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William A. Rockie: Seventy Years a Geographer in the West

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William A. Rockie

Seventy Years
A Geographer in the West

Compiled by
John D. Rockie

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William A. Rockie
Seventy Years A Geographer
in the West

Revised and compiled by his son
John D. Rockie
Gig Harbor, Washington

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At the time of William A. Rockie's death in 1981 he was in the process of preparing a monograph for the "Occasional Papers in Geography" series at Portland State University. The monograph was to recount his long career as a professional geographer. He had started in the late 1970's writing his recollections in a random fashion. After Rockie's death several people from the Geography Department at Portland State University discussed the unfinished work with Rockie's son, John, who agreed to assume responsibility for organizing what Rockie had written and expand on it as needed to finish the monograph. Professors Courtney and Price agreed to help in editing.

Except where noted, the narratives that follow are in W.A. Rockie's words (subject to the limitations of editing), as he had written them, some many years ago, others in the years just before his death. Most of the writing that Rockie did in the late 1970's dealt with his experiences from the early 1900's until the late 1940's. Particularly sparse were periods in the late 1940's, late 1950's and from the 1960's on. For those periods, his son, John Rockie, made liberal use of diaries, as well as papers and publications written by W.A. Rockie.

The illustrations in the monograph were selected from photographs and other material from W.A. Rockie's personal files and several archival collections, so do not necessarily represent the choices of W.A. Rockie, but I think he would be pleased.

Larry W. Price
PREFACE

William A. Rockie's careers in government and educational service spanned more than two-thirds of a century, and throughout his life he was dedicated to the furtherance of man's optimum use of his environment. Although in recent years he resisted being termed an environmentalist (the "new breed of environmentalists," as he often termed them), he was a true environmentalist in the sense that he had a deep regard for protecting and improving the environment.

"Rockie," as he was usually called by his associates -- "Bill" or "Will" by many of his closer friends and family -- put in nearly 40 years as an employee of the federal government before he retired in 1952. His first government job was with the U.S. Forest Service in Targhee National Forest in Idaho in 1911, and he continued at summer work in the west for several years, interspersed with undergraduate work at the University of Nebraska, until he graduated in 1914. From 1914 to 1919 he was engaged in soil survey and land classification work for the Bureau of Soils, and later the U.S. Geological Survey. After a brief stint as assistant professor in the Department of Geography and Conservation at the University of Nebraska in 1919-1920, he tried farming in the Priest River country of northern Idaho from 1920 to 1922. His farming venture was not a roaring success, and he returned to government service in 1922, working for eight years in Blister Rust Control for the U.S. Bureau of Plant Industry. His work from 1922 to 1930 dealt primarily with ecological studies in the Pacific Northwest.

The majority of Rockie's government work was in the area of soil erosion control, and it would be difficult to think of the early development of soil conservation programs in the Pacific Northwest without thinking of Bill Rockie. His entry into soil conservation work began when he started the Soil Erosion Experiment Station at Pullman, Washington, in 1930. In 1933 the station became part of the newly organized Soil Erosion Service, and Rockie was named regional director for the Pacific Northwest. The Service was expanded considerably in 1935, and also underwent a name change to the Soil Conservation Service. During these years he was at the heart of the newly developing soil conservation movement in the United States, along with "the Chief," Hugh Bennett (called by some the "fiery apostle of soil conservation"), the assistant chief, Walter Lowdermilk, and other regional directors throughout the country. Rockie had many stories to tell of his experiences with these people, but one he particularly liked telling was of Hugh Bennett's admiration for Rockie's prowess at eating cherries -- "Rockie is the only man I know who can be putting a cherry in his mouth while chewing another, and spitting out the seed from a third, all simultaneously." After three years as Regional Conservator, Rockie resigned in the summer of 1938 as regional head, and took a more active role in planning for the region, as well as research studies, of Alaska in particular. He continued in this planning capacity until his retirement in March 1952 on his 62nd birthday. Rather than this marking an end to his many years of scientific endeavor, it was the beginning of a new and different type of activity, less structured, and involving considerably more world travel than had his previous 40 years.

In April 1953 Rockie accepted an invitation to be the land use specialist on an international expedition undertaking a scientific study of northern Africa. Before leaving the United States for Africa, Rockie completed his term as president of the Association of Pacific Coast Geographers and in June 1953 delivered his address at the Santa Barbara meeting on what had been his favorite subject for many years, "The Palouse" -- a fitting way to close the first phase of his professional life.

The following year, after returning from Africa, Rockie was given an appointment with the Food and Agriculture Organization of the United Nations as soil conservation adviser to the Jamaican government. He was on this assignment from January 1955 to January 1956, during which time he and his wife, Edith, lived in Kingston, Jamaica. After a year in the United States the travel bug bit again, and Bill and Edith spent the early part of 1957 in Jamaica, Mexico and Central America, visiting friends, and Bill, as always, looking at things through the eyes of a geographer. They left in September 1958 on a trip around the world, via Europe, Asia and Oceania, that included visits with former colleagues and other friends and relatives along the way. They returned to the United States in early 1959. Later that year he arranged to teach geography at Portland State College, beginning an affiliation that continued for another 20 years, and cemented many lasting friendships. Except for occasional assignments as
visiting lecturer at several west coast universities, and a year in Turkey as a Fulbright lecturer at the University of Istanbul, he was involved with the Geography Department at Portland State until 1979.

Edith, Bill's wife of 62 years, died in 1978, after accompanying him on nearly all of his world travels. In March 1980, two days before his 90th birthday, Bill married Beulah, a classmate at the University of Nebraska in 1910. During the summer they built a passive solar house on Chehalem Mountain near Newberg, Oregon. In February 1981 Rockie had a cataract removed and a lens implant, to enable him to keep his driver's license, and to continue to see the beauties and wonders of nature. He suffered cardiac arrest in the recovery room following surgery, thus ending a long and fruitful life.

John D. Rockie
Gig Harbor, Washington
September 1988
I began school in Fremont, Nebraska, in the fall of 1896 (Fig. 1) at the age of six and one-half, and started at an early age toward becoming a geographer.

I began a tree and seed gathering business, and was still gathering seeds after finishing high school. It began when I was hired by a local nurseryman to gather cottonwood seedlings, and later, black walnuts, for nursery stock seed.

The streets of Fremont were generally bordered by rows of trees, usually a single species in each platted subdivision, or perhaps a different kind for each street in the subdivision. American elm was the dominant species but silver maple and boxelder were also common. Elm was the seed that I gathered most because I could get large quantities simply by sweeping the seed into piles on the paved streets within a few blocks of the nursery.

On one occasion my tree seed gathering business culminated in an unusually profitable transaction. One of my high school friends who had graduated one-half year ahead of me started at the University of Nebraska with forestry as his major. He knew of my seed gathering business so when he came home after his first week at Lincoln, he called and asked if I could get 15 pounds of catalpa seed for the Forestry Department at the University. I told him that I had never gathered catalpa seeds, but that I would try. The long catalpa pods hang on the trees all winter so that in early February, when this incident occurred, they were readily available. I lived on Maxwell Street, named for Congressman Samuel Maxwell, who lived at the end of the street. As I look at it now, it would have been more appropriate to have named it Catalpa Street, for catalpa trees lined both sides of the street.

On Saturday morning I hitched my horse to the wagon, drove under the catalpa trees on our block, and was able to reach them from the wagon. In a very few minutes I had a sufficient number of pods to provide 15 pounds of seed. Each pod contained many seeds, each about one-quarter inch in diameter, flat, less than one-sixteenth inch thick, with feathery wings attached to each end. Back at our barn I filled a gunny sack with pods, beat the bag on the floor, and found that the pods were so dry that the seeds separated almost instantly. I sorted the seeds from the split empty pods, and by 10 a.m. I had 15 pounds of fine clean catalpa seeds to fill the order from the Forestry Department. My chum took the bag of seed back to the University. I had no idea what I would receive, but was enthusiastically shocked when I received the University’s check for $75.00 for my two and one-half hours work one Saturday morning.
After graduating from high school in 1908 (Fig. 2) I worked for a grain elevator company, both at Oaks and Superior, Nebraska. In 1910 I enrolled at the University of Nebraska at Lincoln. This step would soon lead to opportunities for travel far beyond Nebraska, and ultimately to my future home -- the West. My entire adult life has been devoted to the conservation of natural resources, and in so doing, my interest in things has always included WHAT? WHEN? HOW? and WHY?

Fig. 2. My high school graduation picture.
After enrolling at the University I supplemented my meager savings with a dish washing job, but during the year I had the good fortune to get a job for 15 cents an hour filing maps for the Geography Department. Each day hundreds of maps used in the laboratory had to be returned to the proper files, and a similar supply taken from the files for the following day. In the process, I developed an intense fascination for maps that has never left me. It was the real beginning of my geography career.

At the end of my freshman year at the University I secured a job as field assistant in a forest survey party in the Targhee National Forest in eastern Idaho, adjoining the western boundary of Yellowstone National Park. I bought a round trip railway ticket from Nebraska to Yellowstone National Park for $40.00, and the ticket was good for all summer. It included a round trip from Ogden to Salt Lake City and to Saltair, a resort hotel at the south end of Great Salt Lake, and a round trip from West Yellowstone to Old Faithful Inn by stagecoach. I left Nebraska early enough so that all the side trips could be taken before my job began on July 1, 1911.

The forest headquarters was at St. Anthony in eastern Idaho. Our work area was bounded on the east by the western boundary of Yellowstone National Park, and extended north about 50 miles from a dirt road leading east from Ashton, Idaho, toward the north end of Jackson Hole.

Our field party included the party chief, a permanent Forest Service employee, and 10 college students, mostly forestry majors (Figs. 3 and 4). Our cook was an elderly man, an Oxford University graduate.

The work area was situated on a high basaltic plateau that was almost entirely without streams or lakes. Thus, our water came to us by packhorse in kegs -- Coca Cola kegs! We drank water with a slight Coca Cola flavor, we ate food with a slight Coca Cola flavor, and our occasional sponge baths had a slight Coca Cola flavor. The flavor was not enough to be good, but it was always there! (Publication 30).

Little was known as to the character of our work area, it was unsurveyed, and the first task was running a transit survey to keep our work accurately located (Fig. 5). Day to day work was closely tied into the transit line, which was in turn tied to surveyed land in the vicinity of the road leading easterly from Ashton, some miles west of the west.
Our first transit line was through rolling to level country, but with one very deep canyon draining to the east. When our transit crew reached the south rim of the canyon, I was chosen to scramble to the bottom, and climb the steep slope up to the north rim. I had a stadia rod so that the transit man could determine the distance. As I was climbing the steep slope, I followed a game trail that wound its way up to the north rim. Suddenly I met a bear coming downslope along the same trail, and there was nothing between us but a little air. I turned tail and ran back down the hill until I discovered the bear was not following me, and then resumed my climb to the top. When I reached the rim, the transit man got his reading, and the rest of the crew wound their way across the canyon to continue the transit survey northward. When they reached me they said my meeting the bear had been very funny, for I had gone downslope only a few steps before the bear had gone uphill several times as far (and as fast) as I had gone downhill; the bear was more scared than I. Since in 1911 this was untravelled territory, it was quite possible that I was the first human the bear had ever seen.

Except for the deep canyon, we saw no running water during the entire summer's work. We did encounter one channel that was reduced to a few large, rather deep pools. One such pool even looked as though it should have trout in it. On that particular day two other men (Saxton and Grossman, foresters from the University of Michigan) and I were working together. We stopped at the large pool, and Saxton picked a small blue flower and threw it into the pool from the high west bank. There was a swirl in the water, so we then tried to devise some way to catch that fish. Saxton got a short willow pole, we found a piece of string in our gear, a small hook from a hatband, picked another blue flower, and tried it again. Saxton hooked the fish, and a lengthy battle followed. The fish began to tire, but we felt we would lose him if we had to lift him from the water. Saxton carefully led the fish toward the shallow side of the pool, and Grossman and I got into the deep side of the pool, lay down in the water end to end, and together we rolled toward the shallow side, literally rolling the fish onto the sandy bar. It ended with us having an eight
pound rainbow trout, the only one we caught all summer.

Near the western Park boundary we encountered a hot spring with a basin about twice the size of a bathtub. For a very few days we had a daily bath that we really enjoyed. The spring was not too hot for two or three of us at a time to enjoy a good soaking. Unfortunately, that was our only bath luxury all season. Yet, for all the discomforts, it was a very satisfying summer.

After my second year at the University of Nebraska I worked for the Forest Service in Tahoe National Forest in California. I left school early to accompany my history professor for a two week cruise on a Mexican coastal ship, prior to starting my Forest Service job. Enroute to Mexico I made brief stops at the Petrified Forest (Fig. 6) and the Grand Canyon, where I hiked down to the river and back. I met Professor Persinger at Tijuana, Mexico, on June 14, and we departed on the 15th for a trip down the coast, riding steerage. The inferior accommodations made for a really unpleasant experience! The ventilation was practically nil since the steerage deck was below waterline; a high hatch was the only means for fresh air to reach us, and very little did. We got enough of steerage in one week southbound, and Professor Persinger took a cabin for our northbound return to Tijuana.

I reported to the Forest Service at Truckee, California, on July 1, 1912, for work in the Tahoe National Forest (Fig. 7). This summer's work gave me a splendid introduction to the vegetation and terrain on the eastern slope of the Sierra Nevada, as well as an introduction to wasteful logging practices. It also helped to whet my appetite for living and working in the West (Fig. 8).

After my junior year at the University I spent another summer working in the west, this time on a survey party for the Canadian Pacific Railway in the Selkirk mountains of southeastern British Columbia (Fig. 9). Included in the photographs that I took that summer of 1913 were several of a very unusual glacial formation near Windermere -- a small glacier about 125 feet thick and about 200 feet wide, that had undercut a layer of resistant caprock, cutting away the softer underlying strata, with the top of the glacier scraping the underside of the caprock. When Professor Condra, head of the Geography Department at Nebraska, saw the pictures he contacted Professors Chamberlin and Salisbury at the University of Chicago, who in turn invited me to Chicago to share with them my comments and photographs of this unusual feature. They later informed me of their plans to use one of my pictures in an upcoming textbook on Physiography, but I never heard any more about it. I would liked to have returned to the site of the glacier, but never had the opportunity.

My undergraduate work at the University of Nebraska was completed in the spring of 1914 (Figs. 10-12), and I graduated in June with a degree in Agriculture, but with very close ties to Geography.

Fig. 6. Touring in Petrified Forest, Arizona, June 1912.
Fig. 7. Tahoe National Forest, July 1912.

Fig. 8. W.A.R., Tahoe National Forest, 1912.

Fig. 9. Members of survey party at British Columbia cruising camp, 1913. W.A.R. lower right.
Fig. 10. Members of University of Nebraska Geology 31 class in field camp at Weeping Water, Nebraska, March 16, 1914, "Before the Storm." Professor E.F. Schramm standing, 5th from right; W.A.R. kneeling, on right.

Geology Students
Camp Out in Snow
at Weeping Water

Professor Schramm and a geological party of seventeen students are getting a taste of real pioneer life this week while camping near Weeping Water. The party set out to do field work in geology and did not count on the terrors of winter during the spring vacation. One large tent is supplying shelter to the entire number, and equipped with one stove they are managing to stick out the week. The party will probably return Saturday night.

Fig. 11. Newspaper article found in the Museum Archives at Lincoln and provided by Professors Leslie Hewes and T. Milan Stout of the University of Nebraska.
Fig. 12. Geology 31 camp at Weeping Water, Nebraska, "After the Storm." Apparently the snowy camp made less impact on W.A.R. than on a local newspaper reporter, because Rockie made no mention of the incident, although his files included photos of the camp.
Immediately after graduation from the University of Nebraska in June of 1914, Miles W. Beck and I began a soil survey of Thurston County in northeastern Nebraska (Publication 2). Beck was with the U.S. Bureau of Soils and I represented the Nebraska Soil Survey. Part of Thurston County was in the Omaha and Winnebago Indian Reservations, so we frequently had to deal with Indian chiefs. One chief in particular always seemed to have a kettle of stew on the fire. On one occasion he insisted on sharing his stew with us. The floating hair on the soup looked suspiciously like it had belonged to a dog we’d seen on an earlier visit; one bowl was more than enough! During the summer we had several more encounters with the chief and his steaming kettle of dog stew, but we carefully avoided sharing it with him. During the remainder of 1914 I was involved in graduate work at the University, and continued soil survey work in other counties of eastern Nebraska (Fig. 13) (Publications 1 and 3).

Early in 1915 I received an appointment with the U.S. Soil Survey, and for my first job reported at Alexandria, Louisiana, to Rizden T. Allen, who was Hugh Bennett’s brother-in-law, for a soil survey of Rapides Parish (Figs. 14 and 15) (Publication 6).

After a brief time in Louisiana, I went on to Texas to join a survey party under the direction of Leroy R. Schoenmann, for a soil survey of Smith County (Publication 4).

In late April 1915 I reported to H.V. Geib at Madison, Wisconsin, for a few days of training before joining a soil survey crew at Grand Rapids (now Wisconsin Rapids), Wisconsin (Fig. 16).

In June I was sent to Logan, Utah, for training with William Peterson at Utah State College. The new job entailed classifying lands within the National Forests of Utah and Idaho that had agricultural possibilities. This continued until winter, and I returned to Ogden to write the reports on the year’s work. During the winter I worked on a soil survey of Eastland County, Texas (Publication...
Fig. 15. Pineville, Louisiana, 1915. Note the backward letters and incorrect spelling on the restaurant sign; also, a sign of the times, the poster on the tree advertises "painless dentistry," and "gold fillings, $1.00 and up."

Fig. 16. Rockie, Thompson and Hansen, soil surveyors on their day off, Grand Rapids, Wisconsin, May 1915.

5), and in late April 1916 resumed work in Utah, working north as the winter snows receded. During the summer and fall the work was located out of Soda Springs, Idaho, and Jackson, Wyoming.

During the year I had made plans to be married in December. After completing my year's report writing at Ogden I went to Superior, Nebraska, where Edith Shank and I were married at her parents' farm home near Superior on December 27, 1916. We left the next day for a visit at Emporia, Kansas, with Edith's friend, Jen Owen, who worked for William Allen White, editor of the Emporia Gazette. We then had a brief visit with Edith's former co-workers at the YWCA in Evansville, Indiana, followed by a short honeymoon stay in St. Augustine, Florida.

In mid-January 1917 I reported for work at Waynesboro, Georgia, with E.T. Maxon, Joe Snyder, and Clyde E. Deardorff, for a soil survey of Burke County, Georgia (Publication 7). Edith and I had a large upstairs room and bath in a colonial mansion, and took our meals at a nearby boarding house (Fig. 17).

In April orders were received to report to Ogden, Utah, to continue the work I had been doing in 1915-16. We went by train to Nebraska to see our folks, and Edith stayed there while I went on to Ogden to make plans for the season's work.

One of the specific areas to be surveyed was the La Sal National Forest in southeastern Utah (Fig. 18). The lands were located to the west-southwest of Monticello, a small village east of the Colorado River Canyon, and north of the San Juan River (Fig. 19). Much of the area could be reached only on foot or by horseback. The area was broken by many uncrossable box canyons separating nearly level to undulating tablelands. It supported an open park-like growth of Ponderosa pine interspersed with broad grassy meadows. To be classified as
agricultural land, it had to be topographically and edaphically suited for farm development.

Because of the difficulty of reaching and traversing the area, and because the trails and canyon crossings were known only to the Ute Indians, it was necessary to have the services of an Indian guide. Old Posey was widely recognized as the Indian who was best acquainted with the area; he could speak enough English to be useful to us, and was highly recommended by Forest Service personnel. He was also the recognized leader of his people and was considered fully reliable. In addition, the Forest Supervisor assigned his clerk, Howard Balsley, to accompany me into this remote wilderness.

Since the area had neither people nor stores, we outfitted with supplies to last for two months. Posey furnished a saddlehorse for each of us, and several packhorses were loaded with survey equipment, tents, bedrolls and food. We discovered the very first day that we would not be alone, for Posey had many "hangers-on." About 25 to 30 Indians followed at a discreet distance, but always camped within calling distance -- several men, women, and many children. This fact bothered Balsley and me right from the start, and bothered us even more when we discovered food disappearing almost every time we left our camp. However, since we were far from any whites, we decided it would be unwise to accuse the Indians of stealing.
At the end of the first week we made plans to move our camp on Sunday morning. We were camped on the north edge of a mile-wide grassy meadow in which the horses had excellent grazing. Posey was across the meadow tailing our string toward camp, when Balsley decided that he would set up his camera tripod and take Posey's picture as he approached. I saw Posey suddenly leave the string and start his horse on a dead run toward us. I was puzzled as he bore down upon us with no sign of slowing down, headed for Balsley's camera. As he passed the camera on its tripod, a black leather quirt appeared and hit the camera. Posey then circled back toward the horses without ever slowing down. He swung in behind the horses and started them coming toward camp again just as though nothing had happened. We were both rendered speechless by Posey's destruction of the camera, and Balsley's first words were a masterpiece of understatement, "I don't think I had better try to take Posey's picture." Since his camera was in pieces on the ground it was quite evident that he could not. We decided before Posey reached camp with the horses that we would ignore his overt act, and proceed as though nothing had happened. It appeared that any objection on our part might bring on something worse than the destruction of a camera. When Posey reached camp with the horses, we tried to act natural, and went ahead with loading our outfit and moving to the next campsite. Posey again seemed to be his former self, so we tried to do likewise. Every time I used my camera after that Posey watched me like a hawk, but within a few days he apparently decided I had gotten the message.

During the ensuing weeks Posey appeared convinced that I would not try for his picture, so that he gradually became the shy friend that he had appeared to be when he was first hired. He observed our every act and move interestedly and intelligently. He began to show that he could and would do things to help us and displayed a keen interest in all of our activities. He had very keen eyesight as we had learned in that frightening incident, and frequently would point to an arrowhead that I had failed to notice. He took us to various cliff dwellings which we could never have found unaided, and even helped lower us by rope into some of the dwellings.

His most friendly act was on a Sunday weeks later when he suggested that I go alone with him. He took me to the site of a prehistoric village consisting of several hundred mounds, each about 15 feet across and two to three feet high. I had wondered that morning when he had tied two shovels behind his saddle, but when we reached the site he suggested we excavate one of the earthen mounds to see what it contained. We found a human skeleton, two pieces of pottery, some arrowheads and some pottery fragments. Before we left, Posey took all the articles we had found, placed them in the hole we had dug, and covered them with earth. Before leaving I took a compass bearing on twin peaks to the west -- across the canyon of the Colorado River -- and also got a bearing on Abajo Peak to the northeast, with the thought that I might some day return to the site for further study. After that phase of the season's work was done, back in Ogden writing reports, I found that the page of my notebook on which I'd written the compass bearings had been torn out. I had to assume that Posey did not want me to relocate the prehistoric village.

During the next few years I often thought about Posey's violent reaction to the camera, in an attempt to explain the one rash action so unlike the rest of his conduct during our weeks together. Old Posey would have stayed an enigma, had it not been for a news item under a Salt Lake City headline nine years later, in 1926. The item contained a report of a Ute uprising in southeastern Utah, in which numbers of white settlers who had homesteaded lands in the area were attacked and killed by a band of Utes under the leadership of Old Posey. The uprising had been quelled by troops from a fort near Salt Lake City, and Posey had been killed. It then came to light that the U.S. Army had placed a $5,000 reward on his head, dead or alive, back in 1887, because of his killing of some white settlers at that time. He clearly had good reason for not wanting his picture taken.

After completing the work in the La Sal National Forest, I was able to arrange my work so that we would be headquartered at Richfield, Utah, during the latter part of the summer, and sent for my wife (Fig. 20). Late in the summer we moved farther south, working in the Escalante and Boulder area east of Bryce Canyon (Fig 21). The work in southern Utah was completed in late September, then we went by train to Armstead, Montana, where we caught a horsedrawn stage to Salmon City, Idaho. From there Dana Parkinson and I conducted field work in the Salmon National Forest. When finished, we lived in a big family hotel occupied mainly by Forest Service people in Ogden, Utah. I finished writing my reports on the season's work in time for the Christmas holidays, which we spent with our families in Nebraska. We spent the winter in Washington, D.C., while I outlined my next year's work on other national forests.
During my years in the Soil Survey, my chief in Washington, D.C., was Curtis F. Marbut, the well-known soils geographer. When he visited my field work area I became his personal valet, business manager, etc. I would receive an envelope containing $500 to $1,000 in cash (the amount depended on what was estimated to be the expense for that trip). I would then take care of everything, including responsibility for his briefcase and suitcase. He was penurious in his personal habits, and if he could save Uncle Sam five cents, he did. All the trains we travelled were 15 to 17 cars long. When we boarded the train, say, going from Boise to Salt Lake City, he would go to the chair car near the engine and sit down until 10:00 p.m., then we would start hunting for a sleeper. We'd go back through the several chair cars to the sleepers, and he'd ask the porter in each Pullman car for two berths. If there were none, we'd continue asking and walking until we reached the last car—with me carrying two grips, his and mine, and I would see to it that he had his briefcase. Frequently there were no vacant berths. Then we'd walk back the length of the train to the front chair car where we'd sit up the rest of the night.

In March of 1918 I was transferred to the U.S. Geological Survey for land classification related to the Stockraising Homestead Act for federal lands not in national forests. I was assigned to head and instruct a party of 16 land classifiers in central Oregon. Our assignment was land classification of second- and third-grade agricultural lands and grazing lands, and we were assigned 16 Model T Fords for our transportation.

Edith and I left Washington, D.C., in late March, visited briefly with our folks in Nebraska, and then I went on alone to Portland, Oregon, to decide where our headquarters would be, and how to get the 16 Model T Fords from Portland to central Oregon. When I arrived in Portland on April 1, the cars were not available, so Nathan C. Grover, Chief of the Water Resources Branch of the U.S.G.S. (under whom the land classification work was being done), assigned me to an army captain in determining where to drill some water wells to serve military installations in the Pacific Northwest. This took until the end of April, by which time the 16 cars had been delivered. The government paid $350 each for the cars, $5,600 for the fleet (Fig. 22). Five of us tried driving them to The Dalles, but three of the five were not familiar with driving a Model T, and burned out the bands going over the Mosier grade, about 60 miles east of Portland.
I established our headquarters at Condon, Oregon, and assigned portions of the state to each land classifier/driver (Figs. 23-25). Rubber tires were our chief trouble, due to poor roads; we averaged only 2,700 miles per tire during the entire season.

On June 8, 1918, I had an unusual and very memorable experience. I awoke to a beautiful clear day at Wasco in north central Oregon. I was looking forward to the total eclipse of the sun at about four o'clock that afternoon. I planned to locate and map three tracts of federal land a few miles northeast of Wasco before the hour of the eclipse. Earlier I had been advised by my chief in Washington, D.C., Nathan C. Grover, that a man had been hired to inspect the work of my land classification crew, and I was to meet him in Wasco that morning when he arrived on the branch line train from Biggs Junction to Shaniko. I met him at 8:30 in the morning and we drove a few miles northeast, during which time I learned that he taught agriculture at the State Normal School at Lewiston, Idaho. About 10:00 I stopped near an unoccupied farmhouse to resume work on a plane table map.

As I worked at my plane table the inspector (who should probably remain nameless) watched my work for a while, then he walked to the nearby farmhouse. Moments later I was startled by the crash of breaking glass, and saw that the inspector had broken a window in the house with a fencepost. I asked him what he was doing, and he replied that he had hunted all over the farmyard for a piece of glass that he could smoke, through which he could view the eclipse during the late afternoon. He could find none, so saw nothing wrong with breaking a window in an abandoned farmhouse. I pointed out that the farmhouse was not abandoned, only unoccupied, because the owner was in the army. As the day passed the inspector repeatedly tried to justify his breaking the window, and that he was not in the habit of doing such a thing, and I began to feel less unfriendly toward him.

I mapped another tract in early afternoon and had just reached the third tract, when the time for the solar eclipse approached. My Model T Ford had been missing on one cylinder, so while waiting for the eclipse, I lifted the hood and was cleaning a...
spark plug when I heard a crackling sound. I looked around and saw that the inspector had set fire to a pile of Russian thistle adjoining a field of wheat ripe enough to burn. The fire was still small so I grabbed the first thing I found in the car, and beat out the fire before it did any damage. About this time the eclipse began, and it was a wonderful experience. While we were in the darkness, Mt. Hood to the southwest and Mt. Adams to the northwest remained in bright sunshine throughout the eclipse. While engrossed in the spectacular phenomenon I was still thinking about what action to take regarding the inspector. By the time the eclipse was over I had decided I wanted nothing more to do with him, so told him I would leave him there, and would send someone out from Wasco to get him before nightfall. I took his grip and briefcase out of the car and set them on the ground, despite his constant protesting. I cranked the car and started to leave, but stopped when he yelled that he wanted his topcoat. Not until then did I realize that I had used his topcoat to beat out the fire he had started. Several times he mentioned that he would get me fired for what I was doing, but I was "fed up." I reached Wasco about 5:00 o'clock and fortunately was able to contact my boss, Mr. Grover, at his home in Washington, D.C., so told him what had happened. He asked me to send out transportation as I'd planned, and instruct the inspector to report to Gerald M. Kerr, who had a similar survey party in Idaho. Weeks later I learned that after a day or so with the inspector, Mr. Kerr had all he could take of him, and the inspector returned to his teaching job at Lewiston Normal. I never saw him again.

My wife and our first son, Dwain (born at Superior, Nebraska, in late June), joined me at Condon in late August (Fig. 26), just before the 1918 flu epidemic struck in September. Many of our men and their family members became ill during the epidemic; I arranged to use one floor of the Hotel Dalles (in The Dalles, Oregon) as a "field hospital," and spent several weeks playing doctor and nurse. By a miracle, Edith, the baby and I all stayed healthy, so while I was with my patients in The Dalles, Edith helped our neighbors in Condon.

In November we headed east and the family stayed in Nebraska while I went on to Washington, D.C., to write the final report on our season's work. While in Washington I was asked by Professor George Condra of the University of Nebraska to fill a sudden vacancy in the Geography Department caused by Professor Nels Bengston's appointment by the U.S. Department of Commerce as Trade

Fig. 26. W.A.R. and son, Dwain, at Condon, Oregon, August 1918.
In January 1919 I began teaching Dr. Nels Bengston's Geography classes at the University of Nebraska. Since I had been his assistant from 1911 to 1914, the takeover was rather painless. For the next 18 months I combined my teaching with conducting soil surveys in Sioux County, Nebraska (Fig. 27). One of my fellow workers on the soil surveys was Clyde Deardorff, whom I had worked with in Georgia in 1917 (Publication 8).

I spent some time logging cottonwood trees to make excelsior, the standard packing material of the day, and later worked for the lumber company that had marketed the cottonwood trees for me. When that job ended, the prospects of returning to government service with the U.S. Department of Agriculture became increasingly attractive.

I contacted several people in the USDA, and in the spring of 1922 had an interview for a job. Nothing materialized until summer, when I received an appointment to the U.S. Bureau of Plant Industry. I started on the new job in June, the same month that our second son, John, was born.

Teaching was enjoyable, but I found myself becoming increasingly discontented with the Nebraska climate (in which I had grown up, but which I had managed to avoid for much of the previous eight years). Because of this discontentment, and on the strength of a job offer in Sandpoint, Idaho, at the end of the school year in May of 1920 I advised Dr. Condra that I was planning to resign and return to the West. He tried to dissuade me, but to no avail. I can still remember as a boy in Fremont, Nebraska, sleeping on the grass in the yard at night, and when the grass got really hot under me, I'd roll over to some cooler grass. When that grass got hot, I'd roll to yet another spot with cooler grass. The nights just did not cool off, and that, and some of the winter northerners were what helped convince me to move.

By the time we arrived in Sandpoint the job offer had fizzled, so I spent the next two years doing a variety of things. I tried my hand at raising seed potatoes, but after a successful harvest, a packrat in our cellar virtually put me out of the seed potato business.
My first task in the Bureau of Plant Industry was an extensive ecological study of the interior dry belt of British Columbia, Washington, Idaho and Oregon. The study was made during June to September 1922. The region investigated was bordered on the west by the Coast Range of central British Columbia and by the Cascade Range of southern British Columbia, Washington and Oregon, and on the east by the Rocky Mountains. W.E. Lawrence covered the southern part; V.H. Young of the University of Idaho Botany Department and I covered the northern part (Fig. 28). The study was made primarily to investigate the possibility of a natural barrier which might prevent or delay the eastward spread of the white pine blister rust. To be an effective barrier, the area between the mountain ranges had to be without the genera Ribes and Grossularia (currants and gooseberries), for they were the alternate host plants.

It was believed that if the distribution of Ribes was not too widespread, they could be eradicated. After several months of study we concluded that there were too many of the wild currants and gooseberries -- as well as those in people's gardens -- for successful eradication. It appeared that a possible alternative was through some white pine eradication work in selected areas.

I should mention an unusual experience I had while in Canada that summer. Dr. Young and I were working our way southward along the west side of Okanagan Lake in southern British Columbia. During the summer we had camped when necessary, but preferred to stop where there were prepared meals and comfortable lodging. When our survey reached Okanagan Lake we began looking for a place to stay. By good fortune we inquired at a rather pretentious ranch house as to where we might find lodging while we surveyed that area. It happened to be the home of J.C. Dun-Waters, and we were offered food and lodging for the duration of our time in the area. We were given a guest house, and had most of our meals in the Dun-Waters home.

Dun-Waters had been a British army officer during World War I, and had retired to this place. The ranch was situated on a several hundred acre delta across the lake from the town of Vernon. An array of buildings served the many facets of the ranch (orchards, crops, livestock, etc.). All of this made for a very unique experience, but the most memorable feature was found in Dun-Waters' trophy house -- a mounted elk head with very large antlers, which we measured to be eleven feet three inches from tip to tip! Dun-Waters explained that he had received a special permit from the U.S. Secretary of State to hunt in Yellowstone National Park, and that is where he shot the elk. The entire collection of his hunting trophies had been willed to the Canadian National Museum in Ottawa. However, in the late 1920's the Spokesman Review of Spokane, Washington, reported that the Dun-Waters trophy collection had been destroyed by fire. I later contacted the museum in Ottawa and learned that they had not recorded the size of the huge elk antlers, so unfortunately there is no official documentation of what would certainly appear to have been a world's record.

Fifty-seven years later I returned to British Columbia on a nostalgia trip with my two sons, and retraced much of my travels during the survey in 1922. Included in this trip was a brief visit to the site of the Dun-Waters ranch (named Fintry -- most likely after a town in Scotland), and many of the features on the delta, both physical and cultural, were much the same as I had found them over a half century earlier (Fig. 29).

To return to 1922, that summer's work led to further study and research, and later, eradication procedures, that kept me occupied for the next eight years as an ecologist with the Office of Blister Rust Control. I was headquartered in Spokane, Washington, with field work primarily in northern...
Idaho, and to a lesser extent, Washington, Oregon and British Columbia. Despite earlier conclusions that the eradication of Ribes was an impracticable means of providing a barrier to the spread of blister rust, it had been decided after further research to attempt to eradicate the wild currants and gooseberries from the white pine stands of northern Idaho. Camps were established in the forests, and crews were assigned to various camps to proceed with the eradication. I managed two one hundred-man camps in the Priest River drainage of northern Idaho during the summer months of 1923-25 (Fig. 30). By 1926 I had developed some theories about why currants and gooseberries were where they were, and was assigned to a research job to try to improve on our eradication techniques.

During these years I became friends with Robert "Bob" Marshall, of later Wilderness Area fame. I do not recall the exact circumstances of our first meeting, but it was in northern Idaho, and Bob was with the Priest River Branch Experiment Station of the U.S. Forest Service. He had recently graduated from Syracuse University with a major in Forestry. The western environment was new to him, but he was deeply interested in every detail of the outdoors. I learned immediately of the depth of his dedication to the forest and to everything that pertained to it. Every plant, every insect, every bird and every animal came under his eagle eye. His questions were innumerable, but one never had to tell him the same thing twice. Unfortunately, he had developed a love for the philosophy and theory of communism. I found that our thoughts about nature dovetailed in nearly everything we said or did, but we disagreed rather violently regarding his political leaning.

Partly because of Bob's interest in my work in Blister Rust Control, his boss, Dr. Robert Weidman,
assigned him temporarily to assist in my research. I assigned Bob with Lincoln Ellison to help assist in the necessary studies there at his current station, and conferred with Bob regularly during the next two field seasons.

I remember vividly Bob's passion for walking. One Sunday evening I arrived at the station where Bob was working and found that he and Ellison had left the station at daylight to climb three mountain peaks that day, and had not yet returned. They finally arrived about 11:00 p.m. from their reported 57 miles of mountain climbing that day. Ellison dropped onto his bunk exhausted, but Bob said to me, "Bill, come and walk down the road with me so that I can put my mileage for today at more than 60 miles." On another occasion, one hot summer day, I was driving south on Washington Street in Spokane when I saw Bob Marshall walking with a pack on his back. I hailed him and offered him a ride. He refused with the word that he was on vacation and was walking from Spokane to the regional office of the Forest Service in Missoula, Montana.

Another earmark of Bob Marshall was his notekeeping. His personal work table was always littered with slips of paper, each portraying the details or observations about some little bit of research he was doing. I asked him about many of them, and learned that he did these things whenever he had an idle minute. They included items such as: how far a bug of a certain species travelled in one minute; the range in size of the leaves of huckleberry; the number of seeds in one wild currant, etc.

My research on the blister rust problem had the blessing of our chief in Washington, D.C., Samuel B. Detwiler, but the chief of the Spokane office, Stephen N. Wyckoff, did not like the idea (Note: The exact nature of Wyckoff's objection to Rockie's research is not made clear in Rockie's papers). This caused some friction in working conditions, but I continued on the research (Fig. 31) until I was called to Washington, D.C., in January of 1930 to write a bulletin describing our results.

During the field season of 1929, Bob Marshall had surprised me with the announcement that his father had died and had left Bob relatively wealthy, so he had decided to go back to school to pursue a doctorate at Johns Hopkins University, in Plant Physiology, as I recall. In June, 1930, while I was in Washington completing the bulletin on my ecological study, I had a call from Bob and he told me of his upcoming trip to Alaska.

While in Washington, D.C., I renewed friendships with other old friends, including Hugh H. Bennett, whom I had known in Soil Survey work years before. Bennett offered me a job at Pullman, Washington, to develop and supervise an erosion experiment station. He had just received some funds from Congress to start ten erosion experiment stations around the country, and he had chosen Pullman as the location for one of the stations.

I completed the blister rust eradication bulletin by the end of June, had it approved by Dr. Detwiler, and proceeded with my transfer from the Bureau of Plant Industry to the Bureau of Soils. The bulletin was never published, however, a result of some bureaucratic complications. By the time I learned about the complications I was too busy with my new work to give the bulletin the modifications needed for publication.

As I prepared for the transition to the new field of soil conservation, it brought to mind my first specific study of soil erosion in the Pacific Northwest. It happened during my wild currant study near Elk River, Idaho. In May of 1923, I was studying the root habits of these plants and their contribution to stability of stream banks against washing away by undercutting.

One morning I was lying on my stomach with
my chest and head down over the bank making measurements of the roots of the different plants growing on the stream bank when I heard something moving behind me. When I raised my head I saw a large black bear breakfasting on the vegetation. The bear was swinging his head back and forth in his search for his favorite leaves, and although he was within six or seven feet, he was not yet aware of my presence. From many previous encounters with bears, I knew they have very poor vision. I also knew that I must change my position and soon. Moving very slowly and carefully, I got the lower part of my body down over the bank with my feet in the stream without the bear’s seeing or scenting me. By that time, the bear had advanced to within three feet of my head as I crouched in the stream under the vertically cut bank. Something had to be done. With all the energy I could muster, I suddenly jumped, leaped and yelled -- like a jack-in-the-box -- and really startled the animal. Instantly the bear jumped into the air, reversed himself tail for head, with his feet working like a paddle wheel, but very ineffectively, since his feet were in the air. When he came down his rapidly moving feet quickly took him out of sight.

The bear left me around 9:00 a.m., and after my nerves had quieted down, I returned to my study of the plant roots. At noon I walked over to the trail where I had left my lunch. A forest guard soon came along and we passed the time of day. He explained that he was the first person over that trail this spring and was cutting out logs and brush that had fallen during the winter. I asked him if he'd had lunch, and he said he had not, so I invited him to share mine. During lunch he said he had had a strange experience earlier that morning. He was axing through a downed log across the trail when a black bear came tearing up the trail at a gallop. He said it acted terrified and appeared to be running rather blindly. When it finally did see him it was less than 10 feet away. Without any hesitation it turned up the hill and disappeared, still at top speed. He said, "Its deep tracks in the trail showed continuously from where I saw the bear to here, a distance of more than three miles, and I've been wondering what could have scared that bear." After studying the bear's tracks we concluded that it had indeed been surprised and scared by my desperate action by the stream bank.

From this first rather brief study of soil erosion in the Pacific Northwest, soil conservation became the focus of my professional life for the next three decades.
My initial contact with the name "Palouse" was during high school in Fremont, Nebraska, in 1906 or 1907. The local Union Pacific Railroad station agent hired me to distribute 30 cardboard posters (each about 3 1/2 by 6 feet) in 30 towns of eastern Nebraska (Fig. 32). My job was to nail the posters inside the waiting rooms of the passenger stations of the Union Pacific Railroad. I was given a rail pass, expenses for meals, and $5 for the job, which took several days (Publication 46).

The poster told about millions of acres of government land open to homesteading in Oregon that yielded 60-bushel wheat crops and had no crop failures. The lands that were advertised included much of the area between Bend and Burns, Oregon, and were described as being in the "Palouse Region of Oregon." The poster also encouraged the reader to write for more information, which came in the form of a booklet which included glowing descriptions of the agriculture potential of each county in central Oregon, Lake County in particular.

Several years later I had the opportunity to see the true Palouse, as well as the area between Bend and Burns, and they were, and are, vastly different. My first glimpse of the true Palouse came in 1913. I had been working on a survey party for the Canadian Pacific Railway in southeastern British Columbia during the summer, and before returning to school at the University of Nebraska I travelled by rail from Cranbrook, to Spokane, to Lewiston, and return (Fig. 33). Then in 1918 while working on land classification for the U.S. Geological Survey, with headquarters at Condon, Oregon, I had the opportunity to see the "Palouse Region of Oregon" in some detail. My land classification task included an examination of large areas of abandoned 320-acre homesteads in northern Lake County, Oregon.

In 1930, after being hired to develop a soil erosion experiment station at Pullman, Washington, I found myself working in the heart of the Palouse. The Pacific Northwest Soil Erosion and Conservation Experiment Station (Figs. 34-35), established cooperatively by the State College of Washington and the U.S. Department of Agriculture, was conducted jointly by the Bureau of Chemistry and Soils and the Bureau of Agricultural Engineering. I was appointed superintendent of the Station and was in charge of soils work. Paul C. McGrew was assigned to the Station as Agricultural Engineer. The Station was set up to determine the extent of erosion losses and to find practical methods of controlling soil and rainfall losses.

The soil erosion experiment station at Pullman was one of ten throughout the country. The steps leading to establishment of these stations are described below:
Fig. 33. W.A.R. assisted Erwin Raisz in the final compilation of this landform map in 1951. Spokane, Pullman, and Lewiston are marked by large dots.

The first governmental recognition of the erosion problem in America occurred in 1903 when the United States Department of Agriculture began some field studies in "hillside erosion." In 1914 investigation of field terraces for the prevention of "hillside erosion" was begun. In 1915 the Department began studies in Utah, under the direction of Arthur Sampson, to determine the soil losses from forestland. The writer first studied the effectiveness of field terraces in Louisiana, Texas, and Georgia from 1915 to 1917. The Missouri Agricultural Experiment Station began to measure soil losses under different cropping conditions in 1917, and in 1926 similar studies were begun by the Texas and Oklahoma Agricultural Experiment Stations. Although these and other less formalized studies were spread over a 25-year period, the nation was not yet aware of the problem.

In 1927, however, a USDA bulletin entitled Soil Erosion: A National Menace, by H.H. Bennett and W.R. Chapline, combined with Bennett's personal crusade among the people and before the United States Congress, caused sufficient furor that Congress appropriated $160,000 for the establishment of ten erosion experiment stations. These stations were started in 1930 at the following locations: Statesville, North Carolina; Zanesville, Ohio; La Crosse, Wisconsin; Clarinda,
Iowa; Bethany, Missouri; Hays, Kansas; Temple, Texas; Guthrie, Oklahoma; Pullman, Washington; and Tyler, Texas.

They were located in what were considered the worst eroding regions in the country, and they were under the direction of H.H. Bennett. The writer was selected to head the station at Pullman, the only one in the western half of the country. Other stations were added to these ten in later years in other badly eroding regions. These stations mark the birthplace of soil conservation (Publication 53).

At the time I began my soil erosion research in the Palouse, most of the tilled land in the Northwest had been cultivated only within the past 40 years. The Willamette Valley and the Palouse country were the only extensive areas that had been farmed for a longer period. Conservation of the soil in the Pacific Northwest was different in this respect from most parts of the United States. In the Piedmont country of the eastern and southern states, in the "Dust Bowl" of the Middle West, in the range lands of the Southwest, and to varying degrees in other sections, it was largely a job of repairing "damaged and ruined land." If these more damaged sections of the country had attained conservation farming when they should have, the tasks there also would have been those of prevention.

The Chinese custom of paying a doctor to keep one well, and of ceasing to pay him during illness, is conservation at its best. The Chinese doctor then works hard to get his patient back to health so he can again receive his continuing fee. The Soil Conservation Service in the 1930's was so busy working with "sick" land that insufficient thought was being given to keeping the good land healthy. There were not enough Soil Conservation doctors to care for both the sick and the healthy, so the tendency was to let the healthy land rely on its own home remedies. This had not proven sufficient in other sections of the United States. It remained to be seen if it would be in the Northwest. Some of the experiments tried at our Station are described briefly:

...The major line of investigation which has been initiated to date is a
Fig. 35. W.A.R. in Soil Erosion Station pickup, Pullman, Washington. Vehicle was provided by the U.S.D.A. Bureau of Chemistry and Soils, W.A.R.'s parent agency.

series of plots from which the runoff and erosion is under absolute control. On these plots most of the major cropping and tillage systems will be tried and the resultant runoff, for instance, from a field of sweet clover, will be compared, and the amount of water which is lost together with the amount of soil carried off in that water will be compared. Some of these plots are twice as long as others in order that we may know whether a long slope runs off proportionately as much water as a short slope. One plot has been desurfaced to subsoil so that all the runoff and erosion from this plot will be similar to the effect upon our clay hill tops, yet placed on a comparable basis with the adjoining black soiled slope...

A rather extensive system of terraces has been partially built, the effect of which it is hoped will tend to materially decrease both runoff and soil erosion. This system of terraces is made up of individual terraces of different lengths, draining different acreages, and with different gradients... (excerpts from a radio talk by W. A. Rockie, April 27, 1931).

In numerous Agricultural Experiment Station bulletins dealing with agricultural land problems, published in the Pacific Northwest between 1918 and 1924, none considered erosion to be a serious problem. In most it was either mentioned in passing or omitted entirely. In 1930, however, the following statement was made about the Palouse:

Practically all of the crop land of this area has been devoted exclusively to small grain farming for 35 to 50 years. Under this treatment, the soils have lost at least 35 percent of their organic matter, 25 percent of their nitrogen and much of their capacity of absorbing moisture. Furthermore, soil erosion has increased during this period until it has become a serious menace ("Farming Systems for Eastern Washington and Northern Idaho," by George Severance, Byron Hunter and Paul Eke, dually published as Bull. 173 of the Idaho Agric. Exp. Sta., July 1930, and as Bull. 244 of the Wash. Agric. Exp. Sta.). This was one of the first printed statements of the seriousness of the erosion problem in the Pacific Northwest.

Dr. E.A. Bryan, the first director of the Washington Agricultural Experiment Station, stated in a letter to me dated March 5, 1932:

I came to the State College as its President and Director of the Experiment station in 1893 and remained Director for about fifteen years and President for twenty-three.

For the first fifteen years our attention was not drawn particularly to soil erosion -- indeed, rather to the absence of it. Of course there were occasionally and in spots what were called "cloud bursts" in which hillsides, no matter how protected by growth, were washed down in spots, while along the canyons tributary to the Snake River the floods would produce havoc. It is
to be remembered that in that period the land had not been long under cultivation. It was full of small rootlets that held soil particles as a string of beads and the soil was very like a sponge. It was a source of constant wonder to the newcomer how much moisture the ground would take up without any evidence of washing. But the whole situation was somewhat different from what it is now. Most of the wheat was then spring sown and the land went through the winter with some cover which protected the soil. For the past fifteen years the erosion difficulty has been increasing rapidly, though there has perhaps not been so much difference in the kind and character of the precipitation. Much has been due to the change in the character of the soil itself and the greater absence of cover. It is astounding how little cover prevents or lessens the washing. Your investigations are of great importance.

Virgin soil generally neither blows nor washes; damage occurs only after some unusual disturbance to the land or to its cover. All natural causes fade into insignificance in the face of agricultural use; and, too frequently, abuse of the land has been the outstanding cause of accelerated erosion in the United States. This was brought out emphatically in a study of heavy summer rains in the Palouse (Rockie and McGrew, 1932, Publication No. 13). Our observations indicated two conclusions: first, that any vegetative cover offers an effective means of preventing losses from soil washing and runoff in the Palouse region; and second, that the principle of summer fallowing (tilling a field during a growing season, but without a vegetative cover) does not facilitate erosion control (Publication 18). Furthermore, results of erosion studies in all parts of the world indicated that these principles of control are equally applicable anywhere (Figs. 36-40).

As erosion progresses from the primary state of sheet erosion to the more advanced stage of gullying, the streams become more muddy from the ever increasing debris. When I was five years old I saw my first clear stream in Nebraska, called Looking-Glass Creek. I had previously thought that well water was clear and stream water was black. I waded in this stream in which my feet were clearly

![Fig. 36. W.A.R. securing soil sample from excavation for Erosion Building, Pullman, Washington, October 1, 1930.](image)

![Fig. 37. Control plot with funnel draining into measuring tank in Erosion Building, PNW Soil Erosion Station, Pullman, Washington.](image)
Fig. 38. Control plots for measurement of runoff and erosion under different cropping systems. Soil Conservation Experiment Station, Pullman, Washington. Large lettering "Soil Erosion" is on roof of Erosion Building.

Fig. 39. Tanks inside Erosion Building for measuring runoff from control plots. PNW Soil Erosion Station, Pullman, Washington.

visible through the knee-deep water. It had a sandy bottom. Forty years later I again studied the same spot in this stream; it had become a mud-covered channel with a stream that was always opaque. That section of Nebraska had already changed from the clear to the muddied stream. In the 1930's the streams of the northwest were showing a decided trend in this direction (Fig. 41).

Besides the work I directed at the Experiment Station at Pullman, other cooperative research studies were started at Lind, Washington; Moro, Oregon; and at Moscow, Idaho. The results of these studies showed conclusively that the period of profitable use under the wheat-summer fallow system of farming of the 1930's was limited to a few more decades at most. The results also showed that any one of several modified systems of wheat farming could maintain the Palouse region in permanent agricultural use.

On the national scene, in the fall of 1933 a new agency was formed: The Soil Erosion Service, headed by Hugh H. Bennett (Fig. 42). This agency was essentially an outgrowth of the erosion experiment stations Bennett had started three years earlier. I was named director of Region 11 (Washington, Oregon and Idaho). Within a few weeks there were several thousand employees of the Soil Erosion Service, recruited mainly from state agricultural colleges and state extension services. I secured many of my staff from the faculties of Washington State College, the University of Idaho, Oregon State College, and Montana State College. My appointment to the Soil Erosion Service was
Fig. 40. W.A.R. inspecting 1931 planting of native bunch grass at PNW Erosion Farm two years later. The crop was harvested in 1932 and 1933 for seed. Pullman, Washington, November 5, 1933.

Fig. 41. W.A.R. examining silt and clay deposit two feet deep in Waitsburg, Washington, from flood of March 30-31, 1931. Soil cracked into blocks which indicates a shrinkage of around 10%.
Fig. 42. Hugh H. Bennett, "the Chief" of the Soil Erosion Service.
dated October 10, 1933, and within a month we had a staff of 30 people in the regional office and some 150 people at various field demonstration projects, established to develop erosion controls on a community scale. The best and most adaptable soil-conserving farm practices were tried out in these demonstration projects. Individual methods stood or fell as farmers' trials proved them to be good or bad practices. These projects represented a major step toward a more general acceptance and adoption of conservation farming methods (Publications 14-24).

The new Soil Erosion Service was financed by emergency relief funds of the depression years, and the funds were of sufficient amount (Bennett was given $5,000,000 to work with) that we expanded much too rapidly for the best interests of the work. But those were our orders, to get started, get going, get it done!

While on the subject of spending money, I should mention my efforts to obtain aerial photographs of our soil conservation work areas. In 1923 I took my first photographs from an airplane. They showed so much that I was immediately and permanently sold on aerial photographs.

In 1930 I officially requested aerial photos of the erosion experiment station at Pullman, Washington. My request was refused "partly because of their high cost and partly because they had insufficient value." The following year, 1931, Howard Flint, a Forest Service photographer, unofficially offered at my urgent request to take photos of our experiment station without other cost to the erosion work if I would hire the airplane. I hired a private airplane in Spokane, with pilot Nick Mamer, for two hours, at $16 per hour. As a result, I received fourteen 8 x 11 oblique and vertical negatives (with prints) of the farm, thus getting our first accurate picture of the lands on which we were working. These photos proved invaluable in our work. I submitted a voucher of $32 to Washington, D.C., to pay for the airplane I had hired, and received the voucher back unpaid with a note from Hugh Bennett that I would have to pay the bill myself. A few days later I received two letters of censure from A.G. McCall, Division Chief, and Henry G. Knight, Bureau Chief, and still later, another censuring letter from the Secretary of the Interior! I did pay the bill, although not without protest.

Soon after being named a regional director of the Soil Erosion Service I requested aerial photographs of the 100,000 acres of land in a soil erosion demonstration project, but my request was refused. However, I had already been in discussion with members of the Washington National Guard regarding their taking aerial photos, and was able to get the aerial photo job done without charge if I would buy the film. Since it was not illegal to buy photographic film, this was done. We soon had the aerial pictures we needed through the expert efforts of Dale L. Swartz, pilot, and Jack G. James, photographer (Figs. 43-44). A Mr. Charles Collier in our Washington, D.C. office who had been observing my persistence regarding aerial photos decided to get aerial photos of a similar demonstration project in Virginia. So, I believe the first government contract for aerial photos (of the Virginia project) was let to a commercial company by the Soil Erosion Service in December 1933 or January 1934.

In February, 1934, I was called to Washington D.C., for a conference. One subject was aerial

Fig. 43. Washington National Guard pilot, Dale Swartz (left) and photographer, Jack James. James was also a civilian employee of the Soil Erosion Service (later the Soil Conservation Service).
photos, and the recently flown pictures of the Virginia project were on exhibit, to prove they were of no value to our work. And certainly, on the basis of that sample, they were no good to anyone. However, I had brought samples of the aerial photographs of the Palouse Demonstration Project and they were as good as the others were poor. My photos saved the day and when they were shown to the commercial company, the Virginia Demonstration Project was reflown. The replacement photos were nearly (though not quite) as good as mine, taken by the Washington National Guard team of Swartz and James. Aerial photography had finally been established in the Soil Erosion Service. Our 1933 aerial photos of the Palouse project were of sufficient quality that they still attracted favorable comments years later (Figs. 45-47 are examples of aerial photographs of the Palouse area flown by the Washington National Guard in 1937-1939).

Later in 1934, at the request of officials of Washington State College, I showed the aerial photos of the Palouse Demonstration Project to officials of the Agricultural Adjustment Administration who were visiting the Palouse country from Washington, D.C. They were so pleased with the pictures that they took our specifications and shortly afterward issued their first invitation for bids on aerial photos for their work. The initial results were so successful that within the next few months they awarded contracts for aerial photographs of many millions of acres. The usefulness of aerial photographs was no longer in doubt.

In 1935 the Congress passed legislation establishing a national program of soil conservation to be carried out by a new agency in the Department of Agriculture -- the Soil Conservation Service. The action made permanent the already existing Soil Erosion Service, but the replacement of "erosion" with "conservation" gave the name of the new agency a more positive ring; and my title changed from Regional Director to Regional Conservator (Fig. 48). Shortly after the Soil Conservation Service was established in the Department of Agriculture, I had a visit for several days from the Secretary of Agriculture, Henry Wallace. I gave him a tour of the Palouse, and found his visit both interesting and a pleasure. He was seriously interested in the details of our work, and was very knowledgeable (Fig. 49).

In contrast to the delightful visit from Secretary Wallace was an earlier inspection visit by Dr. Rexford G. Tugwell, the Undersecretary of Agriculture. I received word from Washington, D.C., to escort him through our region, and Evan Kelly, Regional Forester for the U.S. Forest Service at Missoula, delivered Dr. Tugwell to me at Moscow, Idaho. Kelly asked if he might go along on the tour, saying, "I'd like to see how you handle the
situation!" Dr. Tugwell was a master at antagonizing people. During the time he was with me he managed to offend several prominent people -- Dean Iddings of the College of Agriculture at the University of Idaho, President Holland of Washington State College, and Paul McGrew of our Pullman office. Before leaving Pullman, Evan Kelly said to me, "You're not having any better luck than I did!"

When the Soil Erosion Service was formed in 1933 it was logical for our regional office to be in Pullman, at least initially, in close proximity to our erosion experiment station. Then in 1935 when the Soil Conservation Service was established, and the number of personnel and scope of operations of our regional office was expanded, the drawbacks to our Pullman location increased. It became apparent that we had outgrown our Pullman office, and the soil conservation activities of our region could be directed more efficiently from Spokane. The move to Spokane was made in June 1936. For me personally, and for many of the staff, the move was a big improvement. I had frequent trips to Washington, D.C., for conferences (Fig. 50), as well as many trips in and around the Pacific Northwest, and Spokane provided better transportation access. Research activities continued at the Soil Conservation Service Experiment Station at Pullman, however, and a number of publications resulted (Publications 27-32).

In 1933 when I was named regional director of the Soil Erosion Service, Clyde E. Deardorff replaced me as superintendent of the Experiment Station at Pullman (I had first worked with Deardorff in the Soil Survey at Waynesboro, Georgia, in 1917). When Deardorff was transferred to the regional office in 1935 he was succeeded by G.M. Horner as Project Supervisor. Paul C. McGrew, the Agricultural Engineer with whom I had started the Experiment Station at Pullman in 1930, continued there until 1936 when he became Assistant Regional Director (Fig. 51).
After the Soil Conservation Service was established in 1935, a large number of Civilian Conservation Corps camps were transferred from the Forest Service to the Soil Conservation Service to aid the new agency in its demonstration work. I was assigned some thirty C.C.C. camps and given very little time to develop plans, work, and new locations.

One of the camps was located at Warrenton, Oregon, where blowing sand was endangering both public and private property along the Pacific Coast in the Clatsop Plains dune area.

(Note: The following excerpt from an article by E.M. Rowalt is included to clarify the blowing sand problem in the Clatsop Plains area:

Much of the sand load of the Columbia River, moved about by ocean currents and tides, eventually is swept on to beaches south of the mouth of the river. The prevailing winds then pick up the sand and move it back to the east, overland. During the winter of 1934-35 the dunes moved eastward 150 yards along a 16 mile front."

"Anchoring the Clatsop Dunes with Vegetation," Rowalt, E.M., Soil Conservation 2 (4) 61-63, October 1936)."

Shortly after the construction of the necessary buildings at Warrenton I received telephone instructions from Chief Bennett to "Move that camp -- there's no work for them there." I was having enough difficulty keeping the other camps busy so before I'd been able to do anything about the
Chief's orders, a man from the Washington, D.C. office came to inspect the Warrenton camp and the work they were doing. When the inspector made his report to Bennett he said, "That camp at Warrenton is your prize camp out in Region 11." A couple of weeks later another inspector appeared, apparently sent by Bennett to see if the first report was true. He gave a report even more flowery about the work of the camp. It was only a month later that Chief Bennett was using the work of that camp as one of the star performances in the United States, and I didn't have to move the camp!

This project, which became one of the highlights of our work with C.C.C. camps, was a multiple phase process. The men at the Warrenton camp constructed picket type sand fences, planted European beach grass (Holland grass) (Ammophila arenaria), American beach grass (A. breviligulata), sea lyme (American dune grass) (Elymus mollis), and later planted shrubs and trees (Figs. 52-54).

Late in 1937 I suffered a ruptured appendix, with nearly fatal results, spending several weeks in the hospital, followed by several more weeks at home. I returned to work briefly, and then attended the annual meeting of the Association of American Geographers at Ann Arbor, Michigan. I was inducted into the Association, and on December 29 was introduced by Nels A. Bengston for my paper presentation on a subject that had become very dear to my heart over the preceding seven years -- "Man's Effects on the Palouse" (Publication 32).

A very interesting friendship resulted from my stay in Ann Arbor. I was assigned a dormitory room at the University of Michigan, and my roommate was George Hubert Wilkins, the polar explorer. He was also a new inductee into the AAG. I greatly enjoyed getting acquainted with Sir Hubert and learning of his many accomplishments and future plans.

From Ann Arbor I went to our S.C.S. headquarters in Washington, D. C., for a series of conferences until late January (Fig. 55). To provide
Fig. 48. W.A.R., Regional Conservator, Region 11, at Soil Conservation Experiment Station, Pullman, Washington, April 7, 1936.

Fig. 49. Visit by Secretary of Agriculture Henry Wallace to Erosion Control Demonstration Project at Pullman, Washington, 1935. L to R: Dean E.C. Johnson (WSC), Dr. A.L. Hafenrichter (SCS Agronomist), Secretary Wallace, Dean E.J. Iddings (U. of Idaho), W.A. Rockie, Regional Conservator, SCS.

Fig. 50. In Washington, D.C. office, February 1936. L to R: Calkins, Finnell, Bennett, Clumner, Rockie, Merrill.
Fig. 51. August 5, 1936. Soil Conservation Experiment Station, Pullman, Washington. Left: G.M. Horner standing in field of spring wheat (after winter wheat). Right: P.C. McGrew standing in field of spring wheat (after sweet clover).

a means for additional recuperation from my emergency surgery two months earlier, I chose to return home by ship. I left New York City on January 22 on the S.S. Virginia, travelled to Cuba, the Panama Canal, and north along the coast to San Francisco. I was back at work in Spokane by mid-February. Despite the leisurely trip home I found my strength still much below par, so that I was not up to the workload required by my position. This culminated in my decision in June to resign as Regional Conservator, which I did at the end of June. Coupled with my resignation was the approval of the Chief, H.H. Bennett, for me to undertake immediately a comprehensive study of the potential agricultural lands in the Territory of Alaska. Thus ended the first phase of my work in soil conservation.

Fig. 52. Civilian Conservation Corps men from the Warrenton, Oregon, C.C.C. Camp planting beach grass, Clatsop County, Oregon.
Fig. 53. A wide sand plain west of Coffenbury Lake, Clatsop County, Oregon. Cross fences extending from the fore dune ridge help reduce sand motion prior to establishing vegetative cover. Fort Stevens and Columbia River in background. October 22, 1937. (S.C.S./WNG).

Fig. 54. Looking north toward Columbia River mouth, Clatsop County, Oregon. The picket fences spaced 30 feet apart were constructed in 1936 and raised as dune ridges grew 4-6 feet high. Sea lyme and Holland grass were transplanted and ridges became a new fore dune. October 22, 1937. (S.C.S./WNG).
At the time of the Klondike gold rush, one of the older boys from my home town of Fremont, Nebraska, got the "gold bug." His move to the far north placed Alaska on a pedestal in my eyes, and sparked my initial interest in Alaska. Indeed, the name "Alaska" was a magic word to nearly every boy at the turn of the century. It was just as alluring as were such names as London, Calcutta and Cape Horn, perhaps even more so.

In February 1935 at a meeting in Portland, Oregon, I had discussed with Don L. Irwin of Palmer, Alaska, plans of the Alaska Railroad to bring to the Matanuska Valley midwest farmers who had "gone broke" during the depression. It was noted by Irwin that every land clearing there on sloping land would bring immediately a severe erosion problem, pointing up the need for adoption of a land use policy for Alaska that would prevent the mistakes of agriculture that had happened in the "lower 48." Irwin was on his way to Washington, D.C., to secure approval for these plans and then to find funds to carry them out.

Unfortunately, when the colonization of the Matanuska Valley received governmental approval in Washington some weeks later, the ultimate plan was barely recognizable as the plan which Irwin had brought into Washington for approval. Politics had been substituted for plans, so that instead of farm families, the colonists were largely city families selected by county governments in the states of Minnesota, Wisconsin and Michigan. In too many instances the county officials selected those families which were costing the county the most in "relief" funds, without regard for their suitability and adaptability as colonists committed to agriculture in a new land. In fact, some of the 200 families who made the long trip by train and ship to Alaska refused to disembark from the ship when it arrived at Seward, Alaska, and were given a free trip back to the town or city from which they had been recruited. The plans had called for these new settlers to be brought gradually to the Valley, with farm buildings ready for occupancy when they arrived. However, politics dumped them all at once onto a swamplike, boggy campsite where they had to drag their tents around through the mud before they had even a place to sleep. Life was rough for them during their first few weeks in the Matanuska Valley where their new homes were to be built, but most of the unnecessary and unwarranted hardships and difficulties were corrected during the first few months of the colony's existence.

Although the problems of good land use were under intensive study in the lower 48 states during the 1930's -- especially in the Soil Conservation Service -- the problems had received very little attention in Alaska. There was so much undeveloped land that good land use had not yet seemed of much importance.

Soon after the start of the Matanuska Colony in 1935, and based upon many reports I had received about the different land problems the new settlers were having, I proposed to Hugh Bennett, Chief of the Soil Conservation Service, that the Service undertake a comprehensive study of Alaska's agricultural possibilities from the standpoint of soil conservation and good land use. Since the Chief had made some soil surveys in Alaska, including parts of the Matanuska Valley, more than 20 years before, my suggestion aroused his deep interest, especially since I had suggested conservation surveys of those lands being newly developed by the Matanuska colonists. Most of the difficulties they encountered were the direct result of inadequate information as to the farms' suitability regarding either soil or climate. As I had mentioned earlier, coupled with my resignation in June 1938 as Regional Conservation was the approval of the Chief for me to undertake a comprehensive study of the main areas of potential agricultural land in the Territory of Alaska. The first phase of the study was for a three man reconnaissance team of Bennett, Louis P. Merrill (an S.C.S. Regional Conservator with headquarters in Fort Worth) and myself, to investigate the erosion conditions. The primary purpose was to pinpoint one or more potential areas for detailed study and survey during the succeeding year.

I returned to Spokane from Washington, D.C., in early July 1938, announced my resignation to the personnel in the Spokane office, and prepared for an imminent departure for Alaska. As it developed, Bennett did not make the trip. Merrill and I met in Seattle on July 19, and left for Alaska by Alaska Steamship on July 20. As we went through Juneau we met briefly with Alaska Acting Governor Watson, Regional Forester Frank Heintzleman, and John Keyser of the U.S. Weather Bureau. On our return...
in early September we stayed in Juneau for eight
days, during which time we met with Alaska
Governor Troy, and again with Heintzeleman and
Keyser.

At the Experiment Station at Palmer in the
Matanuska Valley we conferred with Don Irwin,
whom I had first met in Portland as mentioned
earlier. This was the forerunner of many years of a
good working relationship as well as a close
friendship. During the next two months Merrill and
I spent considerable time in this area with Irwin and
other Experiment Station personnel (Figs. 56 and
57). While in the Fairbanks area we conferred with
President Bunnell and Dr. Otto Geist at the
University of Alaska, and to a greater extent, Mr.
Lorin T. Oldroyd, Extension Director, at the
Fairbanks Agricultural Experiment Station. This
included a study of a "pitting" problem at the
Station which I continued over the next two years
(Publication 39).

In addition to time spent in the Juneau,
Palmer and Fairbanks areas, we travelled to many
outlying areas to become more familiar with the
Territory, from Kodiak Island in the south to
Wiseman, north of the Arctic Circle (Figs. 58 and
59). Wiseman was the locale for Bob Marshall's
best seller, Arctic Village. I had a chance meeting
with Bob during my trip to Wiseman, and we
renewed our friendship that had begun in Idaho
during my work in Blister Rust Control in the
1920's. It proved to be one of the last times I saw
him before his untimely death the following year.

After my return to Spokane in the latter part
of September, much of my time was taken
completing reports of the 1938 field work and
preparing plans for the 1939 field season (Fig. 60).

In early July 1939 I returned to Alaska for
four months, with my headquarters in Palmer (Fig.
61). I conducted a detailed soil conservation survey
of the Matanuska Valley, and in addition, began
more general studies of the Kenai Peninsula, the
Susitna Valley, and the Tanana Valley.

During the summer I worked closely with Don
Irwin and Ross L. Sheely, General Manager of the
Alaska Rural Rehabilitation Corporation, Matanuska
Valley Colonization Project, as well as many of the

Fig. 56. W.A.R. observing results of land clearing, 3 miles south of Palmer. Stumps of birch and
spruce mixture, 40-50 feet high, 6-12 inches d.b.h., slashed, logs snaked out, tops piled and burned.
Very bad example of soil removal in land clearing, 5-6 inches of vegetative layer and mineral soil is
being removed with stumps. Total depth of soil is about 24 inches.
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Fig. 57. Soil Conservation Field (and Stream) Work, August 1938. L. P. Merrill on left.

Fig. 58. Flower and vegetable garden at Olnes, a ghost mining town a few miles north of Fairbanks. "Mayor" Ed Fahrney, center, is 65 years old and has spent 38 of them in Alaska. A merchant at Olnes during the boom days of 1904-05, he now owns the 10-15 vacant buildings that remain. Dr. Otto Geist, the best informed man in Alaska, on right; W.A.R. on left.

Fig. 59. L.P. Merrill, Tanana, August 1938.

Fig. 60. Letter to W.A.R. recommending continuing soil conservation work in Alaska. March 21, 1939.
colonists who had settled in the Valley (Figs. 62 and 63). Time was also spent in the Fairbanks area, both in the field, and with Mr. Oldroyd and others at the Fairbanks Agricultural Experiment Station. The field survey party I directed for the Matanuska Valley project included James E. Caudle, Charles R. Buzzard, Herbert A. Hopper, Clinton H. Morgan, and John P. Thomson (Publication 48).

After my return to Spokane in late 1939 I saw an article in the Spokesman Review that Robert Marshall, Assistant Chief of the U.S. Forest Service, had died of a heart attack on a train between Washington D.C. and New York City. Several weeks later I had a telegram from Alaska Governor Ernest Gruening that he would stop to see me as he came through Spokane enroute home to Alaska. During his brief stop we discussed our mutual sorrow about Bob's death. Neither Governor Gruening nor I could accept the heart attack explanation for his death. We both believed he had committed suicide.

In 1940 I spent nearly seven months in Alaska and during the summer my wife and our younger son joined me. Edith and I had a small house in

Fig. 61. Palmer, Alaska, looking east, 1939. Old Palmer is in lower center. Matanuska Colony government buildings are in the upper center. Matanuska River is in middle distance, Lazy Mountain beyond.

Fig. 62. Oscar Anderson farm, Matanuska Valley, 1939. Note the prevailing type of haystack which allows better drying under the typically wet weather during haying season.
Fig. 63. Matanuska Valley, October 12, 1939, looking southeast, showing a large haybarn of the homesteader still unfilled. The snow-covered hay was intended for the barn. Pioneer Peak on the right.

Fig. 64. William Cassler farm two miles north of Palmer, July 1940. Oat strips are planted between vegetables to break the force of the winds.

Palmer, and our son worked for the Alaska Railroad. He worked on a section crew and lived a few miles north of Palmer at the Moose Creek section house, so we were able to get together frequently on weekends.

I completed the survey of the Matanuska Valley (Fig. 64) and continued general studies of other localities in what proved to be my last season of field work in Alaska. During the summer I spent a number of days both conferring and conducting field work with Meredith F. "Pete" Burrill (Fig. 65) and John Leighly. At the time Burrill was with the General Land Office, and Leighly was a climatologist with the U.S. Weather Bureau.

Fig. 65. M.F. "Pete" Burrill, Kenai Peninsula, Alaska, about 10 miles north of Homer, August 17, 1940. Pete commented in 1982 about the hike in 1940: the grass was loaded with water drops after a prolonged rain, so every step was a cold shower!

During 1941 I worked on the detailed report of the Matanuska Valley study, as well as other reports from the field data obtained during 1938-40. Plans were also made for initiating detailed studies of other areas, to be started as soon as funds became available. Then came the war, and the plans were shelved indefinitely. When the plans for further Alaska studies were put on hold, I assumed new duties as the Chief of the Project Plans Division of the Pacific Northwest Region. As a result, I worked more closely with J.H. "Heinie" Christ, the man who had been appointed Regional Conservator in 1938 after my resignation (Fig. 66). Also, in the spring of 1942 nationwide reorganization of the Soil Conservation Service resulted in the closing of the regional offices in Spokane and Berkeley, California, and a new Pacific Coast Regional office was opened in Portland, Oregon.

In early April 1942 prior to our move, Stuart Chase, the noted economist, visited our regional office in Spokane. I escorted him on a tour of the Palouse country (Fig. 67), and many in our office conferred with him during his week's visit.

In June I attended the American Association for the Advancement of Science meetings in Salt Lake City, and gave a paper on Mexico at the
Fig. 66. W.A. Rockie (L) Chief, Project Plans Division, and J.H. Christ, Regional Conservator.

Fig. 67. Stuart Chase (L) and W.A. Rockie, near Thornton, Washington, April 6, 1942.
In July we started house hunting in Portland, and moved from Spokane to Portland in August 1942.

Even though my involvement in Alaska surveys was no longer a primary assignment, there were continued activities related to the Territory. I continued to keep abreast of the problems and development of Alaskan agriculture and published several articles and reports (Publications 36, 39, 40, 47, 48 and 49). Because of my close contact with Alaska development, even after I retired I was being encouraged to resume my Alaska studies (Fig. 68).

One aspect of Alaska development that particularly interested me was the potential of Alaska for homesteading. Certain magazine articles and newspaper feature stories in the early 1940's presented rosy-hued prospects for homesteading, while still other articles and stories presented quite an opposite picture. These divergent viewpoints regarding the progress of the Matanuska Valley Colony may have resulted from the publicity it received. If one accepted the statements of the enthusiastic proponents of the colony, every colonist was living in "milk and honey" and was wading knee deep in "clover and strawberries." He had been transformed in a few years from the status of relief client to that of an independent, highly successful farmer. If, on the other hand, one believed the opponents of the colony, there wasn't a chance of those former relief clients ever being anything else, that the Matanuska Valley was a cold, sterile land of snow and ice, and that it was a mistake to consider that agriculture had any chance of development there (Publication 35). I think my views in the 1940's regarding the matter of homesteading in Alaska were pretty well summarized in a letter written to my son in March 1945, in response to his request for advice about the advisability of an Alaskan homestead:

Dear John:

You wrote me for advice about taking a homestead in Alaska after you get out of the Service. Although my answer might be influenced by when you get out, it is not likely to be greatly changed.

I don't have to tell you a lot of things about Alaska, for you learned a good deal the summer you worked on the railroad section crew at Moose Creek in 1940.

A lot of people are making some ridiculous statements about the number of farmers and others who will go to Alaska during the next two years. Take it from me, if too many go, somebody's going to get cold when they can't find or can't pay for a bed and someone is going to be mighty hungry.

It's absolutely impossible to give you a simple yes or no answer. Let me say in the first place that if present indications are borne out, there will be several service men or women wanting each piece of land that is suitable for making a future home.

I hope that not too many people,
especially you service fellows, remember a news release some years ago in the Washington Evening Star saying that, although there are no homesteads left in the U.S., there are 364,000,000 acres open to homesteading in Alaska. Since a homesteader is allowed not more than 160 acres, the article in effect stated that there were 2,275,000 homesteads in Alaska. That's all bushwa!

And there are government reports out which state there are 65,000 square miles suited to tillage and 35,000 square miles suited to grazing. These total 100,000 square miles or 64,000,000 acres, less than 1/5 the earlier figure, but they are still much too high.

I confidently believe that successful permanent agriculture will materialize in some portions of the Territory, but I am also confident that the total acreage will never be as large as even the smaller figure. And never is a long time too. So I think the 400,000 homesteads represented by the currently published figure is so exaggerated that it is not funny, McGee. To begin with, there won't be more successful farms than the local population in Alaska will support. I heard one recent estimate that predicted 100,000 new farmers in Alaska right after the war. The lowest estimate I have heard quoted is 15,000 new farmers in the next two years. I believe that if even 10,000 farms are started in Alaska in the next 10 years, you may be better off to start farming down here. Up there you will have so many untried and unsolved problems with no easy way to solve them, while down here so much more is known about how to farm that it's like comparing daylight to darkness.

I could cite instances of farmers who have succeeded beyond their dreams in southeastern, southern, southwestern and central Alaska, but for every one who has succeeded I believe there are five who have failed in their farming. The abandoned farms of those who have failed are, on the average, I believe, every bit as good land as are those places which have developed into successful farms.

So, if we base our thinking on experience up to now, you would be mighty lucky if you proved to be one of the successful. The chances are several to one against your making a financial go of an Alaska homestead. These are my opinions today.

With love from your dad,
WAR March 10, 1945

(Note: The postwar boom in homesteading and agricultural development in Alaska was much more restrained than was indicated by some of the inflated estimates of postwar agricultural potential -- bearing out the opinions in Rockie's letter.

Except for the preceding few pages, Rockie had done virtually no writing for this monograph for the years from the early 1940's until his retirement from the Soil Conservation Service in 1952 (Figs. 69-70). Noteworthy accomplishments for these years include: (a) completion of his chapter on "Soil Conservation" for Conservation of Natural Resources [Publication 53]; (b) publication of various technical articles [Publications 41, 42, 44, 45, 50-52, 54-57]; (c) in June 1951 he piloted a group from Oregon State College Institute of Northwest Resources through eastern Oregon and Washington; and (d) in August 1951 he conducted a University of Connecticut Conservation tour through eastern Washington.

Also, for reasons not known, the writing done by Rockie in the late 1970's for this monograph did not include any mention of his involvement in the Northwest Scientific Association, and his involvement is worthy of comment. He was very active in the Northwest Scientific Association from 1925 well into the 1950's. He presented papers at most annual meetings from 1925 to 1939, including general session lectures in 1932 (Publication 18), 1934 and 1938, and the retiring president's address in 1936 (Publication 30). He also served on the Board of Trustees in the early 1940's and again in the early 1950's. He was honored as a 25 year member in 1949, was program chairman in 1952, and was elected Honorary Life Member in 1958.

The cooperation of a number of Pacific Northwest scientists was instrumental in the writing and publishing of The Pacific Northwest (1942), edited by Otis W. Freeman and Howard H. Martin. Fifteen of the thirty-one contributing authors (including Rockie) were members of the Northwest Scientific Association. Rockie contributed one chapter and coauthored another [Publications 37 and 38].)
Fig. 69. W.A. Rockie Retirement Party, March 13, 1952. Edith Rockie (L), J.H. Christ (R).
TO: All SCS Personnel in Region 7  
From: W. A. Rockie, SCS, Portland, Oregon

It is with the deepest regret that I am leaving the Soil Conservation Service. This work has been for a long time and still will be in future years, a major life interest for me. Undoubtedly, there will be many many moments when I will feel regretful at having taken this action at this time.

However, my interests have included other fields of endeavor, some closely related to soil conservation, and others not so close. I am making this change at this time to satisfy some of my desires in these other fields before it is too late.

I have known and worked with a few of you for about 35 years, with many of you from 20 to 30 years, and with hundreds of you from five to 20 years. I have enjoyed those years with you. I think of every SCS'er as a friend, and I hope that every SCS'er feels that I am his friend.

The wonderful farewell party that was given for me on March 13th told me many things that I had hoped (but did not know) were true. I will always remember my multitude of SCS friends, especially as I use the beautiful inscribed fountain pen desk set which was presented to me at that time.

Although I will see most of you less frequently than has been the case in past years, I do not want to entirely lose my personal contact with you. My interest in our work and my personal friendship with many of you is too deep to thus end so easily. However, on the chance that I may never again have the pleasure of seeing some of you, and to those of you whom I have never been privileged to meet, I wish to extend my best wishes both officially and personally and to also send you my personal farewell greetings.

W. A. Rockie

Fig. 70. Retirement letter from W.A. Rockie to SCS personnel in Region 7.
Soon after retirement from the Soil Conservation Service in March 1952, I made a study of Krilium, a highly advertised soil conditioner manufactured by the Monsanto Chemical Company of St. Louis, Missouri. Krilium was described as the cure-all for soil problems. I began with a study of the manufacture of the powder at the factory, studied their demonstration farm in Ohio, and then spent nearly a year observing the effects of Krilium on the soil at many points in the Pacific Northwest. Krilium did not measure up to the claims made for it, and quickly passed out of the picture.

A highlight of 1952 was in August when Otis W. Freeman and I guided a group from the International Geographical Union from Spokane to central Washington, then up the Grand Coulee to Grand Coulee Dam (Fig. 71).

In March 1953 about one year after my retirement from the S.C.S. I received an offer to join a scientific expedition to explore the Sahara and the French Sudan from September 1953 to May 1954, to assess the dependability of the food supply in this region for providing needs in Western Europe. The offer had first been made to Walter Lowdermilk, who had recently retired as assistant chief of the Soil Conservation Service. Lowdermilk was unable to go, and asked me to take his place. I accepted in April, after several weeks study of the proposed expedition.

The expedition was to have been sponsored and financed by UNESCO, but in early May I learned from the leader that UNESCO's contribution would be small, and that each member of the expedition would need to furnish a substantial
portion of the finances needed. I spent most of the
month of May trying to get financial assistance
(Rockefeller Foundation, Ford Foundation, and
American Geographical Society), to no avail.

In the latter part of June, to complete an
earlier commitment, I gave the presidential address
at the annual Association of Pacific Coast
Geographers meetings in Santa Barbara (Publication
No. 57). A few days were spent with Dr. Homer
Shantz, retired president of the University of
Arizona and author of The Vegetation of Africa
(published by the U.S. Department of Agriculture),
getting his advice regarding my plans for spending
the coming year in Africa.

I left the United States on July 12, 1953, on
a Holland-American line freighter from San
Francisco, through the Panama Canal, to Antwerp.
The trip took 32 days, with stops at various ports in
the Caribbean on the way.

In late August I met for a week in Merzig,
Saarland, with several other members of the
expedition, then spent the first part of September
with my older son and his family near Frankfurt,
Germany. The expedition members gathered in
Merzig in late September for final preparations, and
the International Sahara-Soudan Scientific
Expedition of 1953-54 had taken form. It was
apparent to me at the time that the organization
and leadership of the expedition were quite lacking.
I had already been alerted to the prospects of all
not being as first represented -- e.g., the limited
backing from UNESCO. Now I learned that the
motor vehicles planned for the trip were clearly
underpowered and inadequate for the trip.

The original group that gathered at Merzig
included the following participants:

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Franz Kollmannsperger</td>
<td>Zoologist -- Saarland</td>
<td>Germany</td>
</tr>
<tr>
<td>Gunther Niethammer</td>
<td>Ornithologist -- Germany</td>
<td>Germany</td>
</tr>
<tr>
<td>Father Mohr</td>
<td>Priest and Ethnologist -- Holland (left the expedition soon after reaching Algeria)</td>
<td>Holland</td>
</tr>
<tr>
<td>Johann Schulz-Hanke</td>
<td>Taxidermist -- Germany</td>
<td>Germany</td>
</tr>
<tr>
<td>Krarup Mogensen</td>
<td>Geographer -- Denmark</td>
<td>Denmark</td>
</tr>
<tr>
<td>Julien Laenen</td>
<td>Ornithologist -- Belgium</td>
<td>Belgium</td>
</tr>
<tr>
<td>Hubert Gillet</td>
<td>Botanist -- France</td>
<td>France</td>
</tr>
<tr>
<td>Fritz Buckner</td>
<td>Photographer -- Saarland</td>
<td>Germany</td>
</tr>
</tbody>
</table>

Walter Konrad
Ethnologist -- Germany

W. A. Rockie
Soils and Land Use Specialist -- United States

Our group left Saarbrucken on 3 October
1953 with a Volkswagen bus, a Volkswagen bug and
a Renault truck, and sailed to Algiers on 7 October,
where we met with some of the city fathers, to help
publicize our expedition (Fig. 72).

The first few weeks were spent in agricultural
areas in the immediate vicinity of the city of Algiers.
This particular stretch of lowland next to the
Mediterranean closely approximates our Los
Angeles-San Diego area. The crops are very much
the same except that they are not as intensively
produced. The better valley lands are mostly owned
by Europeans who have settled in northern Algeria
since the coming of the French during the 19th
century. During the several weeks we were in the
Algiers area I spent my time alternately with other
members of the expedition, making some studies of
agricultural geography in the immediate vicinity, and
with Benjamin E. Thomas and his family at their
home in Algiers. Ben Thomas was a professor of
geography at the University of California at Los
Angeles, on leave of absence while making research
studies in northern Africa for the Office of Naval
Research.

We camped on the Mediterranean shore 20
miles east of Algiers for a week, then a week at a
mine headquarters near the town of Palestro, about
30 miles southeast of Algiers, in the northernmost
range of the Tell Atlas. Much of the hilly country
in this area had little or no protection against
erosion, with sheet and gully erosion prevalent
nearly everywhere; the worst region in California
looks like heaven compared to this.

We next set up camp at 5000 feet elevation in
the Atlas Mountains and worked out of here for the
next three weeks, each of us gathering information
for our individual studies. On 14 November the
group moved to Laghouat, on the southern edge of
the Sahara Atlas, until 27 November. At Laghouat
we picked up our military escort, a sergeant and his
assistant, who accompanied us in their jeep for the
next several weeks through the desert, and who, I
guess, prevented our getting lost, and our getting
into trouble. Just south of Laghouat we entered the
Sahara proper (Fig. 73). There is practically no
vegetation on the land, the surface being bare, with
desert pavement in many places. The strong winds
that characterize the Sahara are sufficient to blow
away all of the fine material on or near the surface,
leaving only the coarse part of the surface soil. The result is that sometimes as much as two or three inches of pure gravel lies over any fine material on the desert. It is called desert pavement because you can drive on it with a car where there's no road, but if you ever spin your wheels you're through the desert pavement, down to the fine material, and in that case you're usually stuck (Fig. 74).

As we proceeded south from Laghouat toward Ghardaia the desert became extremely severe, with probably less than two inches of rainfall a year, some years without a drop, thus there was practically no vegetation. There were scattered plants with some vegetation appearing immediately after rain showers, but if the bands of sheep, cattle, goats, donkeys and camels have been over the area, they have nipped off anything that shows green. The result is that the Sahara shows up as a strictly vegetationless landscape. The desert pavement gives the surface a predominantly dark appearance.

Our next major stop was for six days at the oasis of El Golea, about 1000 kilometers south of Algiers. Before the French came to El Golea, the Arabs lived in a strongly fortified and naturally protected village on top of a mesa 250 feet above the plain (Fig. 75). Their wells and their date and vegetable gardens were located on the plain below, as they are today, but to protect themselves against warring tribes, they had built their village on the precipitous mesa.

The advent of the French to the area in 1873 provided protection for the native Arabs against the neighboring tribes, so they were able to build homes near their gardens on the plain, and the mesa village was virtually abandoned as a residence area. It is said that there may have been as many as 2,000
Fig. 73. Map of northwestern Africa showing Rockie's route across the Sahara south from Algiers to Lagos, Nigeria, via El Golea, Tamanrasset, Agades, Zinder and Kano; then back north to Algiers by a more westerly route through Gao, Beni Abbas and Coloum Bechar, 1953-54 (political names and boundaries are portrayed as they existed in 1953-54).
Arabian wells in this oasis at the time the French came. These were shallow wells, and not until a number of years later was the first artesian well developed by the French. When artesian water came into use the number of shallow surface wells began to decline. Simultaneously the El Golea oasis and town began to grow.

In 1953 El Golea and the nearby associated oases were said to have a population of about 15,000 people. The entire El Golea development had a total length of between 10 and 15 kilometers, and a maximum width of two kilometers. The gardens at El Golea had the best three layered agriculture we encountered, with the date palms up at 60 to 70 feet high; beneath the date palms they had apricot, peach, pomegranate, and other fruit trees, including figs, and on the ground between the fruit trees were ground crops such as wheat and potatoes (Fig. 76).

We proceeded south to In Salah, famous for its system of getting water for irrigating their date palms (Fig. 77) -- from fogara (underground conduits for water distribution). While here I had the misfortune of breaking a tooth in my partial plate, and faced the prospect of having no chewing teeth until the expedition reached Zinder -- and the nearest dentist -- six weeks hence. This posed a serious morale problem for me, exacerbated by the proximity of Christmas -- a classic case of the holiday blues! This was the first Christmas I had ever spent without some of my family present with me, which included all of my 63 Christmases. Evening was the least pleasant time because most of the time we had no light.

From In Salah we were beginning to approach the Hoggar, a large basaltic mountain area reaching elevations of around 3,000 meters. Southeast of In...
Salah about 250 kilometers was a place called Arak. It had been a military station at some time in the past, but all that was left were four masonry walls without a roof. We found an actual outcropping of the water table -- one of two places where we found surface water and an occupied stream course. On top of the cliffs bordering Arak the Danish geographer, Mogensen, and I found the remains of a prehistoric village. There were upwards of a hundred mounds that appeared to be the remnants of former habitations, and thousands of arrowheads scattered everywhere.

Our next major stop was at Tamanrasset, our headquarters for over a month. We arrived there just before Christmas, and made preparations for a camel trip through parts of the Hoggar. I noted with interest the abundance of trees in Tamanrasset (Figs. 78 and 79). John Gunther had been at
Tamanrasset some months before, and I had read his article in the June 1953 Reader’s Digest, under the title, "Inside Nowhere." Gunther had described Tamanrasset as a bleak lunar landscape, except for the only tree, a "spiky gnarled willow." I found Tamanrasset to be a veritable horticultural paradise. I made a census of the trees in just one part of the town, and found dozens of different kinds, and many thousands of trees in all. Judging from my sample census, I am sure there are more than 10,000 planted trees in the Tamanrasset oasis, in addition to several thousand native acacia trees within an hour’s walk of the town.

Trees of Tamanrasset:

<table>
<thead>
<tr>
<th>Tree</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tamarisk</td>
<td>897</td>
</tr>
<tr>
<td>Apricot</td>
<td>270</td>
</tr>
<tr>
<td>Peach</td>
<td>256</td>
</tr>
<tr>
<td>Fig</td>
<td>180</td>
</tr>
<tr>
<td>Orange</td>
<td>168</td>
</tr>
<tr>
<td>Date Palms</td>
<td>162</td>
</tr>
<tr>
<td>Lombardy Poplar</td>
<td>98</td>
</tr>
<tr>
<td>Acacia</td>
<td>55</td>
</tr>
<tr>
<td>Mulberry</td>
<td>31</td>
</tr>
<tr>
<td>Cypress</td>
<td>26</td>
</tr>
<tr>
<td>Pomegranate</td>
<td>25</td>
</tr>
<tr>
<td>Pear</td>
<td>23</td>
</tr>
<tr>
<td>Quince</td>
<td>20</td>
</tr>
<tr>
<td>Apple</td>
<td>18</td>
</tr>
<tr>
<td>Eucalyptus</td>
<td>15</td>
</tr>
<tr>
<td>Ziziphus</td>
<td>15</td>
</tr>
<tr>
<td>Parkinsonia</td>
<td>9</td>
</tr>
<tr>
<td>Plum</td>
<td>5</td>
</tr>
<tr>
<td>Grapefruit</td>
<td>5</td>
</tr>
<tr>
<td>Tangerine</td>
<td>5</td>
</tr>
<tr>
<td>Johannesbrot</td>
<td>3</td>
</tr>
<tr>
<td>Citrus, with enormous lemon-like fruit</td>
<td>2</td>
</tr>
<tr>
<td>Olive</td>
<td>2</td>
</tr>
<tr>
<td>Lemon</td>
<td>2</td>
</tr>
<tr>
<td>Avocado</td>
<td>1</td>
</tr>
<tr>
<td>Unknown Tree</td>
<td>1</td>
</tr>
</tbody>
</table>

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I seriously considered leaving the expedition at Tamanrasset in order to return to Algiers to have a dentist treat an abscessed tooth; however by the time we reached Tamanrasset the inflammation had subsided somewhat. Since it was better, I decided to continue with the group on a camel trip (for the experience) before making my decision about leaving the expedition permanently. The group had chosen camels for transportation, but many of us found that walking interspersed with camel riding was the best answer (Fig. 80). The camel train included three Tuareg guides, the two man French Foreign Legion military escort, and the nine members of the expedition. We left Tamanrasset December 24 and returned January 6, 1954.

After many long discussions the expedition leader finally authorized the use of expedition funds to pay my air fare to Algiers and return, for the necessary dental work. I left Tamanrasset on January 14 for Algiers, had the abscessed tooth pulled and a new partial plate made, and returned to join the group at Tamanrasset on January 20.

Before leaving Tamanrasset I met a Miss Daisy Wakefield, a 74 year old English missionary who had lived there for 18 years. In discussing my work in soils and agricultural geography, she said that from her observations since she came in 1935, eight inches of soil had been blown from this land. In answer to her questions about what could be done to help the situation, I told her that the land could not be helped as long as there were people, goats, sheep, donkeys, camels, and native fauna eating up most of the plants just after the seeds germinated.

We headed south from Tamanrasset on January 23. Our military escort left us at In Guezzam, as we crossed the border from Algeria into French West Africa (now Niger). The next town of any consequence was Agades, in the
savannah country. We spent 10 days in this drab dusty place, with little green vegetation (Fig. 81). I made detailed studies of the garden products, the water supply problems, and the people, including several visits to a nearby Tuareg camp.

The expedition continued south through Zinder and arrived in Kano, Nigeria, on February 16 (Fig. 73). Kano was the center of the peanut industry in this part of the world. They had many huge pyramids of bagged peanuts (each bag contained about five bushels) and these huge pyramids marked the town (Fig. 82). There were three factories in the town where peanut oil was extracted and all the solid residue of the peanuts was hauled off to the edge of Kano to a dump.

The rest of our group decided that they were going farther east, over to the Lake Chad area, and then down through Cameroon to Douala. I discussed with the leader an alternate plan and had it approved, for me to continue south to Lagos, and then return to Europe on my own. I proceeded to Lagos by train. While there investigating my various options for travel to Europe, I met a young man named McCulloch who had just received his doctor's degree in chemistry from the University of Johannesburg. McCulloch was driving to Algiers, and asked me to join him for the trip, and I accepted.

We left Lagos on February 25 in McCulloch's Austin A-40 (Fig. 83), following a route several hundred miles west of the southbound route of the expedition (Fig. 73). Two weeks later, after innumerable tire repairs and several broken spring repairs, we limped into Beni Abbes in western Algeria, and the Austin would go no further without extensive repairs. McCulloch stayed with the car to await replacement parts, and I hitched a ride to Coloum Bechar with a carload of Belgians. I caught a train to Algiers on March 15, left Algiers by air on the 16th, and arrived at my son's home near Frankfurt on March 17, 1954, my 64th birthday!

My wife met me at Frankfurt and we visited our son and his family for several weeks, then spent the next two months traveling by car through Germany, Austria, Italy, the British Isles, Belgium, Holland, France, Switzerland and Denmark. We sailed for New York on the New Amsterdam in early June, and took delivery of a new car in New York. We spent a month visiting many people and places as we drove across country, and reached home in Portland in mid-July, just a year after I had left for my Africa trip.

(Note: Regarding Rockie's choice of transportation north from Lagos to Algiers: Certainly one consideration stemmed from his basic Scottish frugality, but a major factor had to be his perennial adventuresome spirit, always eager to face new challenges, as well as to see new country.

An interesting comment on Rockie's
communication problems during the Africa trip, best described in Rockie's words, in his notes written on February 5, 1954 in Agades:

    I have found my inability to talk any of the used languages fluently to be a serious handicap in keeping track of our group's plans, but on the other hand it has been a convenient cloak by which to get privacy when I wished it. I can usually understand barely enough of the conversation, either in French or German, to know whether it is of special interest to me or not. If I think it is, I ask for a detailed translation, but if I think it is not, I just act ignorant. It gets awfully dull sometimes when during an entire day of steady flow of conversation -- for with eight contributors there is a steady flow -- I hear not a word of English except the yes or no answers to my specific questions. If I ask no questions, there is usually absolutely no English spoken. I am the outlander, and they naturally speak their native tongues.

    It is apparent from Rockie's notes that he relished meetings with people who spoke English; e.g., at In Ekkar in southern Algeria, he spent an evening with a French geologist and two Norwegian journalists, all of whom spoke excellent English, and it was the highlight of his day).
In the fall of 1954, not long after our return home from a year in Africa and Europe, I received a phone call from the FAO (Food and Agriculture Organization of the United Nations) asking if I would accept a year's assignment as the soil conservation advisor to the Jamaican government. After a careful -- though rather hurried -- discussion lasting about ten seconds with my wife, we said we would go (Fig. 84).

Our home in Kingston was a suburban apartment, situated several hundred feet higher than the city. Our windows to the south looked down across the city, the bay beyond, the airport on the sandspit which practically separates the bay from the sea, and beginning about six miles from us, the blue waters of the Caribbean. To the north and east, our windows opened onto the precipitous Blue Mountains. Six miles away -- though 25 miles by the corkscrew trail they call a road -- the British army had built a hill town, Newcastle, at an elevation of 4,000 feet where their personnel could get some respite from the heat down in Kingston. Up there, because of the cooler climate, they grew peaches, strawberries, raspberries, blueberries, and all of the common vegetables that we can grow in the temperate zone. During part of the hot, sticky, rainy season we also maintained a home up 2,400 feet in the mountains. It was delightful and we wanted to live there for our remaining months, but there was no way for Edith to get anywhere -- she objected to the 12 mile walk to town!

About 80 per cent of Jamaica is mountainous, with scattered lowlands fringing much of its coastline. It is about 150 miles from east to west, and a maximum of 50 miles from north to south. The south shore is quite dry, with many cacti and other desert plants, while the north shore of the island, and all of the mountains are much more humid. The rainfall ranges from as low as 20 inches on the south side to as high as 250 inches in the northeastern part.

The coastal lowland fringe was dominated by many large farms of the plantation type, some with corporate ownership, such as the United States Fruit Co., others individually owned, but mainly given over to the production of sugarcane and bananas. A rather large number of these were installing irrigation systems, to keep crops growing during the dry season. Sandwiched in between these larger estates were literally thousands of small peasant farms of from one to several acres each (Fig. 85). The government was taking the lead in irrigating these farms, especially in some of the driest parts of the island, making the water equally available to large and small farmers. The homes on these little farms were tiny; most had but one or two rooms, with the entire house having between 150 and 250 square feet.

Every farmer builds his own house, and almost entirely from materials on his own land. He cuts a few small trees which he fastens together to make the framework. He mixes red soil with water to make mortar, gathers loose rocks and from these he makes his walls. He cuts grass for the thatched roof, and his home is almost done. He finds a large log and handsaws the boards from which to make floor and some furniture, and it is ready to live in. He usually buys windows, and if he has some money

Fig. 84. Will and Edith Rockie at Jamaica's annual Denbigh Fair, June 1955.
The farms that occupied these steep mountain slopes were even difficult to see. There were no fences except for the occasional rock wall where the rocks which worked out of the soil were piled to get them out of the way. You saw no fields as we think of them and it was out of the question to find the boundaries of a farm. Most of the farm fields looked more like a patch of unused brushland or woodland than like cropland. Nearly all the crops were spotplanted, and rows of any sort quite unusual. In one very mixed planting I found that I could touch 11 different crop plants without taking a step. I measured out a square rod at this same spot and found 18 different crops growing thereon. I have counted 42 crops mixed up on a single acre. The variety of crops was great, but most of the peasant farmers grew only a few, the most common being sugarcane, bananas, yams, sweet potatoes, beans, coconuts, pigeon peas, cassava, corn, peanuts, mangoes, coffee, akee, breadfruit, oranges and limes.

Although these peasant farms had relatively little livestock, there were invariably a few chickens, a pig or two, a cow of sorts, and less commonly a goat and perhaps a donkey. From them they got some eggs, meat and milk.

My study of agricultural land problems required a great deal of driving on very winding gravel roads (a few of the main roads were blacktopped). I was offered a driver, but I had seen how too many chauffeurs drive, so I preferred to handle the wheel myself. The government furnished me with a Vauxhall (British Chevrolet). It was bright red in color so they had no trouble keeping track of my travels.

Since almost all of the cars used here were the small size of the various British makes, the roads were built proportionately narrower than those in the States. The road traffic was badly mixed in character, bicycles being the most abundant. Pedestrians who, until the last few years, have dominated these roads, also were everywhere, usually with head loads. Loaded donkeys, large wheeled carts pulled by one, two or three donkeys, cars, trucks, buses and an occasional American car further complicated the road problem.

Much of the published data on the island had stressed the malnutrition of the people here, but after living here for some time, it seemed to me that this area was fortunate in that respect. Several local scientists, who also felt as I did on this point, believed that the yearlong abundance and almost universal availability of mangoes, bananas and other fruits were important factors in minimizing the ill effects of the widespread poverty. A native Jamaican told me they turn over the pot during the mango season and do no cooking.

Because of the poverty and the widespread unemployment, from one to several thousand Jamaicans were emigrating to the United Kingdom each month, mostly to work as housemaids and
laborers. As high as 800 had gone in a single day since our arrival. They all wanted to migrate to the United States, but our immigration quota for Jamaicans was so small as to practically close that door to them.

The opposition party ousted the labor party from the control of the government here just one week before we arrived, so we saw the all too familiar scene of sweeping out the old personnel, bringing in the new, yet at the same time hoping to improve the economy of their country. Attempting to do these things, dozens of official missions to the U.S., the U.K., Trinidad, Puerto Rico, Mexico, and various South American countries were the order of the day. One lady stated it rather vividly, "Join the party, and see the world."

My work in Jamaica was completed in late January 1956, and we returned home to the States, and visited with family and friends as we drove across country. Prior to going to Jamaica we had sold our Portland home and moved our "home base" to Spokane. At the post office I found 15 months of mail, including 485 unanswered first class letters. We had made arrangements in 1954 for handling our mail, but something went haywire. I spent a lot of time making apologies for the neglected correspondence.

(Note: Most of this chapter consists of excerpts from an article Rockie wrote for the Nebraska Alumnus while on assignment in Jamaica [Publication 60]).
After the UNESCO Expedition to the Sahara in 1953-54 and the FAO assignment to Jamaica in 1955-56, we did some more relaxed traveling. This enabled us to renew many friendships around the world. In January 1957 we drove to San Antonio, Texas, for a short visit with our older son and family, then drove to Queretero, near Mexico City, to visit friends from Holland, and then back to Texas. Later we flew to Kingston, Jamaica, where I made a final check on my 1955-56 work there, combined with visits with our many friends in that warm land. We next stopped at Tegucigalpa, Honduras, to visit longtime friends originally from Pullman, Washington. During the previous seven years they had carved a farm out of the pine-oak forest high in the mountains 60 miles northeast of the capital. They had about 50 different crops growing when we were there. We had short visits in several countries enroute back to the States. Highlights of this trip included Jamaica’s most violent earthquake since 1907, and flying close beside an erupting volcano in Nicaragua.

The rest of the year our travels were confined to the 48 contiguous states, and included attending meetings of the American Association for the Advancement of Science (Stanford) and the Soil Conservation Society of America (Monterey).

In August 1958 we started a long trip by air. We flew to Seattle, Frobisher Bay (Baffin Island), London, Copenhagen, Bonn, Rotterdam, Frankfurt am Main, Athens, Cairo, Karachi, Lahore, New Delhi, Bangkok, Manila, Biak (New Guinea), Sydney, Auckland, Wellington, Nandi, Honolulu, and home to Portland in late February 1959.

In London we rented a car, visited friends at Exeter and also the L. Dudley Stamps at Bude (Fig. 86). (Note: Rockie reported on his visit with Dr. Stamp in a letter to the editor of The Professional Geographer, Vol. X, No. 6, November 1958 [Publication 62].) We then enjoyed England’s south coast (their Riviera) all the way from Exmouth west to Land’s End. We did not find the palm trees I had been told grew there, but we did find palmettos.

Our next stop was Denmark, where A. Krarup Mogensen, my Danish co-worker in Africa six years before, shared his apartment at Aarhus with us. We were in Scandinavia for several weeks, most of it in Denmark, and this enabled me to learn much about the Danish Heath Society.

Fig. 86. L. Dudley Stamp home, Ebbingsford Manor, Bude, England (photo from Stamp Christmas card).

(Note: The following comments on the Danish Heath Society are excerpts from Rockie’s "Report from Denmark" [Publication 63]. This inclusion is deemed appropriate as it shows his appreciation and respect for others, even in another country, who share his ideals of conservation and respect for the resources of the land.)

Many conservation activities center around the Danish Heath Society, which was founded by Enrico Dalgas in 1866 with the primary objectives of afforestation and cultivation of the heath which then covered nearly half of Jutland. With the passing of 92 years, its objectives have broadened until today they include most of the goals of both the Forest Service and the Soil Conservation Service. The Heath Society has a membership of 20,000 and has always been a voluntary association, though since 1880 it has had some assistance from the government.

One hundred years ago Jutland was quite different than it is today. Settlements and farms had developed along and near coastlines, water courses and lake shores, but most of the interior consisted of treeless, barren looking heath. This vast area of heath
(approximately half of Jutland) lay quite vacant, usually unused and unwanted. This level to hilly terrain is monotonously bare of any upstanding plants. They usually rise from six to eight inches above the earth. Today, however, scattered individual Mountain pines (Pinus Mugo) have become established on the heath and may mark a step in plant succession, from heath to forest.

The heath is very much like the Scottish moors and quite similar to the Alaska tundra which I have studied and consists entirely of low growing, almost prostrate plants. Although the heath is a lonesome looking landscape, especially in the typically cloudy and foggy atmosphere, its detailed makeup is truly lovely at all times.

We have recently been guests of the Danish Heath Society at one of their most interesting projects, the Kongenshus Memorial Park. The Society's editor, Harald Skodshoj, was our genial fountain of information. The park is 3,000 acres of virgin heath which they have reserved for the coming generation to know and enjoy. Although nearly half of Jutland's six or seven million acres was heath in 1850, the area of potentially arable heath is today approaching the point of disappearance, so this park will insure that future generations can know what much of Jutland was just 100 years ago.

The outstanding features of this park at present consists of many mammoth glacial boulders of granite and quartzite, placed upright along an avenue to honor the now deceased conservation leaders from every part of Jutland. Their names are deeply chiseled into these standing monuments for all people to see and revere. It is to me the most impressive and meaningful memorial I have ever seen. It is simple and plain, is completely encircled by the heath, but, oh, how effective (Publication 63).

After leaving Scandinavia we bought a Karmann Ghia in Germany, enjoyed several days at the Brussels Fair, and also visited friends in Germany and Saarland before cold weather came to northern Europe. In November we went south via Brenner Pass just before the first heavy snows and enjoyed the mild weather around the Adriatic. We took a quick run east to Trieste and Yugoslavia, then back to Venice and up the Po Valley into the foothills of the Alps at Lake Como, south to Milan and Genoa, and west to Madrid. Spent several days there with longtime friends from Texas. Then to southern Spain, Gibraltar and Portugal, and north to Rotterdam where we delivered our car for shipment to Portland. We had not driven in any snow up to this time. The next morning all of northern Europe had a heavy blanket of snow!

We stopped briefly at Athens (Fig. 87), Cairo, and Karachi, then spent 10 days at Lahore for Christmas with old friends from the early days at Pullman, Washington. They entertained us royally in spite of our succumbing to the Asian flu while there. We continued east through Bangkok, Manila, Biak, and across northeastern Australia to Sydney where we reentered the English world. And it was truly English, for they would not permit me to enter the hotel dining room without a tie, even though it was oppressively hot. We next headed across the Tasman Sea to Auckland, New Zealand, where we stayed two weeks, mostly at Wellington, the capital, resting from our bout with the Asian flu (we had an English-speaking doctor there). Next came the long tiring trip to the Fijis, followed by another long hop to Hawaii, where we were met by our younger son and his family, and J.H. "Heinie" Christ (with the Soil Conservation Service in Hawaii). Heinie had replaced me as Regional Conservator when I resigned in 1938, so I had worked closely with him until I retired from the S.C.S. in 1952. After six weeks in Hawaii visiting family, friends, and renewing S.C.S. ties with Heinie and others, we returned to Portland in late February, 1959, then on to our home in Spokane.

Shortly after our return I began discussions with Clarke Brooke and other geographers at Portland State College regarding my teaching in the Geography Department. This culminated in our moving back to Portland, and my teaching in the fall quarter, 1959. This was the beginning of a most enjoyable and rewarding academic affiliation that continued for the next 20 years. (Note: In 1958 the Soil Conservation Society of America selected Rockie to be honored as a Fellow for outstanding contributions to the science of soil and water conservation.)
Fig. 87. Will and Edith Rockie visiting theater ruins, Athens, Greece. December 10, 1958.
Upon resuming teaching in the fall of 1959, after a hiatus of nearly 40 years, I taught at Portland State College through the winter quarter and summer session of 1960. Fall quarter was skipped due to a planned trip to the Pacific in December. We spent the holidays with our son, John, and his family in Hawaii. The visit included a week on the Big Island of Hawaii where we stayed at Kilauea Military Camp on the rim of Kilauea Caldera, and were treated to a close look at recent volcanic activity. We returned to Oahu on January 4, 1961, and the next day I sailed for New Zealand.

Eight weeks were spent in an abbreviated study of New Zealand agricultural land use. Naturally the study was sketchy, but by hard work and long hours I was able to see all portions of the country, all of their types of agriculture, and to discuss the land problems with many people. I traveled over most of the government owned railways and bus lines (nearly 9,000 miles), 2,000 miles by car, 1,000 miles by plane, 300 miles by interisland ferries, and around 250 miles on foot. I practically lived on the trains and buses, using the sleepers on the trains as my hotel on many nights, even sitting up in the coaches when I could not get a berth. Since New Zealand's trains, railcars and buses normally had all seats taken every day by advance booking, I had to learn to book ahead, or I would find myself aboard with standing room only. Furthermore, since most of their railroad mileage is as crooked and winding as the famous crooked mining railways in Colorado, traveling even while seated was none too comfortable, and a lengthy standing trip was really tiring.

New Zealand was having some of the same problems we were experiencing in the United States. Highways were being built or had already been built paralleling most of the rail lines, usually only a few feet distant on the same federally owned rights-of-way. In spite of this duplication, however, their train and bus service was still running at capacity. Private cars were not yet seriously hurting their public transportation systems.

The handwriting was on the wall, however; sooner or later the private automobile would affect rail and bus traffic in the same way that it had in the United States. One main deterrent to car ownership of new fast cars was the price and the difficulty of owning one. Although the income of the New Zealander was about one-half to two-thirds of the average income in the United States, European compacts cost about 50 percent more than they cost in the United States, and even more for most American cars. The government maintained an import duty of 40 percent and up on all cars imported, and required a special permit before one could plan to bring in a car. One result of this was that the average private car in New Zealand appeared to be around 15 years of age, and 30-year-old Model A Fords were an appreciable part of their cars then in use.

During my time in New Zealand I was fortunate to have been able to spend some time on several different types of farms, each of which was an example of good farming practice.

Farm No. 1: The original owner had been a pilot for the New Zealand Air Force in World War I. Upon his return to civilian life he obtained a grant of more than 600 acres of brush and timber land about 70 miles southeast of Auckland, not far from the present city of Morrinsville. The land was gently rolling to rolling, with deep loamy soil developed from volcanic ash, and a rather uniformly distributed annual rainfall of about 50 inches. The native vegetation which covered the tract included remnants of the partially burned/partly logged virgin forest, some second growth timber of the virgin species, some stands of shrubby invaders, a strong admixture of the native tree ferns, some grassy areas and considerable areas of bracken. The original tract had been divided into several farms, all still owned and operated by members and descendants of the initial owner family. Each of the currently operated farm units was slanted strongly toward dairying, but not one of these units had reached even close to its full potential of development. This situation typifies, in my opinion, most of New Zealand's more than 90,000 farms. Of the many farms I saw, I cannot recall even one which I would call fully developed to its potential. In other words, New Zealand could go far in increasing her agricultural output from the current level, and in addition, she still had millions of other acres which would ultimately become farmlands. It also appeared possible that many of her currently larger sheep runs would ultimately be divided into smaller farms with more intensive utilization of the land.

Farm No. 2: One 1,200 acre sheep run about 25 miles north of Wellington which I studied in some detail consisted mainly of steep hill slopes...
with 40 to 70 percent gradient. It contained a few narrow valley areas and a few hilltops which were gently rolling, but they were the exception. In spite of the steep slopes, nearly all of this farm was in sown grasses and received its annual application of chemical fertilizer by plane. This was supplemented by manure dropped by the sheep (and some cattle) which grazed there the year round. Like most of New Zealand's farms, it was divided into many separate fenced paddocks (pastures). The livestock was rotated many times during the year from one paddock to another, so that overgrazing and excessive erosion seldom occurred. This farmer had one paddock which was being rehabilitated for a period of several months without grazing because it had been damaged by too much use in the recent past. Nearly all farmers in that area had their land sufficiently subdivided so they could easily remove one or two paddocks from the usual rotation cycle whenever such damage occurred. This particular 1,200 acre run had more nearly attained its maximum productivity than the farm described previously.

Farm No. 3: Located a few miles from Feilding, near Palmerston North, the farm consisted almost entirely of level land, and was one of the most highly developed farm units in New Zealand. Although it contained less than 100 acres, it was divided into nearly 20 paddocks. Except for the four paddocks used during the preceding month, all of the farm was "knee deep in clover," ready to be grazed in the scheduled rotation. The sheep and cattle on this farm appeared to be better than average in quality and breeding, and they also showed better care and were in better than average condition. The main products of this farm were lambs and beef for slaughter, and wool. The farm's operation was as modern as any I had ever seen anywhere. From what I saw of the land, the livestock, the operation of the farm, the standard of living in the home and what these folk were getting out of life, their setup equalled the best in farm living.

These three farms are examples of good farming at different stages in their development toward their full potential, each with much better than average management of the particular operation.

Although some New Zealand publications indicated that, except for Crown Lands (government lands not in designated reserves), no suitable land remained for agricultural development, it was my firm conviction that thousands of additional farms would be created on the then undeveloped lands. In addition to those as yet unused lands which I felt would become farms, there was an enormous total acreage of undeveloped or partially developed land in existing farms which could become good farmland when the need for its full development became sufficiently urgent.

In addition to furthering my professional knowledge in New Zealand, I also had the pleasure of making friends with two brothers who are my distant relatives -- one at Dunedin (Fig. 88), the other at Auckland. Our respective ancestors, closely related, had emigrated from Scotland to America and to New Zealand over 100 years earlier.

The remainder of 1961 was involved with Portland State College where I participated in the Geography Workshop at Timothy Lake in August. Also during the summer we bought and moved to a 44 acre farm south of Portland, between Wilsonville and Lake Oswego -- a move made much easier by the collective efforts of the Portland State geographers and their families. The generous help of this group was repeated many times in the years that followed.

Late in the year I accepted an offer to teach at the University of Oregon in the winter quarter of 1962, filling in during the absence of Clyde Patton. In June I attended the annual meetings of the Association of Pacific Coast Geographers at the University of Washington, and received the APCG Distinguished Service Award, presented to me by Arch Gerlach. I also managed to spend a few hours at the Seattle World's Fair.

Several months earlier I had accepted a Fulbright lecturing award, to begin at the University of Istanbul in October, 1962. We flew to Europe in early September, spent several weeks visiting in different parts of Europe, then, in a newly purchased Volkswagen, drove to Turkey via Austria, Yugoslavia and Greece. My lectures on soil and water conservation were divided between some 30 professors in the Forestry Institute of the University of Istanbul, and about 100 University seniors (Forestry majors). We took advantage of our location both at Christmas, when we spent a week in the Holy Land, and during the February break, when we drove several thousand miles along the Mediterranean and Aegean coasts (in company with my University interpreter), and thus escaped the snow and cold of Istanbul. Classes ended on May 22, and we had planned to fly eastward immediately, but a revolution on May 22, followed by martial law, prevented issuance of a promised permit to sell our car, and also delayed our departure until June 12. We drove to Rotterdam to ship our car home, then
late in June flew eastward to visit our older son, Dwain, and his family in Japan for several weeks; we also spent several days in the Matanuska Valley in Alaska renewing old friendships with Don Irwin and others.

Back at Portland I again helped with the Conservation Workshop at Timothy Lake in August, and in October taught Peace Corps classes for students going to Turkey.

Although it had not been planned, I was involved practically the entire year of 1964 lecturing in geography and conservation -- the winter quarter at Portland State College, the spring quarter at Central Washington State College at Ellensburg, the summer session at Portland State, and the fall quarter at Eastern Washington State College at Cheney. In May, Paul McGrew and I attended an official rededication of the Soil Conservation Experiment Station at Pullman, Washington, that we had jointly started in 1930. In mid-June I attended the 50th anniversary of my university class at the University of Nebraska, Lincoln.


In late 1967 I received a call from Professor Chester Cole, Chairman of the Department of Geography at California State College, Fresno. Some years earlier I had promised him that I would spend a year as a visiting lecturer in his department. Chet said he had just discovered that I was approaching 80 years of age, and that the president
of his college did not approve visiting faculty members who were 80 years or older. He said that if I were going to give him a year, it would have to begin in September 1968. I sent him a resume, a tentative acceptance, and a month later he called with word that the president wanted a statement from my doctor regarding my health condition. So my doctor for 25 years wrote a very good health report on me, saying that I looked and acted like a man many years younger.

That year at Fresno marked the end of my full-time teaching. My affiliation with Portland State College continued, but on a very limited basis. I was named Adjunct Professor of Geography, and gave occasional lectures, participated in seminars, and attended the summer field camps which I greatly enjoyed (Fig. 89).

(Note: Rockie wrote nothing further for this monograph about his activities during the 1970's, so the closing portion of the monograph is provided by Larry Price.)

Fig. 89. W.A. Rockie, above Timberline Lodge, Mt. Hood, Oregon, August 1975.
My first acquaintance with the name W.A. Rockie came in 1961. I was an undergraduate student at Eastern Illinois University, and being interested in the north, did a research paper for Professor Dalias A. Price, entitled "The Agricultural Potential of Alaska." One of the major references was Will Rockie's 1946 paper, "The Physical Land Conditions in the Matanuska Valley, Alaska" (Publication No. 48).

Later in 1969, after I decided to come to Portland State for my first job, I was excited to see the name W.A. Rockie listed as an adjunct professor in the Geography Department. It did not take long to get to know Will, and when I decided to offer the summer field camp in 1970, Will agreed to come along and help. Subsequently, he visited the field camp every year it was taught, except for 1978, when he was recuperating from a broken leg.

Our first week was along the Deschutes River, three miles upstream from Maupin. Will drove over and joined us after we had been there for three or four days. He would typically arrive one afternoon and the next day we would go on a field trip of the surrounding area including Shaniko and the John Day fossil beds. The following day he would return to Portland. The three days with us gave ample time for Will to make personal contact with each of the students and to learn their names. His visit was a highlight for all concerned. His insight, experience, and historical perspective into the region made us all see the country with different eyes. I remember vividly many of the incidents which he faithfully recounted each year.

Every student was impacted by Will's ambience and verve, and his sincere interest in each person. During the final week on campus when final papers and presentations were given, Will would always come and listen and react to the student papers. Afterward he would attend our final beer blast, slide show and party. Not one student who took the field camp will ever forget Will Rockie, nor will I. He helped make the course a success.

One last story tells of the kind of person Will Rockie was. In the mid-1970's the department decided to take a three-day midwinter trip to the Palouse. Professors Clarke Brooke, Dale Courtney, Tom Poulsen and I were along in addition to 10 or 15 students. The idea was for Will to take us to some of his old haunts and to discuss how the land had changed in the interim. Upon arriving in Pullman, Washington, the first evening all of the accompanying faculty sought refuge in local motels, while Will and I joined the students in a grass field on the local agricultural experiment station. We sat around a campfire and slept on the ground in sleeping bags although the temperature dropped below freezing. It was no big deal; there was never any question but that Will and I would stay with the students. At over 80 years of age this says it all about the character of Will Rockie.

Larry W. Price
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58. 1954, "Sahara is Not All Desert." Presented at joint session of American Association for the Advancement of Science and Geological Society of America, Berkeley, California,


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