-drinking Paris shoppers make deposits on many food containers, including berry baskets. Merchants pay refunds on all bottles except those for champagne. These empties are washed and hung on the rack to dry before they are redeemed.

↑ Knights of the Winetasters Admit Two Americans to Their Ranks

In an old chateau the author and her husband (left) are initiated into an order founded in 1703. Each is garlanded with a ribbon from which hangs a winetaster's silver cup. They were dubbed with the root of a gnarled grapevine (right).

Reproduction by Willard R. Culver

In the Capital of Fashion the Author Models a Double Manteau

Pierre Balmain, creator of this reversible cloak, explains its versatility. Shopping in such a salon is far beyond the means of the average Parisienne, who makes many of her own clothes.

Gallant Gendarmes Often Stop Champs Elysées Traffic for This Charming Driver. Author and Daughter Ride in Her *Fiacre*

Eternal Flame Flares Above the Tomb of France's Unknown Soldier. He Sleeps Beneath the Arc de Triomphe

This victory monument, begun by Napoleon, stands in the Place de l'Etoile, so called because twelve avenues radiate from it like rays from a star. Most impressive of these is fashionable Champs Elysées. War veterans daily replenish fuel for the eternal flame.

Kodachrome by Willard R. Culver

Twin Towers, Thin Spire, and Flying Buttresses Identify Notre Dame

Visitors to Paris recognize the oft-pictured Cathedral almost as readily as they do the Eiffel Tower.

The majestic structure rises on the Ile de la Cité in the Seine. Its cornerstone was laid by Pope Alexander III almost eight centuries ago.

Notre Dame was marred by alterations during the reigns of Louis XIV and Louis XV and damaged during the French Revolution, but it was painstakingly restored about 100 years ago.

The Cathedral is rich in historic associations. Of its many famous ceremonies, the crowning of Napoleon and Josephine was the most magnificent.

Notre Dame's Gothic architecture, rooftop gargoyles, stained glass, ornate sculpture, and religious relics are a textbook to students of medieval church art.

Sightseers in the Gardens of Versailles Never Lose Interest in the Dazzling Fountains

Latona Basin's statues depict Latona and her children, Apollo and Diana. Water spouts represent the frogs into which Jupiter changed Lycian peasants.

Excursionists on the Seine Pass a Miniature Bronze Statue of Liberty. It Stands on the Isle of Swans Below the Pont de Grenelle

Children in Luxembourg Gardens Sail Toy Yachts Under the Marble Gaze of Sculptured Figures

Once the private preserve of Marie de Médicis, widow of Henry IV, the gardens now are public property. Luxembourg Palace (*left*) has housed royalty, confined prisoners of the Revolution, served as seat of the Senate, and now holds the Council of the Republic. Here the indecisive Paris Peace Conference of 1946 was held.

Kodachrome by Willard R. Culver

A Gobelin Weaver Sees Her Design Mirrored Through the Threads

This girl is one of some 50 weavers employed in the Gobelin factory in Paris.

Tapestry weaving was begun here in 1601 by two Flemish weavers, who set up their looms in a dye works owned in the 15th century by Jean and Philibert Gobelin. The brothers' name eventually became a popular synonym for fine tapestry.

For three centuries the French Government has owned the factory. Today it produces large tapestries, mostly for public buildings. For many years its priceless pieces went into palaces of royalty or were given to persons of distinction.

Here the design is drawn from the reverse side on the vertical warp threads, the tapestry's colorless foundation. The transverse weft threads, which are passed over and under the warp by hand, compose the pattern.

A sliding mirror (center), seen by the operator through the warp threads, shows what she is doing.

The average Gobelin weaver produces about 1½ square yards of tapestry a year. A few very skilful workers can complete 3 to 3½.

Kodachrome by Willard R. Culver

Niki Builds an Eiffel Tower with Her Blocks

One of Miss Clark's first trips in Paris was made to the Louvre to see her namesake, the famed Winged Victory, Nike of Samothrace.

Simone Washes Lettuce in a French Salad Basket

This versatile French girl was the Clarks' nurse, cook, and friend. Her English was as good as her French; Niki loved her in both languages.

Kodachrome by Willard R. Culver

Kodachrome by Willard R. Culver

Bronze Charioteers Look Down upon the Tuileries Gardens from the Arc du Carrousel, a Reminder of Napoleon

The guillotine stood here in the Place du Carrousel before it was moved to the Place de la Concorde, where Louis XVI and Marie Antoinette met their fate. Pavillon Mollien, one of the group of buildings comprising the Louvre, stands on the left. The arch commemorates Bonaparte's victories at Ulm and Austerlitz.

Spitted Fowl Spin and Roast Outdoors on a Montmartre Grill

For some 30 years Montmartre was a notable art center, marked by meager living, original thinking, and unconventional gaiety. By the end of World War I it was invaded by night clubs, cabarets, and crowded dance halls. But old traditions linger, and landmarks of the historic past are abundant.

In this vine-covered court of La Bonne Franquette on Place Dancourt, and in many other near-by restaurants, fervid painters gathered in the late 19th century to discuss the revolution they were creating in art.

Claude Monet, Camille Pissarro, Alfred Sisley, and their friends of the Impressionist School loved Montmartre, though they dwelt in wretched quarters.

Here, too, Paul Cézanne, Paul Gauguin, Dutch-born Vincent van Gogh, and many of their followers held forth.

Pablo Picasso, today pushing 70 years, and Henri Matisse, now 81, were younger members of this pioneering group.

Kodachrome by Willard R. Culver

A "Strong One" Proves His Strength by Carrying Two Beefs

This Parisian works in the Central Markets, an expanse of iron pavilions in the Rue Baltard. The city's daily vegetables, fruit, butter, fish, poultry, cheese, eggs, and meat pass through the market. Long before dawn it is thronged with farmers and wholesalers.

Badges and Hats Proclaim Men's Right to Be Known as Strong Ones

Proud wearers have demonstrated their ability to carry 440-pound loads 70 yards through the Central Markets. Paris market women (*Femmes des Halles*) are celebrated like the fishwives of Billingsgate for the vigor of their language.

rationing has ended. While I was there, sugar, oil, and coffee still were restricted, but the merchants were liberal about selling them all without coupons, since their shelves were so well supplied.

I found that, on the whole, food prices were practically the same in Paris as they were in Washington, D. C. On a monthly basis my budget for four people, excluding entertaining, ran around $125 a month. The French themselves do it more cheaply, averaging about 80 cents a day per person. And on that they eat bountiful meals, even the children.

One afternoon after a little French playmate had eaten a full-course lunch with us, I took the children to the Luxembourg Gardens (pages 45, 59). At 4 o'clock Jeanne began to pant, "I'm hungry!" Thinking to provide a treat, I said we would all have some cookies when we got home.

"No, thank you," she replied. "I prefer something respectable!"

In four months I never got used to the fact that all the markets closed on Mondays. Some even shut down on Saturdays, making it a long week end from Friday to Tuesday.

I had plenty to do, however, when the markets were closed. I needed a cleaning woman who could cook, and many are the hours that I spent looking for her in vain. So I took over the operation of "le Hoover," and Simone did the cooking.

My French friends warned me not to pay more than 10,000 francs ($32) a month salary. I scandalized them by giving Simone twice as much, in addition to board and a lovely private room on the courtyard; but she was with us, and on time, every single day from our arrival until the day we left.

Simone Rescues Cooking Secrets

Simone, whose experience was supposedly purely nursemaid, turned out to be marvelous in the kitchen. She was full of salty observations over her steaming soup kettle. "Well, that will fill up one corner, anyway!" she would twinkle. Or, drawing a cross with the bread knife over a loaf before cutting into it, she would say, "Country people always thank the good Lord for the daily bread!"

I learned a lot from Simone. When I skimmed what I called "scum" from the top of the boiled milk, she rescued it to enrich a stew.

One day I decided to straighten out the screened pantry which perched outside the kitchen window. I gathered up a handful of dried leaves and twigs and was about to toss them out when Simone snatched them in panic. "You're throwing away the secrets of French cooking!" she cried. They were the herbs with which she had been making our sauces so tasty.

When we had dinner guests, Pierre, the *concierge*, assisted by an itinerant cook, changed his denim apron for an immaculate white dinner jacket and served for us, for $3. He could construct a tower of fruits or decorate a platter of lobster that would be the envy of the Ritz's chef.

Our laundryman was a rosy-cheeked cherub who did our heavy linen sheets—they were actually more like hemstitched canvas—for 19 cents apiece. My nightgowns were pressed so beautifully they could have hung in the show windows on the elegant Rue St. Honoré.

My husband's shirts, because they were starched all over, not just at the collar and cuffs, French fashion, cost approximately 50 cents each. The laundry had a specialty, "American glaze," whereby the collar was given such a high sheen it looked like celluloid.

Our laundry mark was sewn in with red thread. My husband would often unfurl a handkerchief with two oversized letters and a red cross blazing away in one corner. Our weekly bill averaged $3, slightly under what I paid in Washington.

Our gas bill usually ran about $2.40 a month, and electricity over $12. Our regular morning and evening baths turned out to be an expensive luxury, but the telephone bill was what really threw our budget out of line. It never totaled less than $15 a month, and went as high as $25.

The lovely view from our windows continually reminded us that there was all Paris waiting to be sight-seen. We went first to the end of "our" esplanade to the Hôtel des Invalides. There, in the park, Niki played every day in the shadow of the dome where Napoleon is sleeping among his tattered battle flags.

Dining Nearly 200 Feet Aloft

Marcel and Muriel Tourrenc, the charming French couple who became our closest friends, took us, along with their little son, Patrick, to that lacy steel symbol of the city, the Eiffel Tower. We lunched in the spacious glass-enclosed restaurant on the first platform of the structure, almost 200 feet above the sparkling Seine (pages 49, 58).

From a higher platform the children sailed paper airplanes down into the panorama spread for miles in every direction. The alabaster-white basilica of Sacré Cœur gleamed atop Montmartre (page 50). The Arc de Triomphe sent out its 12 perfect rays of blossoming chestnut-lined avenues (pages

National Geographic Photographer Willard R. Culver

Winged Victory of Samothrace Holds Honored Place in the Louvre, Treasure House of Art

Three incomparable art works draw most visitors to the Louvre: Leonardo da Vinci's *Mona Lisa*, Venus of Melos, and this Nike, goddess of victory. Unearthed in 1863, the exquisite Hellenistic sculpture represents the goddess as a ship's figurehead to commemorate a naval victory in 306 B.C. of Greeks over the Egyptians.

National Geographic Photographer William R. Culver

To Adorn Costume Jewelry, Golden Sea Horses Swim in Plastic Seas

A shop on the Avenue de l'Opéra features sea horses in metal and plastic bracelets, medallions, and clips (page 70). Artists love the bizarre outlines of this little fish, which abounds in warm seas throughout the world. With prehensile tail like a monkey's, the sea horse clings to waving marine grasses, while through a tubular beak it sucks in minute shellfish. Father sea horse receives eggs from the female into an abdominal pouch, from which young hatch later. Both sexes utter monotonous drumming noises.

47, 55). The majestic buttresses of Notre Dame Cathedral soared in carved stone against the sky (page 56).

We made a pilgrimage to the Louvre to introduce our little girl to the original Nike of Samothrace, after whom she was named (opposite page). We chose to go on a special night when the statue would be theatrically lighted.

Winged Victory stood at the top of a regal staircase, floodlighted, then back-lighted, then bathed in the glow of a strange light in which she mysteriously looked exactly as if she were riding the prow of a ship, her draperies wind-blown above the waves of the sea.

Once I joined a crowd a solid block long, six abreast, in the arcade that led to the entrance of the Musée Grévin. We were all awaiting the afternoon opening of the waxworks that rival Madame Tussaud's in London.

My first thrill was the realization that the bay-windowed old Burgundian, asleep over his newspaper on the visitor's bench, was made of wax! The figure of Serge Lifar, the dancer, looked as if he had just alighted from a leap, and his ballerina partner was absolutely life-like, to the real runs in her pink tights! Scenes from the French Revolution were depicted with terrifying authenticity, each one staged in a dungeonlike cubicle.

A rare treat was visiting the looms that produce the exquisite Gobelin rugs and tapestries. Hundreds of French and foreigners each week crowd the ateliers to watch the artists manipulate the dozens of colored bobbins that leave a trail of living pictures on webs of strung linen.

Some of the "painters in thread" followed their patterns by mirror, weaving from the underside. When finished, each figure looked as if ready to speak, and each flower was modeled so delicately we could almost enjoy its fragrance (page 60).

Window-shopping in Paris was a perennial delight. At times the merchants would agree on a single theme for displays. Roses bloomed in the show windows on the Avenue de l'Opéra for two solid weeks in June.

Mother Catherine's Restaurant Distills the Essence of Montmartre

Founded in 1793, this restaurant on the Place du Tertre may have served notables of the French Revolution. In fine weather outdoor diners throng the small tree-shaded square on the crest of Montmartre's hill, highest point in Paris. Oil lamps illuminate tables set under the trees, and wandering accordionists, fortunetellers, and portrait sketchers circulate among the diners (pages 50, 63, and 71). In summer so many tourists frequent nocturnal Montmartre that waiters hear as much English as French.

Sign at upper right says "Free Commune of Old Montmartre." On April 11, 1921, some painters and writers met in Le Lapin Agile, a rustic cabaret near here, and humorously seceded from the rest of France. Members of this Free Commune held fairs in the Place du Tertre and featured swimming races that took place in wagons filled with water.

Here Beats the Heart of an Exciting City and Nation

Round the Place de l'Opéra cluster hotels, banks, steamship, airline, and telegraph offices, and shops. Called by everyone "the Opera," the ornate structure that dominates the square bears the official title "National Academy of Music and the Dance." World's largest theater in area, though not in seating capacity, the Opera draws on State support to stage its costly spectacles. Stairways lead to underground stations of the "Metro," Paris's excellent subway system.

On the fringes of café terraces and on side streets, hawkers peddle anything and everything in four languages. To get a black-market quotation in pre-free franc days, travelers outside the American Express stared with a tourist's innocence at heroic figures on the Opera's roof; instantly Levantine whispers quoted the day's figures.

National Geographic Photographer
Maynard Owen Williams

Georges Tutton

It's a Gay Whirl in Paris for These Merry-go-rounders

Fair-goers on the half-shell spin round at the end of spokes like the ribs of a giant umbrella. Summer fairs and carnivals make the rounds of the capital's "exterior boulevards," which circle close to old city gates but now lie well within the spreading metropolis. In 1793, near where these boys watch their elders have fun, a guillotine stood; 1,396 victims lost their heads.

The Singer Sewing Machine Company presented tiny baby dresses embroidered in circlets of dainty Mlle. Cécile Brunner (sweetheart) roses.

The windows of the ten-cent stores, Monoprix and Prix-Unic, were full of celluloid dolls emerging from crepe-paper American beauties. Even the wigmaker's shop had roses nestled in the false curls that gleamed in his showcases.

A specialty shop that demonstrated the French genius for craftsmanship was L'Hippocampe (The Sea Horse). For years I have collected the adorable little swimming charmers. It took Paris to devote an entire shop to them (page 67).

Treading water in a window aquarium were two black and shiny live ones that had come from the waters near Biarritz.

They were surrounded with exquisitely made, delicately modeled key rings, charms, cuff links, buttons, earrings, bracelets, pins, and clips all bearing the motif in silver or gold.

Some of my happiest moments were spent watching the performing sea horses, tails curled around the green sea grass, slide like little firemen down their waving underwater poles.

Bags, gloves, ribbons, and blouses were bargains, but the greater part of the merchandise was expensive, especially dresses and suits. Most Frenchwomen make their own clothes, and a demonstration of pattern cutting or hatmaking always drew an enormous crowd.

One morning a department-store demonstrator held at least 200 women, including me, spellbound with an animated show illustrating how a variety package of collars and cuffs could change the personality, utility, and even the season of the same dress. That appealed to the thrifty Parisienne, who, wielding her needle as a sword for economic independence, will make exquisite blouses out of her grandmother's eyelet-embroidered petticoats, and

dress her little boys beautifully in hand-sewn trousers made of her husband's wedding suit!

The thing that most surprised me was the juxtaposition of the dowdy and the chic in what has long been the style center of the world. I think that with most Frenchwomen, especially since the war, their interest in investments outweighs that in vestments.

Part of the thrill of Paris, though, was going to the chandeliered and velveted miniature theaters where designers showed their latest creations. I saw whole collections, such as Jacques Fath's, that I should have liked to take home with me intact. Pierre Balmain's superb opening, held in a huge park, with tall trees waving against upper-story windows to make us feel as if we were in a diving bell, sparkled with creative mastership (page 53).

Restaurants Biggest Paris Thrill

The best entertainment in Paris, the one that can be enjoyed night after night, is not to be found at the spicy Folies Bergère or the high-kicking cancan stronghold, the Bal Tabarin. It is not even found in the cinemas that show American movies with dubbed-in French issuing magically from English-speaking lips. It lies in the restaurants of Paris.

I can think of no place in all the world where it would be more heart-breaking to be on a diet. The number of small restaurants with large menus is amazing. Whether I went into a *bistro* that did not offer me even a paper napkin, or into an expensive café that wrapped each heated plate in a separate warmed napkin as it came from the kitchen, as long as I was dining in Paris I had a new taste treat to look forward to every day (pages 50, 63, and 68).

The Parisian restaurateur serves you not only a meal, but beauty that is also sustenance for the soul. Each *salade niçoise* with its vermilion rings of red peppers, each cerise tart in its flaky shell, each serving of *pommes soufflées*, goldenly toasted and resembling miniature pillows puffed to incredible lightness, seems to have been prepared for a photograph in color.

Dining surroundings in Paris are lovely, too. At Le Grand Véfour, glittering with hand-painted mirrors "just as Napoleon used to like it," I was served a tiny bird garnished with white grapes and a flame of cognac to light them up.

In the shadow of the wings of the giant old windmill that turns above the Jardin du Montmartre, I was tempted with a chicken so crisply roasted that it crackled like Chinese duck. At the Chauland, only a block from our apartment, our favorite waiter brought us pâté de foie gras studded with truffles.

Historic Place du Tertre affords treats for eye and ear as well as taste. First comes the music of a mandolin played by a strolling musician. Next, an operatic voice fills the air, holding the entire square absolutely quiet. Then an artist with scissors bangs for attention on a platter with a spoon and cuts ordinary paper tablecloths into patterns that would defy Burgundy lacemakers.

In France, where a meal without wine is like a day without sunshine, my husband and I were delighted to be initiated into the Knights of the Winetasters (page 52). In the ancient château of the Clos de Vougeot, called "the cathedral of wines" by former American Ambassador William C. Bullitt, we sat down to a repast such as I had never before seen.

M. Georges Faiveley, founder of the modern chapter of the Confrérie des Chevaliers du Tastevin, a continuation of an order established in 1703, led some of the toasts to wine. One was "like bottled velvet and satin"; another "deserved to be drunk only with one's hat removed and one's eyes raised toward heaven"; and the slow savoring of a third afforded "the same pleasure as watching the spreading of a peacock's tail"!

Inauguration of new members was presided over by officers dressed in historical robes and following ceremonies dictated by rites over 200 years old. Each initiate, as his name was called, stepped forward to receive a tap on the shoulder with a gnarled and ancient grapevine root, and to be garlanded with a ribbon from which hung the emblem of the order, a silver winetasting cup.

Usually one must have years of background knowledge of wines before he is invited to join the select group. Very proud that few other women in America are members, I willingly took the vow to support the honor of the wines of Burgundy, but I must say I consider myself no expert on the pressed grape. "Now that we are Chevaliers du Tastevin," I tell my husband, "we can tell the difference between white wine and red!"

Weeks on the Riviera

The end of September came before we knew it, bringing with it an enchanting two weeks on the pine- and sea-scented Riviera and then our date with Air France to return to America. As we settled down in the plane, I felt a nostalgia for the Paris which I had not even left.

I remembered the workmen sweeping early-morning streets with their twig brooms; the artist who drew in colored chalk on the sidewalk, leaving a resplendent Jeanne d'Arc triumphantly beside the Gothic arches of

Leslie P. Greenhill

Name Your Book or Print; Left Bank Bookstalls Probably Have It

This open-air paradise for browsers, as typical of Paris as sidewalk cafés, stretches for blocks along the quais, or riverside streets on the Seine's left bank. Boxlike bookcases are clamped to the parapet overlooking the river. Owners sit on small folding chairs near the curb and offer endless variety, from treatises on steam engineering to gold-illuminated vellum pages of 14th-century missals. Prints feature maps, views of Paris, sporting scenes, and 18th-century gallantry. Often the prints turn out to be modern copies, hand-colored.

Chartres Cathédral (page 51); the flower vendor at the Boccador restaurant with the shallow reed basket overflowing with dewy lilies of the valley.

I remembered the exuberant students who stopped our car, demanding an embrace, on Bastille Day; the dancers at the Fête de Versailles, looking like miniature porcelain figures come to life, their every pirouette reflected in the clear waters of the Neptune Basin (page 57); and the man in the post office in the Aérogare de Paris, who looked like a sorcerer, measuring on his little scales just the right combination that would send my letters magically flying through the air.

As we left Paris, I remembered standing in the upper chapel of Sainte Chapelle, with the morning sunlight shimmering through its 15 stained-glass windows. It was like being in the center of an enormous jewel. Closing my eyes, I could see the view from the terrace of the Pavillon Henri IV at St. Germain en Laye, 13 miles from Paris; the Bois de Boulogne; Longchamp; and the silver Seine in the slanting sunlight of late afternoon.

A precious memory picture came to me of the Saturday night the French were celebrating, below us on the esplanade, the anniversary of their liberation (page 44). When the brilliant fireworks began to cascade through the dark night, I awakened Niki. "Oh, Mother," she thrilled, "the sky is full of flowers!"

And now we were winging through that same sky, going home, and yet leaving home. In my heart I realized the truth of the old saying —"Everyone in the world has two countries—his own and France!"*

* See, in the National Geographic Magazine: "Paris Lives Again," December, 1946, and "Paris in Spring," October, 1956, both by Maynard Owen Williams; also "Paris Freed," by Frederick Simpich, Jr., April, 1945.

Down the Susquehanna by Canoe

By Ralph Gray

Illustrations by National Geographic Photographer Walter Meayers Edwards

NATTY BUMPPO, the Deerslayer, paddled cautiously southward on Otsego Lake's blue expanse to meet Chingachgook, his Indian ally.

At Council Rock, their prearranged meeting place, the redskin sprang onto the rock, jumped aboard, and the two friends swept away. Hostile Indians dropped from overhanging trees too late to harm the heroes of James Fenimore Cooper's *Leatherstocking Tales*.

More than two centuries later, our canoes *Susque* and *Hanna* nosed into Council Rock. Though no Indians remained to greet us, the place was fitting for the start of our Susquehanna canoe trip. A few feet away the river begins as Otsego's tiny outlet.

From its central New York State source, the Susquehanna River zigzags across Pennsylvania and empties after 444 crooked miles into Maryland's Chesapeake Bay (map, page 77). Our plan was to canoe this distance, plus certain tributaries, following in the wake of untold generations of red men.*

Canoe "Expedition" Starts in Station Wagon

Our Susquehanna River canoe "expedition" had begun in decidedly un-Indian style by "embarking" from Washington, D. C., in a station wagon. Soon the vehicle was cooling off in the shadows of steep hills surrounding "Glimmerglass," as Cooper called Otsego Lake.

We made our first camp at Mohican Point on the west shore, and knew we had not expected too much of Otsego, for such beauty is hard to overrate (page 81).

While Toppy (Walter Meayers Edwards) made his first of 1,200 photographs, our five self-styled "muscle men" busied themselves about camp.

"You may have to look twice to see my muscles," said Alex Toth, our 230-pounder, "but I'm always ready to help, especially at mealtime." Harold Gray, my brother, and Caleb (Cay) Hathaway, whose canvas canoe *Sonny* was to make a third unit in our flotilla, had done the Potomac River with Toppy and me two years ago.† Dallett Hoopes and Donal Blakley supplied the youthful touch.

Others who joined us later as vacation time ran out for the originals were Adolph Gude, Jr., Gilbert Gude, James Evans, Gordon Irvin, and James Douglass. Don, Dal, Toppy, and I went the whole distance.

Easygoing Dal, a Haverford College junior, immediately made a hit with his elders by laughing heartily at all their jokes. Athletic Don, a University of Maryland freshman, regarded every activity as a test of strength. He was happiest at finding a hard way to do an easy job. "Muscles," "Bulges," "Mighty Joe Young" we called him. Also "GE," for his ability to make food disappear like a disposal unit.

Even now, the active youngsters were out in *Sonny* disturbing Glimmerglass's reflections. Here young Deerslayer first matched wits with hostile Indians.

Cooper wrote of Otsego because it was a spot he had known and loved from boyhood. Shortly after the Revolution, Judge William Cooper, an enlightened land promoter, founded Cooperstown, at the south end of Otsego Lake. In 1790 he brought his family, including year-old James Fenimore, to the wilderness settlement.

After schooling and a career at sea and abroad, the novelist moved back to Cooperstown. Fenimore House, on Otsego's west shore about half a mile north of the parklike village, is a stately modern Georgian stone mansion built on the site of Cooper's home. Now a museum, it houses the central quarters of the New York State Historical Association.

Baseball's "Hall of Fame"

Other Cooperstown museums are the Baseball Hall of Fame and that "rural Williamsburg," the Farmers' Museum.

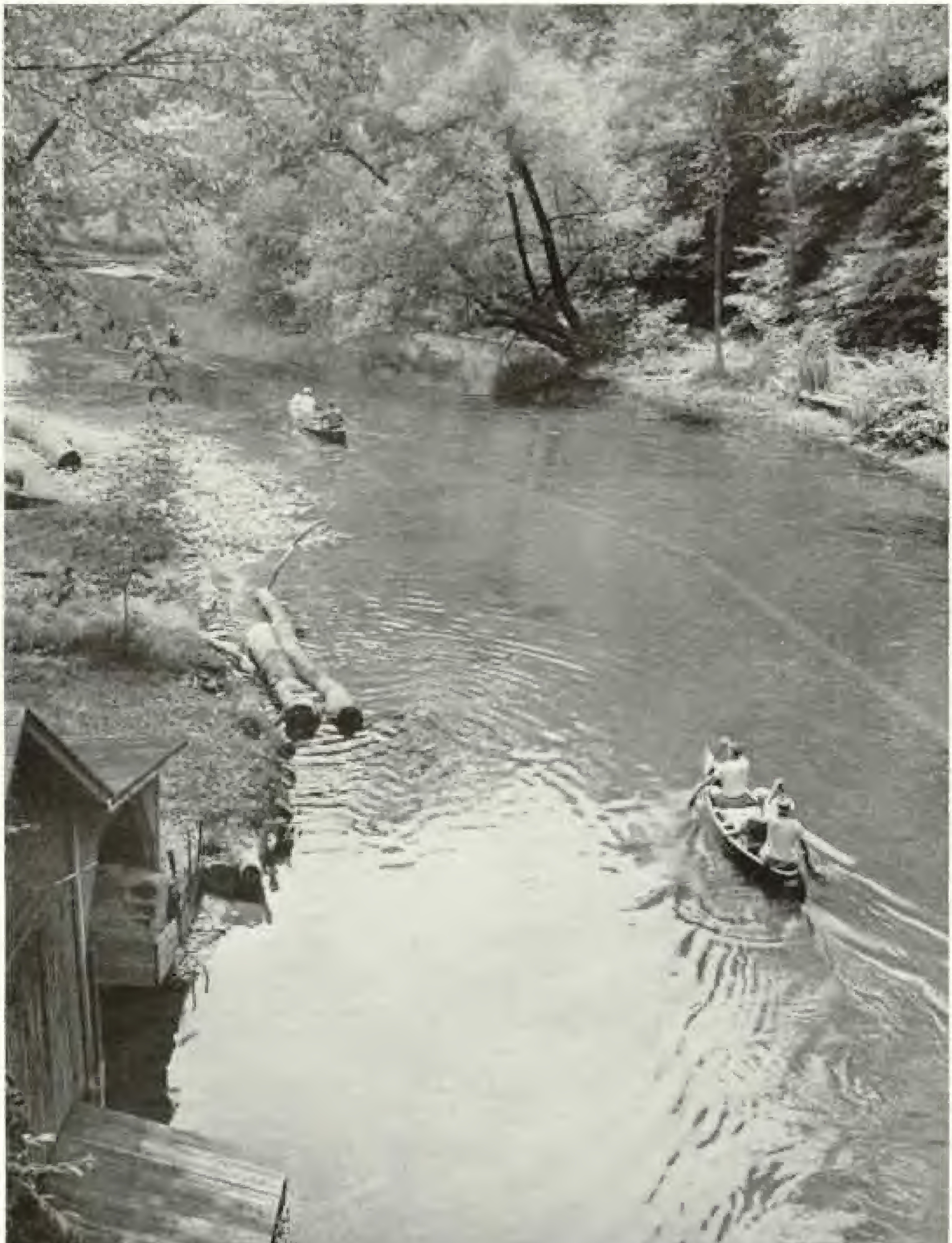
In 1839, when every locality played its own version of "baseball," Abner Doubleday laid down at Cooperstown a diamond-shaped field, limited the number of players, and set up rules which helped standardize the national game.

We launched our canoes at Mohican Point. *Susque* and *Hanna* knew water for the first time as their 18-foot aluminum hulls splashed into the lake. From the stern of *Susque*, the flagship, fluttered the colors of the National Geographic Society.

"Maybe we should paddle the four miles into Cooperstown with baseball bats," Toppy suggested.

* See "America's First Settlers, the Indians," by Matthew W. Stirling, National Geographic Magazine, November, 1947.

† See "Down the Potomac by Canoe," by Ralph Gray, National Geographic Magazine, August, 1948.



C. Chester Lasell

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

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

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

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

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

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

"Next stop, Chesapeake Bay," crowed Harold.

Summer Dry; River Low

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

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

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

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

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

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

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

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

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

"Who was Clinton?" asked Dal.

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

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

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

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

Curious Cows

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

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

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

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

So we rode the crest of dam-let waters just as had Clinton's men. Riffles and shallow places were fun today, with the swift water carrying us over shoals and rocks that 24 hours before would have meant wading. But portaging around two of Oneonta's three dams slowed us (page 82).

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

"Canoeing Fellows" Make Local News

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

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

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

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

Suddenly it was too much for bailing. Cay beached his craft, turned it over (page 85), and found a hole big enough to put two fingers through. His experienced hands cut out a small piece of spare canvas and with waterproof cement patched the hole. A coat of quick-drying lacquer over the area finished the job.

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

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

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

From Cooperstown to Havre de Grace the Canoeists Ran the Susquehanna

Across lazy pastures, and beneath beetling mountains, the voyagers rode the crooked river over the Appalachians. Covering the West Branch too, they relived history, probed industrial cities, and pitched camp in some of the East's most scenic spots.

Syracuse
Auburn
Geneva
Canandaigua Lake
Seneca Lake
Cayuga Lake
Skaneateles Lake
Oneida Lake
Mohawk River
Cooperstown
Otsego Lake
Council Rock
NEW YORK
Goodyear Dam
Oneonta
Selkirk Mountains
Norwich
Wells Bridge
Unadilla
Otego
Bainbridge
Afton
Susquehanna River
Johnson City
Endicott
Owego
Binghamton
Chenango River
Corning
Horseheads
Elmira
Waverly
Owego
Tioga
Spanish Hill
Athens
Sayre
Great Bend
Tioga Point
Hallstead
Oakland
Susquehanna
Starrucca Creek
East Branch Delaware River
Catskill Mountains
Coudersport
Leonard Harrison State Park
Pennsylvania's Grand Canyon
Wellsboro
Wysox
Towanda
Standing Stone
Site of French Asylum
Wyalusing Rocks
Laceyville
Vestal Tunnel
Tunkhannock
Camp Onawaddah
Scranton
Lake Wallenpaupack
Middletown
Port Jervis
Pocono Mountains
Kittatinny Mountains
Hyner View
Lock Haven
Bald Eagle Mountain
Jersey Shore
Williamsport
Muncy
Shickshinny
Berwick
Nanticoke
Wilkes-Barre
Pittston
Tilbury Knob
Campbell Ledge
Wyoming Valley
Nescopeck Falls
Danville
Bloomsburg
Lewisburg
Northumberland
Selinsgrove
Sunbury
Stroudsburg
Delaware Water Gap
PENNSYLVANIA
Lewistown
McKee Half Falls
Liverpool
Millersburg
Juniata River
Tuscarora Mountain
Clarks Ferry
Duncannon
Harrisburg
Lebanon
Reading
Pottsville
Allentown
Bethlehem
Easton
Phillipsburg
Plainfield
New Brunswick
Princeton
Trenton
Carlisle
Conewago Falls
York Haven Dam
Marietta
Lancaster Creek
Norristown
Burlington
Philadelphia
Camden
Chester
Woodbury
Wilmington
Chambersburg
Gettysburg
Wrightsville
York
Columbia
Long Level
Safe Harbor Dam
Holtwood Dam
Pure Islands
Indian Steps Museum
Coram
Mt. Johnson Island
Mason and Dixon's Line
Conowingo Dam
Port Deposit
Perryville
Havre de Grace
Susquehanna River
Smithsburg
Hagerstown
Antietam Battlefield
Frederick
Baltimore
Chesapeake Bay
Chestertown
Bridgeton
Millville
Atlantic City
Dover
Delaware Bay
Cape May
Milford
DELAWARE
MARYLAND
Berryville
Shenandoah River
Wild Acres
Bethesda
Silver Spring
Annapolis
VIRGINIA
Arlington
Alexandria
Bull Run Battlefield
Washington
STATUTE MILES
Drawn by H. B. Oliver and I. E. Alleman

Harry F. Tuohy

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

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

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

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

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

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

Next day at Bainbridge, however, Alex "found" an arrowhead. It was attached to a "bon voyage" message posted on shore from National Geographic Society member Earl K. Stillman. The letter described the relic as "one of several I have uncovered while spading garden. Perhaps it was made by one of the red men whose trail you now follow. Who knows?"

A Dream Come True

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

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

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

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

It was a good place to look for arrowheads.

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

A Mormon Shrine

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

The American Egret—and Other Birds

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

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

Migrating red-winged blackbirds often filled the skies.

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

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

* See "Utah, Carved by Winds and Waters," by Leo A. Borah, National Geographic Magazine, May, 1936.

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

The Susquehanna system is a many-branching path through mountains, and Athens is one of the crossroads. Clinton (page 70) had followed the upper river to Athens. There he met Gen. John Sullivan, his commanding officer, who had brought an army north along the Susquehanna from Wyoming Valley (the Wilkes-Barre region).

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

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

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

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

A Tablet Tells a Story

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

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

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

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

A Pioneer of Pennsylvania

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

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

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

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

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

How did the "Spanish" creep into Spanish Hill?

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

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

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

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

* See "Drums to Dynamos on the Mohawk," by Frederick G. Vosburgh, National Geographic Magazine, July, 1947.

Kodachrome by Walter M. Edwards

A 500-mile Canoe Journey to Salt Water Begins at Otsego Lake, the Susquehanna's Source

From their first camp at Mohican Point the voyagers paddled to the Chesapeake in 18-foot aluminum canoes in 56 days. James Fenimore Cooper called the lake "Glimmerglass." His hero, Deerslayer, canoed its waters.

Kodachromes by Walter M. Edwards

When He Hears Water Roaring Ahead, Skipper Stands to Scout the River Lest Canoes Be Swept Unexpectedly over a Dam

Paddlers are sliding one boat down a gentle cataract at Oneonta, New York, while others nose *Nesque* into fast waters. Such sloping barriers, with convenient platforms at the bottom to stand on, made portages easy, saved weary steps hauling canoes around dams.

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

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

Kodachromes by Wayne M. Edwards

Kodachrome by Walter M. Edwards

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

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

Susquehanna (Right) and Chemung Squeeze Land into an Arrowhead

Here the rivers join at Tioga Point after missing a confluence at Athens (upper left) by only 180 yards. In the old days, that narrow neck saved Indian portagers a 5-mile paddle around the tongue. Today steel bridges (left) carry motorists across the Chemung and Susquehanna.

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

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

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

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

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

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

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

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

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

Itinerant Artists, Using Water Colors and Stencils, Decorated This Ceiling 80 Years Ago

Hagerman House stands on the site of French Asylum, a Susquehanna refuge for fugitives from the French Revolution. Built in 1846 by a French family, the house now shows little Gallic influence (page 88).

Kodachrome by Walter M. Edwards

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

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

Upended by a Glacier, Standing Stone Made a Natural Cornerpost

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

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

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

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

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

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

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

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

Reduction by Walter M. Edwards

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

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

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

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

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

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

Kodachrome by Walter M. Edwards

Trading Paddles for Miners' Lights, the Canoeists Prepare to Explore Huber Colliery

Wilkes-Barre's monuments to King Coal are mountainous culm heaps, huge breakers where fuel is screened and cleaned, and towering shaftheads such as this. Two miners (right) adjust gear strange to the visitors.

Kodachrome by Walter M. Edwards

A Danville, Pennsylvania, Couple Meets *Susque* and Guides It Through Rocky Shallows to the Bridge

Long before the escort appeared, Danville Boy Scouts smoke-signaled the canoeists' arrival. It was a hot day; the panting dog found the only shade beneath the boat's seat. Pole boats paddle or oars in the shallows, which lack depth for a full stroke.

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

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

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

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

▼ Pioneers Scattered Iron Caltrops to Discourage Moccasined Raiders

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

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

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

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

Vanished Retreat of French Refugees

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

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

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

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

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

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

We passed under Wyalusing Rocks, not even seeing this Susquehanna "must." But at Wyalusing bridge Mason Browning and Jack Welles met us in their cars and hauled us dripping to the top of the rocks, where we spent the night in the dry comfort of Log Cabin Inn.

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

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

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

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

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

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

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

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

At this point we entered Wyoming Valley, that great industrial pocket seamed with coal deposits and filled with cities. What a difference from the farm villages and stockaded forts that the Iroquois and Tory band burned in 1778 during the raid that killed almost 500 men, women, and children.

Where "Black Rock" First Was Burned

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

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

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

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

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

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

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

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

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

"It's an eel trap."

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

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

Concrete Walls Baffle Spawning Shad

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

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

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

Danville rolled some of America's first T rails, and Berwick built some of the earliest all-steel passenger coaches to be used in public service, for New York City's first subway. Bloomsburg makes carpets. We remembered it for the vines and flowers growing high in lamppost pots on the main street.

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

A Smoke Signal!

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

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

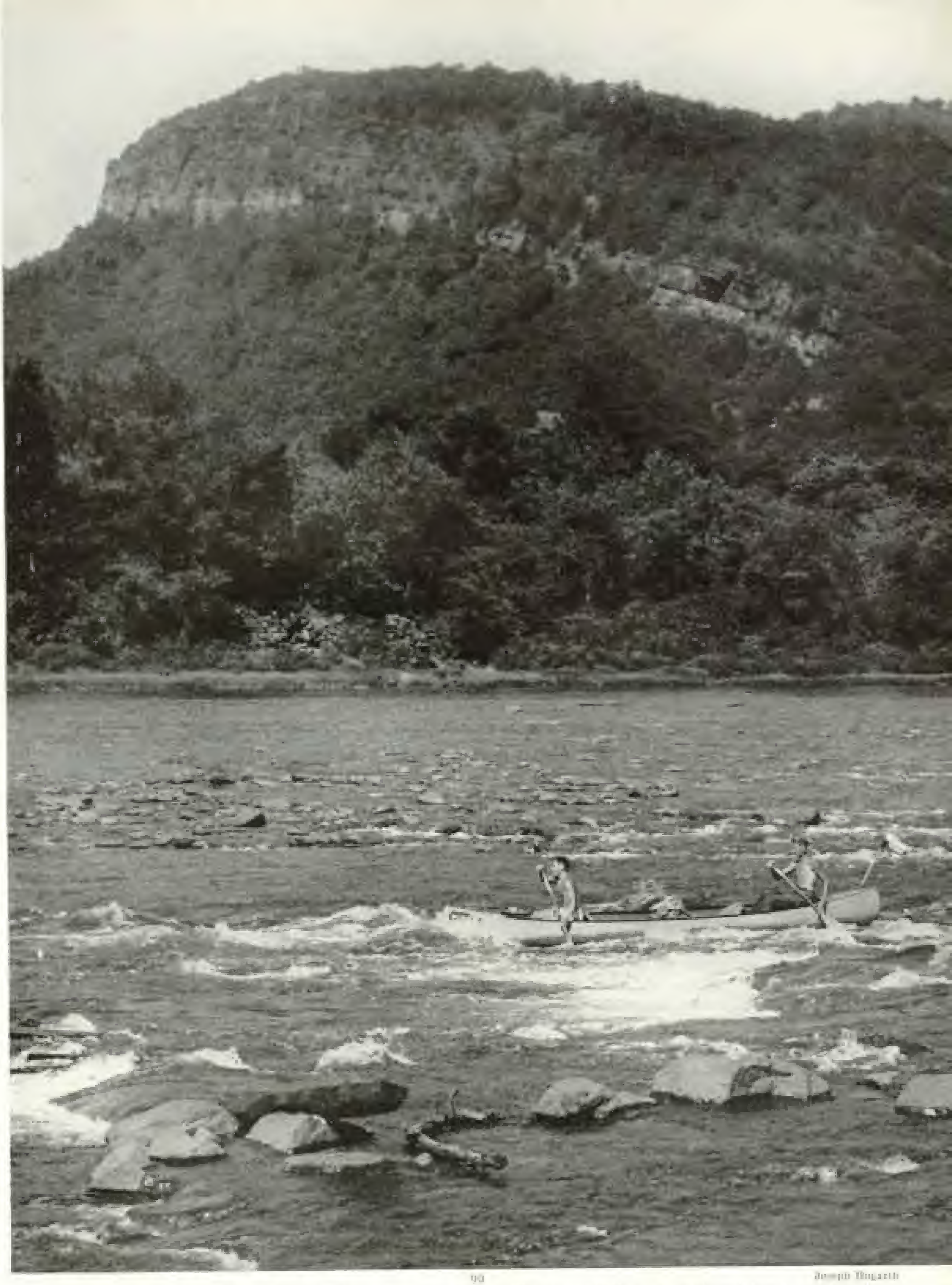
Townspeople said, "Give Dr. Foss time and he'll make Geisinger the Mayo of the East."

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

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

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

* See, in the National Geographic Magazine: "Coal: Prodigious Worker for Man," May, 1944; "Steel: Master of Them All," April, 1947, both by Albert W. Atwood; "Industrial Titan of America," May, 1919; "Penn's Land of Modern Miracles," July, 1918, both by John Oliver La Gorce.



Joseph Hogarth

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

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

Lacmillan Newspapers, Inc.

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

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

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

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

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

Because of low water, I had been uneasy about the ledges, unbroken rock ribs extending across the river. In dry season only an inch or two of water clears them. But as we reached Sunbury, rains upstream raised the river, and the Susquehanna's reputation of being "a mile wide and a foot deep" almost was lived up to.

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

He Who Dreams Last Dreams Best

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

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

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

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

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

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

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

Approach to Harrisburg

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

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

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

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

Pennsylvania Navy Salvages Coal

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

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

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

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

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

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

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

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

Welcome Motorboat Tows the Canoeists to Their "Most Dangerous Moment"—the Portage Across U. S. Highway 1 at Conowingo Dam

Traffic came to a halt as the party carried its three canoes over the busy dam-top road. The impounded lake, largest reservoir on the river, stretches 14 miles upstream.

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

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

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

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

Fairchild Aerial Surveys, Inc.

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

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

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

Smokestacks on a Hydroelectric Plant!

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

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

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

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

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

At one place Dal and I canoed into the broken side of an enormous pothole and looked up 15 feet as from a well bottom to a circle of blue sky. During high water unbelievable volumes of water scour the Susquehanna watershed, large as Belgium, the Netherlands, and Luxembourg.

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

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

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

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

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

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

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

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

* See "Chesapeake Odyssey," by John Maloney, National Geographic Magazine, September, 1939.

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

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

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

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

Bucktail Country Drained by the West Branch Gave the Union Army a Regiment of Sharpshooters. Seen from Hyner View

When Pennsylvania woodsmen heard of the shooting war in Virginia, they rafted down to Harrisburg and enlisted. They distinguished themselves at Second Bull Run, Antietam, Gettysburg, Fredericksburg, and Richmond. Their cap badge was the tail of a buck deer.

Little League's Diamonds Are Two-thirds Regulation Size. Games Last Six Innings. Players Are 9 to 12 Years Old

Williamsport, Pennsylvania, the Cooperstown of "Little League" baseball, forgets work when youngsters play their Little World Series. Carl Stotz (left), founder of the 23-State league, explains its system to the visiting canoe party.

Kodachrome by Walter M. Edwards

▲ Campers, Puffing Like Bagpipers, Blow Up Air Mattresses

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

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

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

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

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

Twin Cities Rise Where West Branch Meets Susquehanna

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

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

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

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

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

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

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

Kodachromes by Walter M. Edwards

Safe and Dry, the Canoes Shoot McKee Half Falls Amid a Meringue of Foam

Coleridge, the English poet, never saw the river, but he might have visioned such a scene when he wrote: "Where Susquehanna pours his untamed stream." At one time he planned to set up a utopia on its shores.

▲ Paddlers Hitch a Ride on a Ferry Heading into Millersburg

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

▼ Liverpool Farmers Mow Wild Grass with Scythe and Cradle

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

Kodachrome by Walter M. Edwards

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

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

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

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

Photograph by Walter M. Edwards

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

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

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

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

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

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

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

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

Loading Canoes for the Final Run. Journey's End, the Chesapeake, Lies Two Days Ahead

Here the party spent a night at the Tucquan Club whose members hunt and fish around Safe Harbor and Holtwood Dams. Until 1869, when the club was founded, its stone headquarters was a canal company's warehouse

Copra-ship Voyage to Fiji's Outlying Islands

By Marjory C. Thomas

THE MORNING sun shone fiercely out of a clear tropical sky. The heavy air reeked with the sickly smell of copra as the cargo ship, *Matua*, came to anchor alongside the dark-timbered wharves of Suva, capital of the Fiji Islands (page 123).

I leaned over the white deck railing and found myself staring into dark, shiny faces crowned with incredible mops of oiled, fuzzy hair. These tall, magnificently built natives looked like a race of dusky giants as they moved about the wharf, their large feet treading lightly as cats, their great muscular limbs swinging with an easy rhythmical grace.

So these were the Melanesians whose old-time savagery earned the territory the title of "Cannibal Isles" of the Pacific. I wondered uneasily if a white woman dare travel alone, as I had planned to do, into the far-back islands of the Fiji group. But I didn't know the Fijians then.

Swarthy luggage carriers, displaying identity disks, filed aboard and began to heave huge cabin trunks onto their shoulders as easily as if they were handling matchboxes.

"No hold-ups when Fijians work the ships," a passenger commented. "During World War II dock companies unloaded American transports so fast they created a record."

In the customhouse my carrier shook his fuzzy head emphatically and muttered "No good," when I handed him a New Zealand half crown. "Better than Fijian money," I argued, "you get 12½ percent exchange."

Dubiously he pocketed the money. Later I learned that so many investors have been smuggling money into Fiji that inhabitants have been warned against accepting foreign currency.

As I stepped into a modern, Indian-driven taxi, I reflected that less than a week before I had been shivering in the first cold blast of winter in my home in southern New Zealand. The sudden change to this oppressive heat left me queerly exhausted.

In the hotel lounge ceiling fans stirred a cooling breeze, rustling fern fronds above the heads of European guests.

Vivid red ginger flowers and masses of scarlet and yellow hibiscus blooms, threaded onto slender brown palm-leaf veins, splashed their brilliance from brass bowls on dark-stained tables.

At night I unfolded the mosquito canopy above my bed, and lay down to swelter beneath a sheet. Below my wooden-shuttered window the water lapped against the sea wall, and the sweet, melancholy strain of a Fijian love song drifted into my room, along with the nauseating odor of copra.

After a sleepless night I asked the houseboy wearily, "Can't you keep that smell out somehow?" With shocked expression he protested, "No smell—none at all!" A few weeks later I too had ceased to smell the copra.

From the roof of the hotel I looked over the town. Situated on the southeast coast of Viti Levu, the largest island in the Fijis, Suva lies at the foot of tropically clothed hills which sweep in rugged tiers around to the harbor entrance. Fine white buildings line the water front, and gay, tree-decked roads run through the town and over the hills to the better residential suburbs.

A Medley of Many Peoples

But it was the short, twisting streets, overflowing with their strange, colorful mixture of humanity, that held me spellbound. There were Indians of all castes—Hindus garbed in loincloth, turbaned Moslems, wiry Punjabis, white-bearded Sikhs, and Madrasis.

Above them towered the good-humored Fijians, strolling leisurely and clasping one another's hands affectionately like happy, carefree children.

Chinese with wide straw hats labored under weighty baskets carried on poles over their shoulders. The delicately colored, richly embroidered saris of the jewelry-laden, somber-faced Indian women brushed against the long, gaily printed cotton *sulus* of the laughing Fijian women (page 122).

Lighter colored Tongan and Samoan women, their coarse black hair arranged in pluits high on their heads, mingled with the throng. An occasional white woman trod the hot pavements listlessly; and European officials and traders, in white shorts and shirts dampo patched with perspiration, moved with the motley crowd.

An ice-cream man on a white bicycle with a red-and-orange umbrella and a tinkling bell dodged speeding cars.

A Fijian policeman directed traffic from a tiny shelter in the street center. The Fijian police in their spotless white sulus, scarlet waistbands, and dark jackets represent the finest Fijian manhood. They must speak fluent English as well as Indian and Fijian.

When I saw them marching, headed by a band resplendent in scarlet jackets, the fluttering white sulu peaks looked even more striking than a kilt; the naturally bushy heads, set

Kodachrome from Pix, Inc.

A Fijian Face Smiles from Her Skirt

Mop of fuzzy hair, brushed and doused with coconut oil, crowns this island woman. She wears a wrap-around cotton *sulu*, its bright red rivaling the hibiscus of near-by jungles. Fijians belong to the Melanesian race, but their customs show Polynesian influence

erect on massive shoulders, were grander than any bushy.

At All Nations Street, where everything from strings of repulsive crabs to cakes, *kumalas* (sweet potatoes), bananas, curios, and peanuts was being sold, I listened to the babble of tongues and wondered that so many people of diverse creeds and colors could live peaceably in a town of 25,000 inhabitants.

I had yet to learn that beneath the placid surface smoldered racial resentment and bitterness.

When the sugar industry was established in Fiji in the 1870's, Indians were brought into the country on ten-year contracts to work the cane fields. Most of them stayed beyond their term, and, when the system of immigration ceased in 1916, some 60,000 Indians had been brought in and only 20,000 repatriated.

Indians Dominate Commercial Life

The Indian population increased so rapidly that today there are 125,000 Indians and only 121,000 Fijians. Indians own the taxis, laundries, and tailoring and other shops.

They belong to a civilization that is old and experienced, and in the commercial life have far outdistanced the tolerant, stone-age Fijians whose leaders are now anxiously looking to the future.

Sympathy lies with the Fijians; but no one can stop the virile Indian race from producing so prolifically, since Indian women marry younger and have larger families than Fijian women.

Separate schools, both Government and mission, cater to the different races. For many years mission schools educated the people; today they receive Government grants. Methodists claim 87 percent of the Fijian population.

Missionaries introduced clothes as well as education; the women still wear ankle-length skirts of Queen Victoria's era. They get drenched in the rain, steam dry, and contract European diseases.

Bob Wright from Black Star

Coconut Palms Nod Feathery Heads over Victoria Parade, Suva's Main Street

Post office (right), steamship companies, and other business firms face the Triangle, a park in the center of the Fijian capital. Suva's water front, crowded with interisland vessels, lies beyond the buildings. A stone monument (left) marks the spot where land was first sold to settlers, a few years after "King" Thakombau ceded the Islands to Britain in 1874, after offering them to the United States (page 123).

Inside a white-painted schoolroom rows of blue-frocked Fijian girls with lustrous eyes, round dusky faces, and hair cut short for sanitary reasons greeted me in English. In their rapt expressions I read intelligence, gentleness, and a whole world of laughter.

The gay childish drawings chalked on the walls were so like the ones my own small son once drew that a lump came into my throat.

As I turned from the questioning eyes to the tree-bordered grounds with their lawns and flower beds, they began to sing. I smiled dazedly at the magical music, and smiles radiated back from every shiny little face.

In the dormitories intricate Biblical texts were worked in bright cottons on pillows adorning iron beds that had once belonged to the American Occupation Forces. Some schools were outfitted with mosquito nets from the same source; at other places children slept on flax mats on the coral floor of the reed-thatched *bures*.

While I had tea and sandwiches with the principal, the children decked themselves in grass skirts, flowers, and paper streamers for a welcome dance. Smooth brown limbs moved rhythmically, and lithe bodies swayed to the accompaniment of clapping hands.

FIJI ISLANDS

Drawn by Theodora F. Thompson and Irma R. Allman

Britain's Fiji Colony Sprawls over Almost 100,000 Square Miles of Southwest Pacific

The author was the only white passenger on a copra-ship voyage to remote outposts of this group. Abel Tasman discovered the islands in 1643, and was followed by other explorers more than a century later. The first detailed study was made by Capt. William Bligh in 1789, when he sailed through the group shortly after the *Bounty* mutiny. Of the 522 islands, about 100 are inhabited. Viti Levu's 4,000 square miles form more than half the total land area.

Early Fijians had no written language, but they recorded historical events in these *mekes*, or action songs. One portrayed the arrival of an ancestor's canoe; another told of a war over the killing of a jungle fowl; others depicted the tragedy of "stranger" diseases brought by alien mariners.

In the Indian school the girls wore lavender frocks, draped with flowing white saris, and their hair was neatly braided in plaits. When I suggested a photograph of a group of girls with plaits, every tot solemnly held up plaits for my inspection. I laughed at the serious, hopeful expressions on the small oval faces—but no one smiled back. The carefree spirit of the Fijian children did not shine in these somber eyes.

"Suva Isn't Fiji"

They were beautiful, with their clear dark skins and gentle, shy manners, but they made me feel a little sad. Possibly I was thinking of the years of drudgery, continuous childbearing, and complete subordination to their menfolk that lay not so far ahead. I remembered a doctor's words, "Indian women

MAPS

Highways, River, and Rail Lines Funnel Sugar Cane into Nausori, Fijian Refinery Center

Under the bridge flows the Rewa, largest stream on Viti Levu, main island of the Fiji group. The span connects Nausori (far bank) with Ndravuillevu, home of Methodist mission schools. Many upcountry plantations ship cane on steel barges. Farmers, also traveling by water, sell their wares at a river-front market (left).

sacrifice everything for their children." These were the little Indian mothers of tomorrow.

"Suva isn't Fiji," the local newspaper editor told me. "There are about 322 islands, totaling over 7,000 square miles, in the Fiji group, which spreads over a sea area of nearly 100,000 square miles" (map, opposite page).

So I boarded a rickety bus, bumped my head on the low entrance, sat on a springless seat with my legs stretched uncomfortably over my luggage, and set off on the 320-mile highway which encircles the 4,000-square-mile area of Viti Levu.

The hot air ripped through the open-framed vehicle, along with churned up stones and dust. At intervals the Indian driver leaned out and spat hard, without losing speed. We stopped often at palm-sheltered stalls in Fijian villages, and passengers re-embarked munching oranges and bananas, and carrying crabs threaded like beads on strings.

Everywhere in Fiji there were crabs—all colors, from pink and red to purple and black (page 126). They pockmarked the ground with holes, slid sideways under rocks on the beach, and climbed trees. The tree-climbing variety are big fellows with powerful pincers capable of crushing coconuts.

At the town of Tavua the air was cooler. Tapioca fields spread from below my window;

Frank J. Byrne

For a Shilling She Offers Live Crabs, Neatly Trussed and Ready for the Pot

Bound together with strands of vine, the captives cannot nip seller or buyer. Crabs abound in the Fiji Islands; some live in salt water, some in fresh, others on land. These were caught in a coastal mangrove swamp. In one planter's house the author found a pet crab which stole the cat's saucer, kept it for a few days, and returned it when it proved inedible.

then the brighter green of the rice crops intermingled with the soft blue-green of the sugar cane plantations. A strip of sea pointed a silver finger inland: the brown reed roofs of native bures snuggled comfortably at the foot of the trees along the shore.

From a hill crest beyond Tavua I looked down on the rich Vatukoula gold fields, which export about two and one-half million dollars' worth of gold annually.

The valley buzzed with life. There were mine heads, smoking chimney stacks, streets bordered by homes and gardens, and schools and sports grounds in this self-contained settlement with its population of 4,000. The mine employs 1,600, mostly Fijians.

Sugar Cane Fiji's Greatest Wealth

Fiji's greatest wealth, however, comes from the 90,000-acre area of sugar fields, which lie mainly along the seaboard of the two main islands. Individual Indians work ten- and twelve-acre farms under the supervision of the Colonial Sugar Refining Company, a name which means much in Fijian industry. Barges carry the cane down the Rewa River near Suva (page 134); but on the western coastline I watched trucks piled high with cut cane, drawn by a little "puffing billy" engine.

The bus frequently crossed sections of the 400 miles of railway line serving the cane lands; a puffing engine painted on a white board acted as warning signal to all nationalities. The train had one almost unique advantage, it carried passengers free!

Cane growers have had to combat beetle borers, rats, leaf-scald, and Fiji disease; but the introduction of Badila, a disease-resisting variety of cane from New Guinea, improved things. Today it provides half the cane grown in Fiji.

Bullocks are most frequently used for cultivating, but I saw both horses and bullocks at work, sometimes yoked as a team. To provide working bullocks for the cane fields, the sugar company imported purebred Zebu cattle, crossing these with other breeds to produce big-framed, hardy animals able to withstand the climate.

The company maintains dairies for the mill settlements, and a 17,000-acre property where 3,000 cattle are grazed to provide prime beef for the mill workers.

Of the sugar towns in Fiji, Lautoka, with a population of over 5,000, is the largest. It boasts a modern sugar mill with a yearly output of approximately 60,000 tons of raw sugar. A pineapple cannery at Lautoka is also run by the sugar company.

"The picture *Blue Lagoon* was filmed at the Yasawa islands across there." The Lautoka hotel manager pointed to a purple strip of land jutting out of the sea.

We passed Fijian boys carrying baskets of yams and taros, and women with bundles of cane on their backs. There were few birds, but the sinuous, furred body of a mongoose often leaped across the road.

Isle of the Fire Walkers

"That's Mbengga over there," the Indian driver enlightened me, "the isle of the fire walkers." Scientists have tried to solve the mystery of how the fire walkers of this island tread barefoot over red-hot stones without apparent injury.

A pit about 50 feet in diameter and four feet deep, floored with water-worn stones about the size of footballs, is used for the ceremony. A fire is burned on top for ten hours or more, then charcoal and ashes are raked off with green bark looped on poles.

Then the performers, well oiled and arrayed in multicolored skirts with chaplets of leaves around their heads, file out of a prayer hut and walk leisurely across the red-hot stones, each man stepping on the same stone as his predecessor (pages 128 and 129).

"With members of the British Medical Association, I examined the fire walkers' feet and there was no sign of blistering; yet a stone extracted from the pit was so hot bystanders burned their fingers on it," a local doctor told me.

Back at Suva an old-timer reminded me, "You haven't seen Levuka, that's where European history began." So I left by launch on my 60-mile trip to Levuka, chief town on the island of Ovalau, and once capital of Fiji Islands.

On the windward side of the island, Levuka nestled at the foot of a steep, ragged mountain; streets sprawled along the water front, running back into shady lanes beneath the arched boughs of great breadfruit trees.

Laughing children splashed below the sea wall, and above it adults reclined lazily on a strip of green lawn.

Only the ugliness of dirty-fronted Indian and Chinese shops marred the loveliness of the place. There was one tumble-down hotel, where I dined at a clothless table with the manager of a thriving tuna industry. The company, I learned, was recently formed, largely financed by American capital, and operated a fleet of craft in Fijian waters.

"The fish are put into frozen brine and taken to American Samoa to be canned for the American market," the manager said. "Tuna run in shoals, and, as a single fish might measure three or four feet in length, the job of catching them is exciting. We are training Fijian fishermen."

Above the shore I found a stone memorial with a bronze plaque bearing the inscription, "The instrument ceding to Queen Victoria, her heirs and successors, the possession of . . . the Fijian Islands . . . was signed on October 10, 1874."

Fiji's most vital history goes back to this spot. Abel Tasman sighted the islands in 1643. Captain Cook anchored off the Lau islands in 1774,* and Captain Bligh passed through the group in an open boat following the mutiny on board his ship the *Bounty* in 1789.

Fiji was divided into seven small warring states when European traders came in search of sandalwood cargoes at the beginning of the 19th century. Unscrupulous traders stimulated tribal wars by selling firearms to the natives.

When the American brig *Eliza* was wrecked at Fiji in 1808, a Swede named Charlie Savage, with two Chinese shipmates, took muskets and ammunition to Mbau Island. There he lived a riotous existence for five years—until he was killed and eaten.

The missionaries did their best to preach peace to the ferocious cannibals, and, in 1854, one of the leading chiefs, Thakombau, was converted to Christianity. A noted cannibal himself, he now ordered his people to give up the practice.

Thakombau had become the self-styled King of Fiji when the United States of America demanded $43,000 for damage done to the American consular agent's property. In desperation, Thakombau offered to cede Fiji to Britain and give 200,000 acres of land in return for settling the debt to America.

Fiji Once Offered to America

Britain rejected the offer, and the Fijian king then offered the territory to America, but that country was so engrossed with the Civil War it didn't even reply. Later Fiji was again

* See "Columbus of the Pacific," by J. R. Hildebrand, National Geographic Magazine, January, 1927.

London News Agency Photos, Ltd.

Fiji Fire Walkers Are Set To Baffle Onlookers with a Ceremonial "Hotfoot"

With long poles the Mbenggs tribesman turn and stir white-hot rocks before filing across them barefoot. Ashes and charcoal are raked off the stones after burning about ten hours (page 127). To convince skeptics, a handkerchief is dropped into the pit, and instantly consumed, just before the performance begins.

offered to Britain, and this time was accepted. The Deed of Cession was signed near Levuka in 1874.*

Today the seat of the Government is at Suva, with a governor as head of the administration. He is advised by an executive council, and there is also a legislative council of 32 members, including Europeans, Fijians, and Indians.

As a full moon rose like a great yellow cheese above the lip of Levuka harbor, I thought of the old-time pirates who had unfurled their sails here. I could almost fancy I saw the daring, handsome Bully Hayes, most spectacular of all Pacific pirates, step ashore, immaculate in white suit, girded with a scarlet silk sash, his long yellow locks hiding the stump of the ear which had been cut off when he was caught cheating at cards in the California gold fields.

Palolo Worms Arrive on Schedule

An elderly scientist at Levuka gave me my first factual information about the mysterious sea worm, palolo, which rises from the sea twice yearly in certain localities.

The scientific term for this tropical organism

* See "British Commonwealth of Nations: 'Organized Freedom' Around the World," by Eric Underwood, National Geographic Magazine, April, 1943.

Fiji official

Smoke Rises; Yet Fiji Islanders Stroll Through Fire Unscathed

After their first walk, with each tribesman stepping upon exactly the same stones as his predecessor, branches and leaves are cast into the furnacelike pit. Then the performers return to stand amid the crackling debris. For years scientists have sought to solve the mystery of Mbenga fire walking.

is *Eunice*. They are green and brown, and the worms are about one-eighth inch thick and from 3 to 12 or more inches in length.

"From years of study of the cycles and the moon, I can correctly predict the date of the palolo rising, always between October and December," my friend told me. "A scum comes up from the coral first, and at the predicted time the natives row out to the reef with buckets and tins to hold the worms which rise in swirling masses to the water's surface.

"They are scooped up in fine nets, and when cooked in a batter have a flavor between oysters and tuberoas. Natives and some Europeans regard the worms as a delicacy."

Wakaya Island, lying directly across from Levuka, was the site of the capture of the German Count Von Luckner, commander of the raider *Seeadler* in World War I.

At the wharf ships were unloading copra into sheds with a storage capacity of 3,000 tons. Levuka exports 10,000 tons of copra annually, with a present-day value of about one and a half million dollars.

"Taveuni Island has the best plantations, owned by a few Europeans and worked by natives," I was told. "If you could survive a voyage in one of those dreadful copra ships, there's one leaving today. The skipper's name is Smith."

Copra Starts Its Journey to Britain from a Fijian Beach

Anchored in a lagoon sheltered by a distant reef, the trading ship waits for small boats laden with bags of dried coconut. Once loading is completed here, the ship moves on to gather the next island's quota, finally returning to Suva to tranship its cargo.

Recently a New Zealand firm put a war-surplus LST (Landing Ship, Tank), veteran of many assault landings, into service throughout the Fiji archipelago and other Pacific island groups. Running directly onto beaches, it loads and discharges cargo through bow doors without need of surfboats. The venture was so successful that more LSTs are being sought.

Under a nine-year contract all Fijian copra, except that used in the islands, is bought by the British Ministry of Food to make margarine, shortening, soaps, and many other products. Fiji also exports coconut oil produced by a new plant at Suva.

During the depression the price of copra plunged to less than $6 a ton, and throughout the islands planters sold out or abandoned lands in despair. Today the price is about $153 a ton (page 152).

A hurricane dealt Fijian coconut plantations a severe blow in 1948, but normal production is expected by 1951.

Bob Wright from Black Star

School out, Thithia Youngsters Play in a Parklike Grove

Here the author found villagers busy repairing damage caused by a hurricane which swept Fiji's Lau Group three months earlier. Only the schoolhouse remained to be rebuilt; meanwhile, classes were held in the church (background).

Only churches and chiefs' houses are deemed worthy of corrugated-iron roofs. Other buildings are thatched with coconut palm leaves.

Christianity has spread steadily throughout the Fiji Islands since the arrival of the first missionaries in the Lau Group in 1835. Today, most Islanders are Methodists; the second largest group of converts belongs to the Roman Catholic Church.

Devout Fijians, strict observers of the Sabbath, undergo their greatest trial when a school of fish appears off an island on a Sunday. On their way to church they look longingly at the sea's silvery temptation, hesitate, shake their heads, then walk on to listen to the sermon.

Fijian schools were conducted by missionaries until 1918, when the colonial government began sharing the responsibility for education. Indians have separate schools, while children of white planters are sent to Suva, the capital, or to other parts of the British Empire.

Margaret C. Thomas

Captain Smith would be English, I assured myself as I boarded the "dreadful" 250-ton copra ship. A large native smiled a gleaming white-toothed welcome from the bridge. "My name is Smith," he said courteously, as he ushered me into the vessel's one good cabin.

I was the only white person on board. On the deck below, men and women were crowded into tiny hot cabins, while deck passengers traveled at a cheaper rate, sleeping like packed sardines on the decks. In a miniature saloon a smiling black steward served the captain, mate, and me with tomato soup, taro, beef, and preserved pears, in between times flicking flies off the spotless cloth with a tea towel.

Strange Bedfellows

The first night the strange jabbering of voices made me feel rather alone, and I locked my cabin door. Unable to sleep, I turned on the light, and to my horror the walls and my bed seemed alive with ugly whiskered cockroaches and smaller shiny black copra beetles, while chewing gum beside my bed supported a moving mass of ants. I lay in a shuddering sweat in the top bunk, watching the crawling pests skating across the roof a foot above my face, expecting one to drop any moment.

In the morning the captain said kindly, "If you leave your door open you'll get more air, unless you are scared?" He grinned, "Once we had an elderly American nurse on board and she locked her door too, at first. And there were two schoolteachers who locked themselves in their cabin the whole trip—scared stiff! You are as safe here as on any European ship."

He was a fine person, with a sense of humor and courteous manners. Because the pests in my cabin worried me, he had a bed carried onto the roof of the wheelhouse and an awning stretched above it.

A gale sprang up in the night, and while I was clinging to the billowing sheets to keep them from blowing away I saw horrible black objects like giant spiders gliding backward and forward beside my bed.

Somehow, still clinging to the sheets, I got down the ladder, which swayed directly above the sea, and my cockroach-infested cabin felt like a haven. In the morning the captain went aloft to kill the spiders—and found round dark mandarine-orange peelings moving about with the breeze!

A bucket of water and an enamel mug were left in the tiny closet, which was also a bathroom. "Just throw the water over yourself with the mug," I was advised. It wasn't a bad way of bathing, either.

I went ashore at a boulder-piled wharf at Taveuni Island. Cows grazed along the foreshore beneath the feathery palms, and white goats straggled along a rock wall which enclosed sloping lawns, an old garden, and a stately mellowed house with shady verandas and thick white walls of crushed coral and sand.

On the dew-drenched lawn I had a job to avoid treading on innumerable toads. I noticed a goldfish pond was netted over to prevent these pests from laying their eggs, like black seeds suspended on yards of silken cord, in the water. Tadpoles will nibble the tails of goldfish.

A youthful planter, clad only in a red flowered sulu, stared unbelievingly at the sight of a white woman on his lawn, then hurriedly retreated to appear in khaki shorts and shirt. Hospitably he invited me to breakfast and a ride over his 4,000-acre plantation. As the lorry bumped over boulders between the 30-foot-wide rows of coconut palms, the sweat ran down my escort's face, and he explained, "Forget where the road is, we may not be on it."

Weeds grow rapidly in this trunk-patterned labyrinth, and have to be cleared to find the nuts. The ripe nuts are gathered into heaps, slit open, and the white kernel dried in the sun on trays, or in kilns.

During the thirties copra dropped to less than $8 per ton, and ruined planters sold their holdings or let them grow wild. Today, however, white copra kings are reaping wealth, with copra at about $143 a ton, under a British Government nine-year purchase contract.

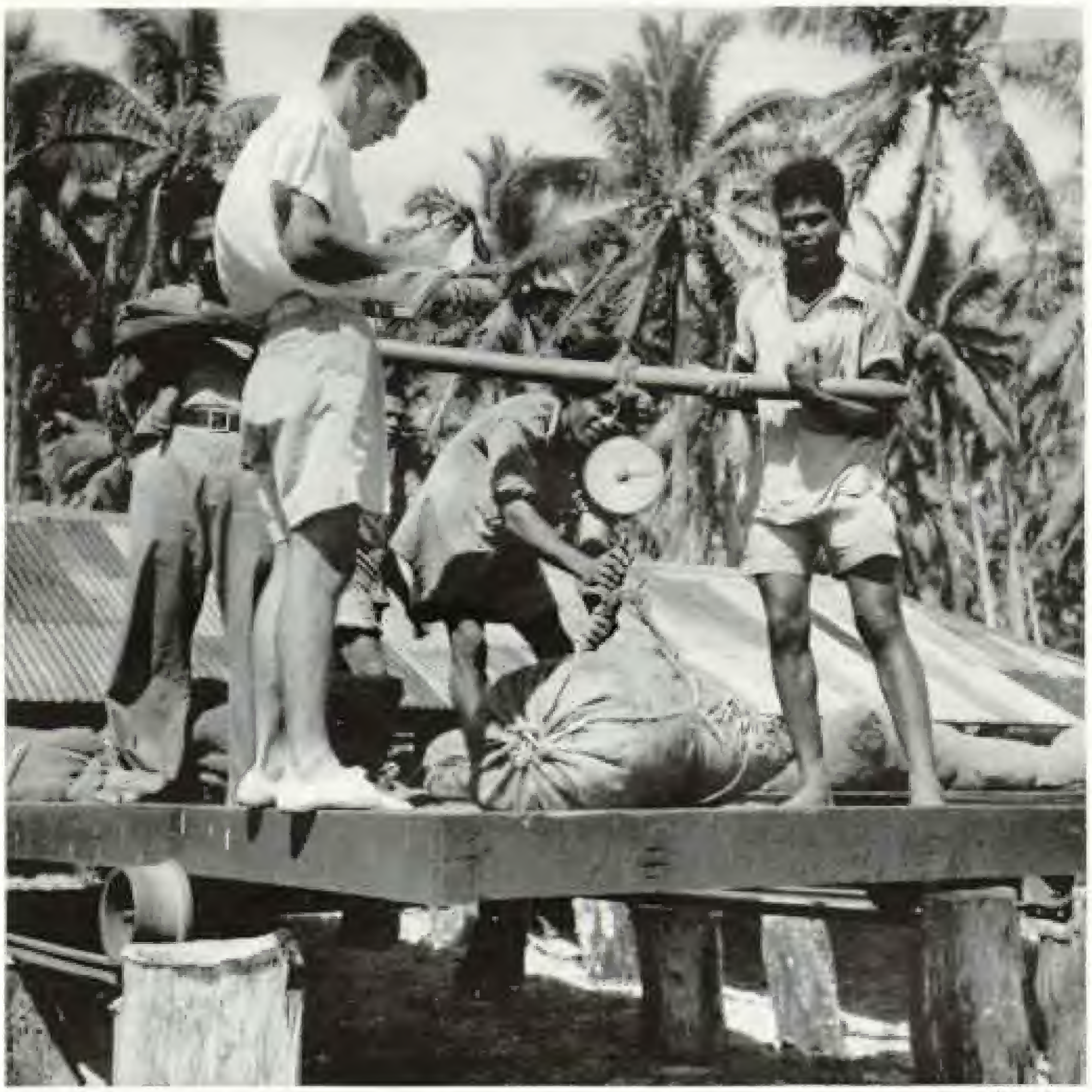
Cattle Roundup for Leper Colony

Over 1,000 head of cattle grazed among the palms; some were being rounded up for shipment to the leper colony at Makongai Island, where more than 700 lepers from Pacific islands are concentrated for modern medical treatment.

Indians were shouting, dogs were barking, and the cattle were bellowing as they were being put through the race running down to the shore. At the beach ropes were tied round the horns of each animal, which splashed madly into the water to swim to the surfboat.

When three steers were fastened to each side of the boat, the engines started, and the cattle began their long swim to the cargo ship (page 137).

When the copra ship moved up the coast, a warm-hearted Scottish couple insisted I become their guest rather than go aboard. They motored me through picturesque native villages, along the only road in the world which



Bernard E. Schantz

While a Planter Keeps Tally, Fijians Weigh Copra for Export to Britain

At a warehouse on Mango, privately owned island in the Lau Group, bags of sun-dried coconut are ready to help relieve the Empire's shortages of fats and oils. Europeans operate many of the colony's coconut plantations. From palm groves surrounding villages come coconut meat and milk important in Fijian diet. Both men and women use coconut oil as a cosmetic.

crosses the 180th meridian (page 138). We paused by the site of the last great native battle in Taveuni, where missionaries actually stepped between the warring tribes to stem the slaughter.

I photographed ancient, undeciphered lettering carved in a rock which rumor says may mark buried treasure. At a cave entrance was a rock with chiseled grooves and a rounded hollow for water, where natives once sharpened their stone tools and axes.

In the darkened cave I was peering at a yellow-and-black carpet snake when my guide leaped past me yelling, "Get out quickly, the snake has a nest of young ones!" Snakes are regarded as a delicacy by the natives and once were kept exclusively for the chief's table.

A descendant of Taveuni's first white copra planter, my host pointed out the fat black pigeons which supplemented supplies in his grandmother's day. Oil was extracted from the candlenuts, and there was lemon grass from which the heavily perfumed citronella oil was obtained. Fijians use it with coconut oil to anoint their bodies; and with a mixture of lemon grass and lemon leaves they brew a fragrant tea.

He pointed out the paper mulberry trees,

Sugar Cane and Bamboo Border a Thatch-roofed Fijian Village. Parrots Scream in Dense Jungle Across the Rewa

Houses are built of coconut or hardwood logs. Far from roads, the villagers float farm produce down the river to market at Nausori (page 125).

A Pig's Bladder, a Few Lusty Puffs, and Junior Has a Balloon

While the hogs are slaughtered for a Fijian village feast, youngsters crowd around waiting for a bladder to be removed. When the prize is held aloft, the boys scramble noisily, and the luckiest wins the toy. Larger and stronger bladders from cattle are used as footballs.

Marion C. Thomas

Cannibals Were His Ancestors; Now He Helps Britain Rule Fiji

Hospitable and kindly, the high chief of Lakemba enforces the law among Fijians of the Lau Group (page 140). Europeans and Indians also live in his domain, but do not come under his jurisdiction. His son was educated in a New Zealand university and studied at Oxford, England.

from the inner bark of which Fijians make bark cloth by beating the bark flat and joining with tapioca starch. The cloth is then stenciled with brown and black dyes.

Rare Tangimauthia Plant

On the mist-shrouded main ridge of the island, at an elevation of about 3,000 feet, is an old volcanic crater, now filled by a lake partially overgrown by floating vegetation. On the shores of this lake grows the famous Tangimauthia, a high-climbing plant with flower clusters nearly a foot long.

The inch-long blossoms of this cluster are white, ensheathed by crimson bracts at the ends of bright red branches. The combination produces a vivid splash of color. Natives used garlands of the flowers for ceremonies, but they were worn only by chiefs. Taveuni and the neighboring island of Vanua Levu are the only known places where the Tangimauthia is found.

Many European children are sent away for their education. "During the 1918 influenza epidemic I was coming home from school on the 60-ton *Glenia*," my host recalled. "The captain and some of the crew died on the voyage. The others were too ill to run the ship, and for three days we just drifted. Now we have radio—and that reminds me, your skipper has just radioed that he'll anchor here in an hour."

Pineapples and oranges were packed as parting gifts, and, as I perched on top of a surfboat of copra and looked back at the lovely shores of this island which is justly called "the garden of Fiji," I remembered the kindly query of an old planter, "Aren't you lonely, traveling so far by yourself?" He did not know that everyone is the friend of the lone traveler.

When I landed at Suva, Captain Smith suggested, "If you want to see Fijians living as they did centuries ago, you should come on our next voyage to the Lau Group. Few Europeans go there."

The night I left for Lau, thunder rolled deafeningly overhead, blinding flashes of lightning seared the sky with blue tongues of fire, and the rain came down in drenching sheets. It rained nearly every day in Suva, but the rain didn't cool the air, it just went up in steam.

"We've fumigated the ship specially for you," the skipper announced happily. And there certainly was less bug activity. But cockroaches breed fast, and copra beetles came aboard with every load of copra, so the lull was temporary. I studied the chart and counted about 50 islands in the Lau Group, which lies about 150 miles east of Suva and stretches north and south for 280 miles.

At one time these islands were partly conquered by the Tongans, who intermarried with the Fijians. Thus many Lau people have lighter coloring and finer features than most Fijians, while the women are regarded as the real beauties of Fiji.

When we dropped anchor at Matuku Island, 115 miles to the southeast, a Fijian nurse offered to act as my interpreter. Together we crossed the yellow beach, patterned with many footprints, to the village, where homes spread like golden-brown haystacks beneath the shady trees of a lovely natural park.

The chief's wife hastened to welcome me, ushering me into the chief's bure by the lower door. I had already been warned never to enter the upper door at the risk of insulting the owner.

An elderly chief in striped pajama coat and sulu extended his hand, European fashion, and offered me a chair which was kept for such special occasions; but I preferred to sit cross-legged on the floor with his womenfolk. They liked that, but when my cramped legs made me squirm, they offered cushions.

The interior of the large hut was beautifully constructed, the spars tied with coconut hemp and latticed like honeycomb.

Children Flee from White Face

Women were sent to kill fowls for a feast for me, while the chief's family escorted me round the village.

The women smiled happily when I admired their babies, and giggled with motherly tolerance when their offspring fled in fright at sight of my white face. They patted me on the back in friendly fashion, and shook their heads laughingly because they didn't know what I was saying.

The native nurse engaged in an animated conversation with the villagers and forgot to interpret, but once she paused long enough to say sympathetically, "It is sad you do not know what we are saying."

I suggested hopefully, "You could tell me," but she only smiled.

She helped when I tried to photograph the island belles, who had the idea that they should line up and face the camera like a regiment of soldiers. When I let them look into the viewfinder, their faces registered amazed delight.

In a small wooden hospital I found a Fijian medical practitioner writing at a desk in a bottle-lined dispensary. His lined face lit up with a smile as he said in perfect English, "We so rarely see European visitors I almost forget how to speak your language."

Margaret E. Thomas

Bawling and Kicking, Fijian Beef Cattle Are Swung Aboard to Feed an Island Leper Colony

Driven into the sea at Taveuni, the animals were secured by their horns to outboats. After a long tow to the freighter, they are lifted to the deck in rope slings. These were bound for Makogai where a modern hospital treats lepers from New Zealand, Samoa, Tonga, and the Cook, Gilbert, Ellice and Fiji Islands.

He issued instructions to two natives, and they returned with a basketful of green coconuts which they placed at my feet. The top of a nut was sliced off with a knife, and I drank the refreshing milk gratefully.

The medical man, the chief's eldest son, and a graduate of the Central Medical School of Suva, expertly bandaged the shark-bitten leg of a native while he told me about his work.

Medical training for selected Fijian youths began in 1884. When, in 1875, some 40,000 Fijians died during a measles epidemic, the chief medical officer of the colony conceived the idea of a course of hospital training for Fijians who could then work among their own people. Later the course was extended to four years, and other Pacific peoples joined the Medical School.

"My people don't understand time, they come day and night," the doctor told me. "Witch doctors are my greatest problem. They give bad medicine behind my back to my patients; if they die, I am blamed, but if the patient recovers, they take the credit."

He served with the Americans and New Zealanders in the Solomon Islands during the last war. In his bure I saw a framed "Commendation for Outstanding Services," presented by a major general of the United

Marjory C. Thomas

Fijian Youngsters Walk to School Along an Imaginary Line Dividing East from West

A sign near Wairiki, on Taveuni Island, proclaims the only motor road to cross the 180th meridian, which the International Date Line follows along much of its sweep from pole to pole. Far north of Fiji the Date Line, where today may become yesterday, swings eastward, rejoining the 180th meridian south of New Zealand. Thus, all of Fiji lies west of the Date Line (map, page 124).

States Army. "Had to cut my hair off before I could wear a helmet," he chuckled; "but the white men had to blacken their faces or the Japs would pick them off first."

His wife spread a camphor-scented cloth on the flax floor of the bure, while a native girl brought steaming kumalas, gray-white taros, highly seasoned chicken soup, and chicken and fish wrapped in banana leaves. One girl fanned me, another served me, while my hostess saw that I had every attention.

Spiders Regarded as Friends

As darkness fell, a rat scampered along the beams above me, a tiny lizard dropped down my neck, queer beetles skated across the floor out of the night, and a hairy spider the size of a crab crawled out of the reed wall. I pointed at the long-legged horror, but no one attempted to kill it, for spiders eat mosquitoes and are regarded as friends.

There was a grand meke that night in my honor; a chair was carried half a mile to the scene so that I should be seated in state. The people sang and danced till midnight. When I boarded a frail canoe, loaded with gifts of baskets, mats, and coconuts, I could see the dark figures of the chief and the villagers illumined by beach fires, waving goodby till I was out of sight. I gripped my cameras tightly as the boatman commented in broken English, "Sit center, many times tip over, have to swim!"

He dropped his oar to clutch at a turtle, and I expected I should be landed in the shark-infested waters any moment; but miraculously the canoe righted itself.

We paddled warily through the reef, down miles of inlet between dark mangroves. Once a large fish nearly jolted the canoe out of the water. I was intensely relieved when at last I saw the lights of the copra ship.

We sailed northeastward to the island of Totoya, where half a dozen canoes, overburdened with men, women, and children, came alongside and attached their craft to the ship. One canoe was swamped, so the tolerant captain slowed down to avoid further capsizings.

One village had been visiting another farther up the coast. Visiting is done on a grand scale in Fiji; usually a death or a wedding provides an excuse for feasting and ceremony.

Richard H. Stewart

After Hours of Ritual Comes a Fijian's Reward: a Stimulating Drink of Kava

To the pulverized root of yangona (*Piper methysticum*), a shrub related to black pepper, water is added. Then the mixture is strained through paper-mulberry bark into coconut-shell cups. Kava is served at all important feasts. By time-honored custom, drinkers must spin empty cups across floor or ground. The beverage is prepared according to rigid rules and served with great ceremony. In the old days, the chief's bodyguard watched for errors. Those who slipped were clubbed to death.

We passed through a two-mile-wide entrance into a lagoonlike harbor, landlocked by hilly ridges like the broken edges of a semicircular shell.

The same friendly welcome awaited me here. On shore a gay American towel—a surprise in this dollar-starved country—was thrust into my hands, indicating an invitation to bathe. A dozen women guided me along a moonlit path beneath whispering palms, through the village where cooking fires glowed in the darkness.

At the foot of a waterfall in a rocky ravine was a pool where most of the village women had probably bathed that day. I followed a native girl's example of undressing and wrapping a towel about myself, but it slipped off as fast as I put it on. Finally a laughing native adjusted it by tucking in the ends.

I sat on a rock in the pool, expecting a crab to bite my toes, while my feminine audience laughed with excited delight at a white woman in their pool. I was glad enough it was dark; but their laughter was friendly, and the water was pleasantly cool.

Fijians are a clean race, and at other islands I was also offered a bath. Sometimes it was merely a bucket of water in a palm-walled closet, with precious soap, a towel, and a native girl to wash me.

We were coming into Lakemba, chief port of the Lau Group, 80 miles to the northeast, when the captain handed me his binoculars. "Looks as if they were badly hit by the last hurricane," he commented. There were gaps in the plantations where broken palm trunks strewed the ground, and the standing palms were battered, fronds hanging like ragged ribbons. Wreckage was piled on the beach; roofless huts marked the site of the village.

Church Unscathed by Hurricane

A massive white concrete church stood unscathed in the center. Here villagers had taken refuge during the worst two days of the storm. Inside the church, on plaques written in English and Fijian, were memorials to the Rev. William Cross and David Cargill, first white missionaries to Fiji Islands, who had landed at Lakemba in 1835.

The chief of Southern Lau lived at Lakemba (page 135). When native girls graciously placed food before me, he apologized because the hurricane had left no fruit or vegetables.

When I suggested taking his photograph, he insisted on shaving first! One of his sons had studied medicine at a New Zealand university and had gone on to Oxford.

I heard wailing in the village as a funeral party of women, wearing ragged mats tied with hemp around the waists as mourning, passed me carrying bundles of sticks on their backs in preparation for the death feast.

In a four-foot-deep, bowl-shaped pit lined with stones, a fire had been burning. When the ashes were raked aside, a pig's carcass stuffed with hot stones and leaves was put into the pit, along with fish and prawns wrapped in leaves, and kumalas. Leaves covered the food, and earth was mounded over it.

Several hours later, delicious, tender food was unearthed, and a chicken was sent aboard by the chief as a special treat for me.

At Nayau Island, to the northwest of Lakemba, I found a water shortage. Although the natives' huts smelled strongly, and the mats were slovenly and dirty, there was the same friendly eagerness to shake my hands and smile a welcome.

The Secret of Reddish Hair

A woman was bleaching her hair, and at last I discovered why some native women have reddish hair instead of the usual black. They collect coral, burn it to produce a form of lime, which they mix with clay and plaster over their heads, later completing the beauty treatment with dyes from trees.

Of all Lau, perhaps I shall remember Thithia Island best, because of its cleanliness and parklike beauty (page 131), and because here I was initiated into the famous Fijian kava ceremony. A woman pounded the stringy roots of the *Piper methysticum* to a pulp in a hollowed bit of tree trunk, water was added, and paper-mulberry fibers were used to strain out the sediment. The muddy-colored liquid was poured into a ceremonial, six-legged wooden kava bowl, and a coconut cupful was handed me (page 139).

Kava is diuretic but not intoxicating, and, while I loathed the taste, I had been warned I must never refuse the honor of drinking it. Everyone clapped and chanted as I drank, and I tried to spin the emptied coconut shell across the room as I had been told to do.

Beside me four policemen guests were singing softly in English for my benefit. I asked why they always sang love songs, and a dark giant smiled and said simply, "Because we like them."

I wondered that there should be such nobility of expression, such gentleness and untroubled happiness in a race that once boasted the most ferocious cannibals of the Pacific. In crowded churches I had witnessed them worshiping God with the earnest simplicity of children. I wondered if their ardent faith and hallowed Sabbaths had something to do with their carefree outlook and peace of mind.

As my native carriers splashed into the water, the villagers followed. When a garland of flowers interwoven with faded paper streamers was shyly placed round my neck, one of the policemen exclaimed, "You look like a princess!"

My nose was sunburned, my forehead streaked with perspiration, and prickly grass heads stuck uncomfortably to my clothes; but, as I smiled and waved goodby, I felt as near royalty as I would ever be.

With a full cargo of copra we headed for Suva. At night we sailed over a phosphorescent sea, the mast swaying against a dark sky set with millions of stars, while from below floated up the most wonderful human music that was ever borne on a sea breeze. The crew were never too weary to sing.

Suva greeted me with a spectacular sunset —and the news that my ship was due to leave that night. Behind the purple-black outline of the jagged mountains a flaming red-gold light lit up the heavens, reflecting itself in the sea, so that the ships rocked at anchor in a harbor of molten gold. Then heavy silver-gray clouds thickened above, the flaming sky turned to lead while I watched, and darkness settled down on Fiji Islands.

I sailed at midnight.

See, in the National Geographic Magazine: "Treasure Islands of Australasia," by Douglas L. Oliver, June, 1942; "Net Results from Oceania," by Walter H. Chute, March, 1941; and "In the Savage South Seas," by Beatrice Grimshaw, January, 1908.

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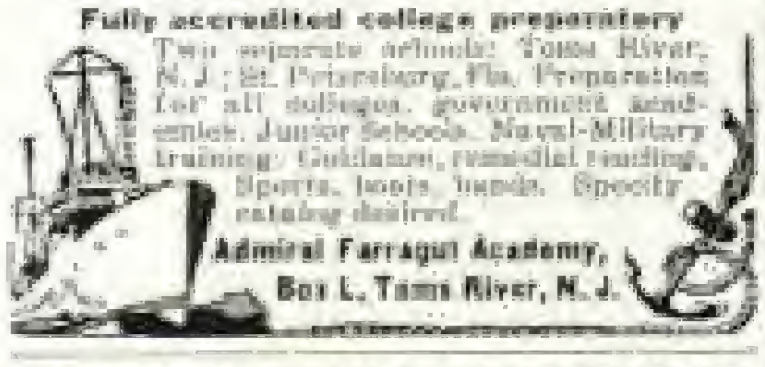

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